

# Assessment Report for Ksi Lisims LNG

WITH RESPECT TO THE APPLICATION BY NISGA'A NATION,  
ROCKIES LNG LIMITED PARTNERSHIP AND WESTERN LNG LLC FOR  
AN ENVIRONMENTAL ASSESSMENT CERTIFICATE PURSUANT TO  
THE ENVIRONMENTAL ASSESSMENT ACT (2018) AND THE IMPACT  
ASSESSMENT ACT (2019) AS A SUBSTITUTED ASSESSMENT

WRITTEN BY

THE BRITISH COLUMBIA ENVIRONMENTAL ASSESSMENT OFFICE

NOVEMBER 12, 2024



**EAO**

Environmental  
Assessment Office

## PREFACE

When a major project is proposed in British Columbia, it may be subject to both a federal impact assessment and a provincial environmental assessment. In British Columbia, environmental assessments are managed by the Environmental Assessment Office (EAO), a neutral regulatory agency within the provincial government that works with and seeks input from scientific professionals, First Nations, proponents, the public, local governments, and federal and provincial agencies.

The environmental assessment process ensures that any potential environmental, economic, social, cultural and health effects that may occur during the lifetime of a major project are thoroughly assessed. The EAO follows a clearly defined process in the [Environmental Assessment Act](#) to conduct the assessment of a major project and produce a detailed Assessment Report which includes recommendations regarding whether to issue an Environmental Assessment Certificate. That report is then given to provincial Ministers to decide whether the project should proceed and if so, under what conditions.

You can learn more about the environmental assessment process [here](#). Information and records relating to environment assessments are available on the EAO's website at [www.eao.gov.bc.ca](http://www.eao.gov.bc.ca). Questions or comments can be directed to:

Environmental Assessment Office  
PO Box 9426 Stn Prov Govt  
Victoria BC V8W 9V1  
Email: [eaoinfo@gov.bc.ca](mailto:eaoinfo@gov.bc.ca)

The Impact Assessment Agency of Canada (IAAC), a federal body accountable to the Minister of Environment and Climate Change, is responsible for conducting federal impact assessments under the [Impact Assessment Act](#). You can learn more about the impact assessment process [here](#). Information and records relating to federal impact assessment are available on IAAC's [Canadian Impact Assessment Registry](#). Questions or comments can be directed to:

Impact Assessment Agency of Canada, Pacific and Yukon Office  
210A – 757 West Hastings St  
Vancouver BC V6C 3M2  
Email: [pacificandyukonregion-regiondupacifiqueetduyukon@iaac-aeic.gc.ca](mailto:pacificandyukonregion-regiondupacifiqueetduyukon@iaac-aeic.gc.ca)

When both an environmental assessment under the *Environment Assessment Act* and impact assessment under the *Impact Assessment Act* are required, [the Impact Assessment Cooperation Agreement between Canada and British Columbia](#) sets out the administrative processes required from both the EAO and IAAC to ensure an efficient and effective assessment process, including the use of substitution. Under substitution, there is a single review process (the provincial environmental assessment), designed to meet both provincial and federal legislative requirements, thereby enabling two decisions (provincial and federal).

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Thank you for your passion, contributions, and effort!

DRAFT

## TABLE OF CONTENTS

# 1.0 Table of Contents

Preface .....	2
Acknowledgements .....	3
Table of Contents .....	4
List of Figures .....	17
List of Tables.....	18
Acronym and Abbreviation List .....	21
Executive Summary .....	23
Résumé .....	27
<b>1.0 Purpose of this Assessment Report.....</b>	<b>32</b>
1.1. Reader’s Guide to this Report .....	32
1.2. The Purposes of the Environmental Assessment Office.....	33
<b>2.0 Project Overview .....</b>	<b>33</b>
2.1. Proponent Description .....	33
2.2. Project Description and Schedule .....	34
2.3. Purpose and Need for the Designated Project .....	40
2.4. Alternatives to the Project .....	40
2.5. Project Anticipated Expenditures .....	41
<b>3.0 Regional And Regulatory Context.....</b>	<b>41</b>
3.1. First Nations .....	41
3.2. Communities .....	42
3.3. Geography and Ecology.....	44
3.4. Regulatory Environment.....	44
3.4.1. B.C. Environmental Assessment and Federal Impact Assessment .....	44
3.4.2. Land Use Plans .....	45
3.4.3. Regulatory Coordination .....	46
3.4.4. Other Projects in the Region .....	47
<b>4.0 The Environmental Assessment Process .....</b>	<b>49</b>
<b>5.0 Stakeholder Engagement .....</b>	<b>50</b>
5.1. Technical Advisory Committee .....	50

5.2. Community Advisory Committee ..... 51

5.3. Public ..... 52

5.4. Local Governments ..... 55

5.5. Alaska ..... 56

**6.0 Indigenous Nation Engagement and Summary of Effects ..... 56**

6.1. Proponent-Led Engagement Activities with First Nations ..... 56

6.2. EAO-Led Engagement Activities ..... 57

6.3. Nisga’a Nation ..... 58

6.4. Participating Indigenous Nations ..... 59

6.4.1. Gitga’at First Nation ..... 60

6.4.2. Gitxaala Nation ..... 61

6.4.3. Kitselas First Nation ..... 61

6.4.4. Kitsumkalum First Nation ..... 62

6.4.5. Lax Kw’alaams Band ..... 62

6.4.6. Metlakatla First Nation ..... 63

6.5. First Nations ..... 64

6.5.1. Haida Nation ..... 64

6.5.2. Gitxsan Wilp Denimget, Tsihl Gwellii Laxwiiyip ..... 64

6.5.3. Gitxsan Nation as represented by Gitxsan Laxyip Management Office ..... 65

6.5.4. Gitanyow Hereditary Chiefs ..... 65

6.6. Métis Nation British Columbia ..... 65

6.7. Indigenous Knowledge ..... 66

**7.0 Predicted Effects of Ksi Lisims LNG ..... 66**

**8.0 Key Concerns Identified in the EAO’s Assessment of Effects ..... 72**

8.1. Greenhouse gas emissions ..... 72

8.2. Marine Shipping ..... 73

8.3. Effects to Marine Resources ..... 74

8.4. Socioeconomic effects ..... 75

**9.0 The EAO’s Proposed Conditions ..... 75**

**10.0 Ksi Lisims LNG’s Contribution to Sustainability ..... 78**

10.1. Introduction ..... 78

10.2. Protecting the Environment ..... 78

10.3.	Fostering a Sound Economy .....	79
10.4.	The Well-being of British Columbians and Their Communities.....	80
10.5.	Sustainability Conclusion .....	81
<b>11.0</b>	<b>Conclusions .....</b>	<b>81</b>
<b>12.0</b>	<b>Notifications of Consent or Lack of Consent by Participating Indigenous Nations .....</b>	<b>83</b>
<b>13.0</b>	<b>Appendix 1 - The Environmental Assessment Process .....</b>	<b>84</b>
13.1.	Early Engagement .....	84
13.2.	Readiness Decision .....	85
13.3.	Process Planning .....	85
13.4.	Application Development and Review.....	86
13.5.	Effects Assessment and Recommendation .....	86
13.6.	Decision .....	87
13.7.	Post-Certificate .....	87
<b>14.0</b>	<b>Appendix 2 - The EAO’s Recommended Key Mitigation Measures and Follow-Up Programs under the IAA .....</b>	<b>88</b>
<b>15.0</b>	<b>Appendix 3 - Residual Effects Characterization Definitions.....</b>	<b>106</b>
<b>16.0</b>	<b>Appendix 4 - List of Parties on the Technical Advisory Committee .....</b>	<b>112</b>
<b>17.0</b>	<b>Appendix 5 – Detailed First Nation Assessments .....</b>	<b>114</b>
17.1.	Nisga’a Nation .....	114
17.1.1.	Introduction.....	114
17.1.2.	Summary of Issues Raised by the Nisga’a Nation .....	116
17.1.3.	Potential Effects on the Nisga’a Treaty Rights and Interests .....	117
17.1.4.	Summary of Predicted Residual Effects on Residents of Nisga’a Lands, Nisga’a Lands, and Nisga’a interests (Chapter 10, paragraph 8(e)) .....	118
17.1.5.	Summary of Cumulative Effects on Nisga’a Treaty Rights and Interests(Chapter 10, paragraph 8(e)) .....	118
17.1.6.	Summary of Predicted Residual Effects on Residents of Nisga’a Lands, Nisga’a Lands, and Nisga’a interests (Chapter 10, paragraph 8(f)).....	118
17.1.7.	Summary of Cumulative Effects on Residents of Nisga’a Lands, Nisga’a Lands, and Nisga’a interests (Chapter 10, paragraph 8(f)).....	118
17.1.8.	Summary of Predicted Positive Effects on Residents of Nisga’a Lands, Nisga’a Lands, and Nisga’a interests (Chapter 10, paragraphs 8(e) and 8(f)) .....	119
17.1.9.	Proposed Provincial and Federal Conditions to Mitigate Effects to Nisga’a Chapter 10 paragraphs 8(e) and 8(f) Treaty Rights and Interests .....	119
17.1.10.	Government Initiatives Relevant to Addressing Potential Cumulative Effects .....	120

17.1.11.	Ongoing Engagement, Information Sharing, Notification, and Reporting.....	120
17.1.12.	Conclusions of NLG .....	120
17.2.	Gitga’at First Nation.....	121
17.3.	Gitxaala Nation .....	122
17.3.1.	Community Profile .....	122
17.3.2.	Gitxaala Involvement in the Consultation Process .....	122
17.3.3.	Assessment Boundaries.....	122
17.3.4.	Regional Context.....	123
17.3.5.	Indigenous Interests .....	123
17.3.6.	Harvesting.....	124
17.3.7.	Use and Integrity of Sacred and Important Places .....	130
17.3.8.	Gitxaala Governance .....	133
17.3.9.	Health and wellbeing, including socioeconomic.....	137
17.3.10.	Positive Effects of Ksi Lisims LNG .....	140
17.3.11.	Conclusions .....	141
17.4.	Kitselas First Nation .....	142
17.4.1.	Assessment Approach .....	142
17.4.2.	Overview .....	142
17.4.3.	Engagement Activities .....	144
17.4.4.	Kitselas Values .....	144
17.4.5.	Information Gaps .....	156
17.4.6.	Evaluation of Effects to Kitselas Metrics.....	156
17.4.7.	Individual Metrics Analysis.....	161
17.4.8.	Ksi Lisims’ Section on Kitselas’ Aboriginal Interests .....	163
17.4.9.	Kitselas’ Determination .....	166
17.4.10.	Potential Cumulative effects.....	169
	Kitselas Appendix A – Crown Conditions and Mitigations Applicable to Kitselas Values.....	170
17.5.	Kitsumkalum First Nation .....	176
17.5.1.	Community Profile .....	176
17.5.2.	Kitsumkalum Involvement in the Consultation Process .....	176
17.5.3.	Assessment Boundaries.....	177
17.5.4.	Regional Context.....	177

17.5.5.	Indigenous Interests .....	178
17.5.6.	Harvesting Rights .....	179
17.5.7.	Use and Integrity of sacred and culturally important sites and landscape features .....	184
17.5.8.	First Nation Governance .....	188
17.5.9.	Health and wellbeing (including socioeconomic) .....	191
17.5.10.	Positive Effects of Ksi Lisims LNG .....	195
17.5.11.	Conclusions .....	195
17.6.	Lax Kw'alaams Nation .....	196
17.6.1.	Community Profile .....	196
17.6.2.	Lax Kw'alaams Involvement in the Consultation Process .....	196
17.6.3.	Assessment Boundaries .....	196
17.6.4.	Regional Context .....	197
17.6.5.	Indigenous Interests .....	197
17.6.6.	Harvesting .....	198
17.6.7.	Use and Integrity of sacred and culturally important sites and landscape features .....	203
17.6.8.	Lax Kw'alaams Governance .....	207
17.6.9.	Health and wellbeing, including socioeconomic .....	210
17.6.10.	Positive Effects of Ksi Lisims LNG .....	214
17.6.11.	Conclusions .....	214
17.7.	Haida Nation .....	215
17.7.1.	Community Profile .....	215
17.7.2.	CHN Involvement in the Consultation Process .....	215
17.7.3.	Assessment Boundaries .....	215
17.7.4.	Regional Context .....	216
17.7.5.	Indigenous Interests .....	217
17.7.6.	Harvesting Rights .....	218
17.7.7.	Use and Integrity of sacred places and cultural heritage sites .....	223
17.7.8.	Haida Governance .....	226
17.7.9.	Positive Effects of Ksi Lisims LNG .....	229
17.7.10.	Haida's Views on Ksi Lisims LNG .....	229
17.7.11.	Conclusions .....	230
17.8.	Gitxsan Simogyet Denimget .....	231



17.8.1.	Community Profile .....	231
17.8.2.	Gitxsan Simogyet Denimget’s Involvement in the Consultation Process .....	231
17.8.3.	Assessment Boundaries .....	232
17.8.4.	Potential effects of Ksi Lisims LNG to Gitxsan Simogyet Denimget Aboriginal rights and other interests .....	232
17.8.5.	Harvesting Rights .....	232
17.8.6.	Health and Well-being .....	235
17.8.7.	Positive Effects of Ksi Lisims LNG .....	237
17.8.8.	Conclusions .....	237
17.9.	Métis Nation British Columbia .....	238
17.9.1.	Community Profile .....	238
17.9.2.	MNBC Involvement in the Consultation Process .....	238
17.9.3.	Assessment Boundaries .....	238
17.9.4.	Indigenous Interests .....	238
17.9.5.	Harvesting Activities .....	239
17.9.6.	Sacred and culturally important sites and landscape features .....	244
17.9.7.	Social and economic conditions .....	247
17.9.8.	Positive Effects of Ksi Lisims LNG .....	251
17.9.9.	Conclusions .....	251
17.10.	Metlakatla First Nation .....	252
17.11.	Gitanyow Hereditary Chiefs .....	253
17.11.1.	Community Profile .....	253
17.11.2.	Gitanyow Involvement in the Environmental Assessment .....	253
17.11.3.	Assessment Boundaries .....	256
17.11.4.	Key Issues Raised .....	257
17.11.5.	Conclusions .....	262
17.12.	Gitxsan Laxyip Management Office .....	264
17.12.1.	Community Profile .....	264
17.12.2.	Gitxsan Laxyip Management Office Involvement in the Environmental Assessment .....	264
17.12.3.	Assessment boundaries .....	265
17.12.4.	Key Issues Raised .....	265
17.12.5.	Conclusion .....	269
18.0	Appendix 6 – Valued Component Assessments .....	270

18.1. Acoustic..... 270

    18.1.1. Summary ..... 270

    18.1.2. Assessment Boundaries..... 270

    18.1.3. Existing Conditions by the Proponents ..... 271

    18.1.4. Potential Project Effects by the Proponents..... 272

    18.1.5. Proposed Mitigation Measures by the Proponents ..... 272

    18.1.6. Key Issues Raised ..... 273

    18.1.7. The EAO’s Characterization of Residual Effects ..... 274

    18.1.8. Cumulative Effects Assessment..... 277

    18.1.9. Conclusion ..... 277

18.2. Air Quality..... 278

    18.2.1. Summary ..... 278

    18.2.2. Assessment Boundaries..... 278

    18.2.3. Existing Conditions by the Proponents ..... 279

    18.2.4. Potential Project Effects by the Proponents..... 280

    18.2.5. Key Issues Raised ..... 282

    18.2.6. The EAO’s Characterization of Residual Effects ..... 283

    18.2.7. Cumulative Effects Assessment..... 285

    18.2.8. Conclusion ..... 286

18.3. Groundwater..... 287

    18.3.1. Summary ..... 287

    18.3.2. Assessment Boundaries..... 287

    18.3.3. Existing Conditions by the Proponents ..... 288

    18.3.4. Potential Project Effects by the Proponents..... 288

    18.3.5. Proposed Mitigation Measures by the Proponents ..... 288

    18.3.6. Key Issues Raised ..... 289

    18.3.7. The EAO’s Characterization of Residual Effects ..... 290

    18.3.8. Cumulative Effects Assessment..... 290

    18.3.9. Conclusion ..... 291

18.4. Surface Water ..... 292

    18.4.1. Summary ..... 292

    18.4.2. Assessment Boundaries..... 292

18.4.3. Existing Conditions by the Proponents ..... 293

18.4.4. Potential Project Effects by the Proponents ..... 294

18.4.5. Proposed Mitigation Measures by the Proponents ..... 295

18.4.6. Key Issues Raised ..... 296

18.4.7. The EAO’s Characterization of Residual Effects ..... 297

18.4.8. Cumulative Effects Assessment ..... 299

18.4.9. Conclusion ..... 299

18.5. Marine Resources ..... 300

18.5.1. Summary ..... 300

18.5.2. Assessment Boundaries ..... 301

18.5.3. Existing Conditions by the Proponents ..... 302

18.5.4. Potential Project Effects by the Proponents ..... 304

18.5.5. Proposed Mitigation Measures by the Proponents ..... 305

18.5.6. Key Issues Raised ..... 307

18.5.7. The EAO’s Characterization of Residual Effects ..... 311

18.5.8. Cumulative Effects Assessment ..... 316

18.5.9. Conclusion ..... 319

18.6. Freshwater Fish and Fish Habitat ..... 320

18.6.1. Summary ..... 320

18.6.2. Assessment Boundaries ..... 320

18.6.3. Existing Conditions by the Proponents ..... 321

18.6.4. Potential Project Effects by the Proponents ..... 322

18.6.5. Proposed Mitigation Measures by the Proponents ..... 323

18.6.6. Key Issues Raised ..... 324

18.6.7. The EAO’s Characterization of Residual Effects ..... 326

18.6.8. Cumulative Effects Assessment ..... 328

18.6.9. Conclusion ..... 330

18.7. Wildlife and Wildlife Habitat ..... 331

18.7.1. Summary ..... 331

18.7.2. Assessment Boundaries ..... 331

18.7.3. Existing Conditions by the Proponents ..... 332

18.7.4. Potential Project Effects by the Proponents ..... 334

18.7.5. Proposed Mitigation Measures by the Proponents ..... 335

18.7.6. Key Issues Raised ..... 338

18.7.7. The EAO’s Characterization of Residual Effects ..... 339

18.7.8. Cumulative Effects Assessment..... 344

18.7.9. Conclusion ..... 345

18.8. Vegetation and Wetlands..... 346

18.8.1. Summary ..... 346

18.8.2. Assessment Boundaries..... 346

18.8.3. Existing Conditions by the Proponents ..... 347

18.8.4. Potential Project Effects by the Proponents..... 351

18.8.5. Proposed Mitigation Measures by the Proponents ..... 352

18.8.6. Key Issues Raised ..... 354

18.8.7. The EAO’s Characterization of Residual Effects ..... 356

18.8.8. Cumulative Effects Assessment..... 362

18.8.9. Conclusion ..... 363

18.9. Marine Use..... 364

18.9.1. Summary ..... 364

18.9.2. Assessment Boundaries..... 365

18.9.3. Existing Conditions by the Proponents ..... 366

18.9.4. Potential Project Effects by the Proponents..... 370

18.9.5. Proposed Mitigation Measures by the Proponents ..... 371

18.9.6. Key Issues Raised ..... 372

18.9.7. The EAO’s Characterization of Residual Effects ..... 375

18.9.8. Cumulative Effects Assessment..... 377

18.9.9. Conclusion ..... 380

18.10. Human Health ..... 381

18.10.1. Summary ..... 381

18.10.2. Assessment Boundaries..... 381

18.10.3. Existing Conditions by the Proponents ..... 382

18.10.4. Potential Project Effects by the Proponents..... 383

18.10.5. Proposed Mitigation Measures by the Proponents ..... 386

18.10.6. Key Issues Raised ..... 386

18.10.7. The EAO’s Characterization of Residual Effects ..... 388

18.10.8. Cumulative Effects Assessment ..... 389

18.10.9. Conclusion ..... 390

18.11. Community Health and Wellness ..... 391

18.11.1. Summary ..... 391

18.11.2. Assessment Boundaries ..... 391

18.11.3. Existing Conditions by the Proponents ..... 392

18.11.4. Potential Project Effects by the Proponents ..... 395

18.11.5. Proposed Mitigation Measures by the Proponents ..... 396

18.11.6. Key Issues Raised ..... 396

18.11.7. The EAO’s Characterization of Residual Effects ..... 398

18.11.8. Cumulative Effects Assessment ..... 403

18.11.9. Conclusion ..... 404

18.12. Employment and Economy ..... 406

18.12.1. Summary ..... 406

18.12.2. Assessment Boundaries ..... 406

18.12.3. Existing Conditions by the Proponents ..... 407

18.12.4. Potential Project Effects by the Proponents ..... 407

18.12.5. Proposed Mitigation Measures by the Proponents ..... 408

18.12.6. Key Issues Raised ..... 409

18.12.7. The EAO’s Characterization of Residual Effects ..... 410

18.12.8. Cumulative Effects Assessment ..... 413

18.12.9. Conclusion ..... 413

18.13. Infrastructure and Services ..... 415

18.13.1. Summary ..... 415

18.13.2. Assessment Boundaries ..... 415

18.13.3. Existing Conditions by the Proponents ..... 416

18.13.4. Potential Project Effects by the Proponents ..... 419

18.13.5. Proposed Mitigation Measures by the Proponents ..... 420

18.13.6. Key Issues Raised ..... 421

18.13.7. The EAO’s Characterization of Residual Effects ..... 422

18.13.8. Cumulative Effects Assessment ..... 426

18.13.9.	Conclusion .....	427
18.14.	Archaeological and Heritage Resources .....	428
18.14.1.	Summary .....	428
18.14.2.	Assessment Boundaries.....	428
18.14.3.	Existing Conditions by the Proponents .....	429
18.14.4.	Potential Project Effects by the Proponents .....	430
18.14.5.	Proposed Mitigation Measures by the Proponents .....	430
18.14.6.	Key Issues Raised .....	431
18.14.7.	The EAO’s Characterization of Residual Effects .....	432
18.14.8.	Cumulative Effects Assessment.....	432
18.14.9.	Conclusion .....	432
<b>19.0</b>	<b>Appendix 7 - Risks of Malfunctions and Accidents .....</b>	<b>434</b>
19.1.	Background .....	434
19.1.1.	Assessment Methods .....	434
19.2.	Potential Project Effects and Proposed Mitigations .....	437
19.2.1.	Summary of Potential Project Effects.....	437
19.2.2.	Mitigation measures .....	440
19.3.	Key Issues Raised .....	444
19.3.1.	Marine Terminal/ Shipping Safety and Potential for Malfunctions and Accidents to Impact Environmental Factors of Importance to First Nations .....	444
19.3.2.	Emergency Preparedness and Safety Risks .....	446
19.3.3.	Contamination of Country Foods Due to Release of Chemicals into the Environment .....	449
19.4.	The EAO’s Assessment and Conclusions .....	450
<b>20.0</b>	<b>Appendix 8 - Disproportionate Effects on Distinct Human Populations and Gender Based Analysis Plus .....</b>	<b>461</b>
20.1.	Background .....	461
20.2.	Inclusive Engagement.....	461
20.3.	Existing Conditions by the Proponents.....	462
20.4.	Potential Project Effects by the Proponents .....	463
20.5.	Proposed Mitigation Measures by the Proponents .....	464
20.6.	Key Issues Raised .....	465
20.6.1.	Disproportionate adverse effects to First Nations populations .....	465
20.6.2.	Disproportionate adverse effects in neighbouring population centres .....	465

20.6.3.	Disproportionate allocation of positive effects .....	466
20.7.	The EAO’s Assessment and Conclusions .....	467
<b>21.0</b>	<b>Appendix 9 - Summary of Effects on Biophysical Factors that Support Ecosystem Function .....</b>	<b>469</b>
21.1.	Background .....	469
21.2.	Potential Project Effects and Proposed Mitigations by the Proponents .....	469
21.3.	Key Issues Raised .....	474
21.4.	The EAO’s Assessment and Conclusions .....	474
<b>22.0</b>	<b>Appendix 10 - Effects on Current and Future Generations .....</b>	<b>477</b>
22.1.	Background .....	477
22.2.	Potential Project Effects and Proposed Mitigations .....	479
22.3.	Key Issues Raised .....	484
22.3.1.	Greenhouse Gas Emissions .....	484
22.3.2.	Effects from Increased Shipping .....	485
22.3.3.	Concern for Training and Employment .....	485
22.4.	The EAO’s Analysis and Conclusions .....	486
22.4.1.	Proposed Provincial Conditions and Federal Mitigation Measures .....	487
22.4.2.	Conclusions .....	488
<b>23.0</b>	<b>Appendix 11 – Consistency with Land Use Plans .....</b>	<b>489</b>
23.1.	Consistency with Land Use Plans .....	489
23.2.	Key issues raised .....	490
23.3.	The EAO’s Assessment and Conclusions .....	490
<b>24.0</b>	<b>Appendix 12 - Greenhouse Gas Emissions .....</b>	<b>491</b>
24.1.	Background .....	491
24.1.1.	Regulatory Context .....	491
24.1.2.	Assessment Boundaries .....	492
24.2.	Potential Project Effects and Proposed Mitigations .....	492
24.2.1.	Existing Conditions .....	492
24.2.2.	Potential Project Effects .....	492
24.2.3.	Impacts of Ksi Lisims LNG on provincial and federal emission reduction efforts .....	495
24.2.4.	Strategic Assessment of Climate Change .....	496
24.2.5.	Proposed Mitigation Measures by the Proponents .....	497
24.3.	Key Issues Raised .....	498

24.3.1.	Upstream and Downstream Emissions .....	498
24.3.2.	BC Hydro Transmission Line and B.C.'s Net Zero by 2030 .....	498
24.3.3.	Transmission Line and Carbon sinks absorption .....	499
24.4.	The EAO's Assessment and Conclusions .....	499
24.4.1.	Residual Effects .....	499
24.4.2.	Cumulative Effects Assessment .....	500
24.4.3.	Conclusions .....	500
<b>25.0</b>	<b>Appendix 13 - Alternative Means of Carrying out the Project.....</b>	<b>501</b>
25.1.	Key Issues Raised .....	506
25.1.1.	Terrestrial Crossings .....	506
25.2.	The EAO's Assessment and Conclusions .....	506
<b>26.0</b>	<b>Appendix 14 - Potential Changes to the Project Caused by the Environment.....</b>	<b>507</b>
26.1.	Background .....	507
26.2.	Potential Effects and Proposed Mitigations .....	507
26.2.1.	Climate change and extreme weather .....	507
26.2.2.	Seismic Events and Tsunamis .....	508
26.2.3.	Forest fires .....	509
26.3.	Key Issues Raised .....	510
26.4.	The EAO's Assessment and Conclusions .....	511
<b>27.0</b>	<b>Appendix 15 - Federal Requirements.....</b>	<b>512</b>
27.1.	Overview .....	512
27.2.	Federal Lands .....	527
27.3.	Pollution to the Marine Environment Outside Canada .....	539
27.4.	Pollution to Boundary, International, or Interprovincial Waters .....	540
27.5.	Indigenous Peoples' Cultural Heritage and Current Use of Lands and Resources for Traditional Purposes .....	541
27.5.1.	Changes to Current Use of Lands and Resources for Traditional Purposes – IAA 2(e)(ii) .....	541
27.5.2.	Changes to Cultural Heritage – IAA 2(e)(i) .....	548
27.6.	Health, Social or Economic Conditions of the Indigenous Peoples of Canada .....	550
27.6.1.	Human Health – Air Quality .....	551
27.6.2.	Human Health – Acoustic .....	551
27.6.3.	Marine Use .....	552
27.6.4.	Employment and Economy .....	553



27.6.5.	Infrastructure and Services .....	554
27.6.6.	Community Health and Wellness .....	556
27.6.7.	Cumulative Effects .....	557
27.6.8.	EAO's Conclusions .....	558
27.7.	Indigenous Knowledge Provided With Respect to the Designated Project.....	559
27.8.	Effects of Federal Work or Undertaking - Marine shipping.....	560
27.9.	Considering the Extent to which Ksi Lisims LNG's Likely Effects Contribute to Sustainability .....	563
27.9.1.	Valued components.....	563
27.9.2.	Temporal boundaries .....	563
27.9.3.	Applying the Sustainability Principles .....	564
27.9.4.	Considering Project Alternatives through a Sustainability Lens .....	570
27.9.5.	The Proponents' Analysis and Conclusion .....	570
27.9.6.	The EAO's Analysis and Conclusion .....	571
27.10.	Considering Environmental Obligations and Commitments in Respect of Climate Change.....	572
27.10.1.	Environmental Obligations.....	572
27.10.2.	Commitments in respect of Climate Change .....	574
27.11.	Considerations under the Species at Risk Act.....	577
27.12.	Federal Crown's Duty to Consult and Nisga'a Treaty Obligations .....	579
27.12.1.	Overview .....	579
27.12.2.	Adequacy of Federal Crown Consultation .....	580

## LIST OF FIGURES

Figure 2-1	Photo of Wil Milit, present day. Proposed location of Ksi Lisims LNG .....	34
Figure 2-2	Photo of the Mylor Peninsula, the marine entry site for the electric transmission line .....	34
Figure 2-3	Artist's rendering of Ksi Lisims LNG, as proposed.....	35
Figure 2-4:	Project Location .....	37
Figure 2-5:	Conceptual Project Layout .....	38
Figure 2-6:	Project Location .....	39
Figure 3-1	Aerial photo of Gingolx, viewed from the South .....	43
Figure 3-2:	Artist's rendering of Ksi Lisims LNG, view from the waterline.....	44
Figure 3-3:	Ksi Lisims Project Inclusion Sites Overview Map .....	48
Figure 4-1:	Overview of the B.C. Environment Assessment Process .....	49

Figure 17-1: Kitselas Consultation Area and Reserves.....	143
Figure 17-2: Kitselas’ determination of the Project’s potential impacts on individual Metrics .....	160
Figure 17-3: Kitselas’ determination of the Project’s potential impacts on individual Metrics Comparative Graph .....	161
Figure 18-1: Conceptual model illustrating the hydrological environment describing the baseline conditions.....	294

## LIST OF TABLES

Table 1: Project Activities and Anticipated Schedule.....	36
Table 2: Major Milestones of the Environmental Assessment .....	49
Table 3: Public Comment Periods and Open Houses.....	52
Table 4: Valued Components, Indigenous Interests, and Other Assessment Factors Assessed .....	66
Table 5: Predicted Residual Effects and Conclusions on the Identified Valued Components.....	67
Table 6: Predicted Positive Effects and Conclusions.....	69
Table 7: Predicted Effects and Conclusions on the Other Assessment Matters.....	70
Table 8: Key Mitigation Measures and Follow-up Programs related to the floating LNG facilities, marine terminal and supporting infrastructure as specified in the draft Certified Project Description.....	88
Table 9: Key mitigation measures related to the transmission line as described in the draft Assessment Report .....	102
Table 10: Valued Component Residual Effects Characterization Definitions .....	106
Table 11: Residual Effects Characterization Definitions for Effects on Indigenous Interests.....	109
Table 12: Summary of residual effects on Gitxaala and its Harvesting Rights .....	129
Table 13: Summary of residual effects on Gitxaala and its use and integrity of sacred and culturally important sites and landscape features .....	132
Table 14: Summary of residual effects on Gitxaala’s Governance.....	136
Table 15: Summary of residual effects on Gitxaala and its health and wellbeing .....	140
Table 16: Kitselas Assessment - Measurable Parameters - History .....	146
Table 17: Kitselas Assessment - Measurable Parameter - Future.....	148
Table 18: Kitselas Assessment - Measurable Parameter - Lands.....	151
Table 19: Kitselas Assessment - Measurable Parameter - Authority .....	152
Table 20: Kitselas Assessment - Measurable Parameters - Community .....	154
Table 21: Kitselas’ determination of the Project’s potential impacts on individual Metrics.....	156
Table 22: Kitselas Assessment - Description of potential impacts and their directionality .....	161
Table 23: Kitselas Assessment - Impacts to values related to interests identified in Application.....	164
Table 24: Kitselas Assessment - Effects Determination Scale.....	166
Table 25: Kitselas Assessment - Impacts Analysis.....	167
Table 26: Summary of residual effects on Kitsumkalum and its Harvesting Rights .....	183

Table 27: Summary of residual effects on Kitsumkalum and its use and integrity of sacred and culturally important sites and landscape feature.....	187
Table 28: Summary of residual effects on Kitsumkalum and its First Nation Governance .....	190
Table 29: Summary of residual effects on Lax Kw’alaams and its Harvesting Rights .....	202
Table 30: Summary of residual effects on Lax Kw’alaams and its use and integrity of sacred and culturally important sites and landscape features .....	206
Table 31: Summary of residual effects on Lax Kw’alaams’ Governance .....	209
Table 32: Summary of residual effects on Lax Kw’alaams and its health and wellbeing .....	213
Table 33: Summary of residual effects on Haida and its harvesting rights .....	221
Table 34: Summary of residual effects on Haida’s sacred places and cultural heritage sites .....	225
Table 35: Summary of residual effects on Gitxsan Simogyet Denimget and its Harvesting Rights .....	234
Table 36: Summary of residual effects on Gitxsan Simogyet Denimget and its health and wellbeing .....	236
Table 37: Summary of residual effects on Métis and its Harvesting Activities .....	242
Table 38: Summary of residual effects on Métis and its use and integrity of sacred and culturally important sites and landscape features .....	246
Table 39: Summary of residual effects on Métis social and economic conditions .....	250
Table 40: Summary of Residual Effects for Acoustic Valued Component.....	274
Table 41: Summary of Residual Effects for Air Quality Valued Component .....	284
Table 42: Summary of Residual Effects for Groundwater.....	290
Table 43: Summary of Residual Effects for Surface Water .....	297
Table 44: Marine Species listed under the Species at Risk Act and/or COSEWIC .....	302
Table 45: Summary of Residual Effects for Marine Resources .....	311
Table 46: Summary of Residual Effects on freshwater fish and fish habitat.....	326
Table 47: Wildlife Species listed under the Species at Risk Act and/or the COSEWIC .....	332
Table 48: Summary of Residual Effects for Wildlife and Wildlife Habitat .....	339
Table 49: Federally at-Risk Plant Species.....	348
Table 50: Species Documented in Wetlands .....	350
Table 51: Potential Effects and Effect Pathways for Vegetation and Wetlands Identified by the Proponents’ Revised Application .....	351
Table 52: Summary of Residual Effects for vegetation and wetlands.....	356
Table 53: Summary of Residual Effects for Marine use .....	375
Table 54: Summary of Residual Effects for Human Health .....	388
Table 55: Summary of Residual Effects for the community health and wellness Valued Component .....	398
Table 56: Summary of Residual Effects for the Economy and Employment Valued Component .....	410
Table 57: Summary of Residual Effects for the infrastructure and services valued component .....	423

Table 58: Risk matrix to assess risk of malfunctions and accidents for Ksi Lisims LNG .....	435
Table 59: Risk Assessment of potential hazards identified for Ksi Lisims LNG .....	437
Table 60: Summary of Potential Risks to Valued Components for Ksi Lisims LNG .....	451
Table 61: Effects on Ecosystem Functions.....	475
Table 62: Proposed Mitigation Measures by Valued Component .....	482
Table 63: Construction Phase Emission Sources Over Construction Period .....	493
Table 64: Total Direct and Indirect GHG Emissions from Ksi Lisims LNG during Operations phase per year .....	494
Table 65: Comparison of GHG Emissions from Ksi Lisims LNG during Operations to Provincial and Federal Emissions .....	495
Table 66: Summary of the Proponents’ Alternative Means of Undertaking for Ksi Lisims LNG.....	501
Table 67: Location in the EAO’s Assessment Report of the Assessment of Adverse Effects within Federal Jurisdiction, as defined in Section 2 of the IAA and Significance Determination .....	515
Table 68: Location in the EAO’s Assessment Report of the Assessment of Effects Required under the IAA [Subsection 22(1)] .....	523
Table 69: Location in the EAO’s Assessment Report of the Assessment of Additional Requirements Outlined in the Minister’s Notice of Substitution Approval under the IAA .....	525
Table 70: Air Quality Project Residual Adverse Effects Extending onto Federal Lands.....	527
Table 71: Acoustic Project Residual Adverse Effects Extending onto Federal Lands .....	529
Table 72: Surface Water Project Residual Adverse Effects Extending onto Federal Lands.....	532
Table 73: Wildlife and Wildlife Habitat Project Residual Adverse Effects Extending onto Federal Lands .....	532
Table 74: Marine Resources Project Residual Adverse Effects Extending onto Federal Lands.....	535
Table 75: Annual GHG emissions from marine shipping .....	561
Table 76: Summary of Residual Effects for GHG emissions from Marine Shipping .....	562
Table 77: Applying the Sustainability Principles .....	565
Table 78: Environmental obligations relevant to Ksi Lisims LNG .....	572
Table 79: Canada’s current climate change commitments relevant to Ksi Lisims LNG .....	575

## ACRONYM AND ABBREVIATION LIST

the Act	<i>Environmental Assessment Act (2018)</i>
Application	Application for an Environmental Assessment Certificate
B.C.	British Columbia
BCCP	B.C. Coast Pilots
BCER	B.C. Energy Regulator
CCG	Canadian Coast Guard
CEAO	Chief Executive Assessment Officer
Certificate	environmental assessment certificate
CHN	Council of the Haida Nation
CSA	Canadian Standards Association
CO	Carbon Monoxide
Cooperation Agreement	<i>Impact Assessment Cooperation Agreement between Canada and British Columbia</i>
COSEWIC	Committee on the status of endangered wildlife in Canada
dBA	A-weighted decibel
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
ENV	B.C. Ministry of Environment and Climate Change Strategy
EAO	Environmental Assessment Office
ENV	Ministry of Environment and Climate Change Strategy
ERAA	<i>Energy Resource Activities Act (2008)</i>
GBA Plus	Gender Based Analysis Plus
GHG	Greenhouse Gases
GLMO	Gitxsan Laxyip Management Office
ha	Hectare

Holder	Certificate Holder
IAA	<i>Impact Assessment Act (2019)</i>
IAAC	Impact Assessment Agency of Canada
LNG	liquefied natural gas
km	kilometre
m <sup>3</sup>	Cubic metres
m	metre
MNBC	Métis Nation British Columbia
NGL	Natural Gas Liquid
nm	nautical mile
NO <sub>2</sub>	Nitrogen Dioxide
NRA	Navigational Risk Assessment
NSA	Navigation Safety Assessment
Project	Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project
Proponents	The Nisga'a Nation, Rockies LNG Limited Partnership, and Western LNG LLC
PM <sub>10</sub>	Particulate matter 10 micrometres or smaller in diameter
PM <sub>2.5</sub>	Particulate matter 2.5 micrometres or smaller in diameter
RoW	Right(s) of Way
SARA	<i>Species at Risk Act</i>
SO <sub>2</sub>	Sulfur Dioxide
USCG	United States Coast Guard
2SLGBTQIA+	Two-spirit, lesbian, gay, bisexual, trans, queer, questioning, intersex, asexual plus

## EXECUTIVE SUMMARY

### Overview of the Assessment Report

This Assessment Report summarizes the findings and recommendations of the environmental assessment for the Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims or the Project), a liquefied natural gas production, storage, and marine terminal proposed by the Nisga'a Nation, Rockies LNG Limited Partnership, and Western LNG LLC (each a Proponent and collectively referred to herein as the Proponents). This report aims to inform the provincial Ministers responsible for making a decision on whether to issue an Environmental Assessment Certificate and the federal Minister of Environment and Climate Change (or Governor in Council) for decision-making under the *Impact Assessment Act*.

The Assessment Report outlines key issues, engagement with Indigenous nations, environmental, social, health, economic and culture effects, including cumulative effects, and proposed measures to mitigate potential adverse impacts.

### Project Details

The Proponents are proposing to jointly develop Ksi Lisims LNG located on the northern end of Pearse Island in northwestern B.C. The Proponents outline that Ksi Lisims LNG aims to export Canadian natural gas to global markets while contributing to the Nisga'a Nation's economic self-determination and providing a lower-carbon energy source to meet international demand.

Ksi Lisims LNG would receive up to two billion cubic feet per day of pipeline grade natural gas and would have a total storage capacity of 490,000 cubic metres of liquefied natural gas, divided between two floating liquid natural gas production, storage, and offloading facilities. Ksi Lisims LNG would export up to 22.4 billion cubic metres per year of natural gas, including a 15 percent annual tolerance, to global markets.

The terrestrial footprint of Ksi Lisims LNG is estimated to be a maximum of 43.6 hectares (ha), while the marine footprint is estimated to be a maximum of 19 ha including the portion of the submerged transmission line that would be located within the identified marine footprint.

### Regulatory Review

Ksi Lisims LNG is subject to an environmental assessment under B.C.'s *Environmental Assessment Act* and an impact assessment under Canada's *Impact Assessment Act*. On April 6, 2023, the federal Minister of Environment and Climate Change approved the substitution of the federal impact assessment to the Province of B.C. The Environmental Assessment Office (EAO) conducted this substituted assessment to meet both provincial and federal requirements, thereby enabling decisions under both British Columbia's *Environmental Assessment Act* (2018) and Canada's *Impact Assessment Act*.

The EAO prepared this Assessment Report in consultation with a technical advisory committee, comprising of federal, provincial and local government representatives with mandates and skill sets relevant to the review of Ksi Lisims LNG, as well as representatives of Indigenous nations potentially affected by Project activities. The Impact Assessment Agency of Canada also provided advice to the EAO in relation to fulfilling requirements of the *Impact Assessment Act*.

The EAO undertook public consultation activities during the environmental assessment, including holding four public comment periods and establishing a community advisory committee. All public comments, as well as the Proponents and the EAO's responses to these comments, were considered in completing the environmental assessment.

### Assessment of Effects

The EAO assessed all information required by the *Environmental Assessment Act* and effects within federal jurisdiction as required under the *Impact Assessment Act*. The assessment was informed by the Revised Application provided by the

Proponents as well as comments received from the technical advisory committee, Indigenous nations, community advisory committee, and the public.

The EAO assessed effects on the Valued Components that were identified as potentially affected by Ksi Lisims LNG, specifically: air quality, acoustics, vegetation and wetlands, wildlife and wildlife habitat, freshwater fish and fish habitat, groundwater, surface water, marine resources, employment and economy, marine use, infrastructure and services, community health and wellness, archaeological and heritage resources, and human health. The EAO considered whether any adverse effects to these Valued Components would be significant.

For all Indigenous nations potentially affected by Ksi Lisims LNG, the EAO assessed the potential effects of Ksi Lisims LNG on the asserted or established Aboriginal rights and title, as recognized and affirmed by Section 35 of the Constitution Act (1982), as well as on any broader interests related to an Indigenous nation (collectively, “Indigenous Interests”).

The assessment also considered other assessment matters as required under the provincial and federal legislation including: risks and uncertainties associated with effects, interactions between effects, the risks of malfunctions and accidents, disproportionate effects on distinct human populations, effects on biophysical factors that support ecosystem functions, effects on current and future generations, contributions to sustainability, consistency with land use plans, greenhouse gas emissions, alternative means for carrying out the project, and potential changes to the project that may be caused by the environment.

To fulfill federal requirements, the EAO assessed adverse federal effects as required under the *Impact Assessment Act* specifically: an adverse change to fish and fish habitat, aquatic species, migratory birds, the environment on federal lands, caused by pollution to the marine environment outside Canada and boundary, international or interprovincial waters and the adverse effects of a federal work or undertaking (i.e., greenhouse gas emissions from marine shipping and supporting marine traffic). The EAO also assessed adverse federal effects with respect to the Indigenous peoples of Canada, specifically: an adverse impact resulting from any changes to the environment on cultural and physical heritage, current use of lands and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and a non-negligible adverse change to health, social or economic conditions. The EAO determined whether adverse federal effects are likely to be, to some extent, significant, and if so, to what extent.

### Indigenous Consultation

The Nisga’a Nation fulfilled several roles throughout the Ksi Lisims LNG environmental assessment, including being a member of the Proponent team, a party to the Nisga’a Treaty, the owner in fee simple of the land on which upland components of Ksi Lisims LNG would be situated, and regulator for any authorizations required under the Treaty. The Nisga’a Nation, as represented by Nisga’a Lisims Government (NLG), worked collaboratively with the EAO and the Impact Assessment Agency of Canada to facilitate a timely and efficient environmental assessment process for the Project and to enable each party to independently exercise their respective obligations in respect to the environmental assessment.

Potential effects from Ksi Lisims LNG would occur in the territories of the following Indigenous nations (listed alphabetically):

- Gitga’at First Nation;
- Gitxaala Nation;
- Haida Nation, represented by the Council of the Haida Nation;
- Kitselas First Nation;
- Kitsumkalum First Nation;
- Lax Kw’alaams Band;
- Metlakatla First Nation; and
- Nisga’a Nation, as represented by NLG.



The EAO, on behalf of the provincial and federal Crown, consulted with these First Nations throughout the substituted assessment process. The Impact Assessment Agency of Canada worked in coordination with the EAO on consultation activities leading up to the substitution decision and throughout the effects assessment phase.

The EAO engaged Gitksan Wilp Denimget, Gitksan Laxyip Management Office representing Nass Watershed Simoogit, and Gitanyow Hereditary Chiefs. The EAO also consulted with Métis Nation British Columbia, on behalf of the federal Crown as part of the substituted assessment.

Key concerns raised during consultation included the potential impacts on marine resources, marine use, cultural practices, socioeconomic and cumulative effects in the region.

The report highlights efforts to incorporate Indigenous knowledge into the assessment process and outlines the consensus-seeking processes with participating Indigenous nations.

### Key Issues

Several key issues arose during the assessment process:

1. **Greenhouse Gas Emissions:** The Project's contribution to climate change was a key concern. While the Proponents argue that the project will help reduce global emissions by displacing higher-carbon energy sources, there remained concerns about its alignment with provincial and federal climate goals. Mitigation measures and proposed conditions have been proposed to address this concern alongside legislated and policy frameworks to achieve future net-zero goals from both B.C. and Canada.
2. **Marine Shipping:** Increased marine vessel traffic elicited concerns about impacts on marine mammals, fisheries and those who rely upon the marine environment and resources. Mitigation measures and proposed conditions have been proposed to minimize these effects.
3. **Effects to Marine Resources:** Concerns were raised about the uncertainty in the assessment of potential impacts of effluents and underwater noise on marine life and critical marine habitats. Mitigation measures and proposed conditions have been proposed to minimize these effects.
4. **Socioeconomic Impacts:** While the Project is expected to create economic benefits, there are concerns about the potential strain on local services, housing, infrastructure and on people who rely on these services, housing and infrastructure for their health and well-being. Mitigation measures and proposed conditions have been proposed to minimize these effects.

### Measures to Reduce Effects

To mitigate potential adverse effects, the Proponents proposed a suite of mitigation measures as part of project design and operations. Additionally, the EAO has proposed provincial conditions as legally binding requirements in the event an Environmental Assessment Certificate is issued. The EAO also recommended Key Mitigation Measures and follow-up programs to the Impact Assessment Agency of Canada to inform federal decision making under the *Impact Assessment Act*.

If approved, Ksi Lisims LNG would also require a number of additional provincial, federal and municipal approvals and permits that would impose additional requirements.

### Conclusions

The EAO carefully considered all information submitted by the Proponents, Indigenous nations, local governments, public, the community advisory committee, and the technical advisory committee. Based on a thorough analysis of the assessment materials, the proposed mitigation measures, acceptable implementation of the proposed provincial conditions, the recommended Key Mitigation Measures and federal follow-up programs under the *Impact Assessment Act*, and the permitting and other regulatory requirements that the Project would be subject to, the EAO has determined

that Ksi Lisims LNG is not likely to result in significant adverse project-specific effects or contribute significantly to adverse cumulative effects. However, the EAO acknowledges that cumulative effects to community health and wellness as a result of residual effects of Ksi Lisims LNG interacting with the effects of other past, present, and reasonably foreseeable future projects are likely to be significant. The EAO recognizes, however, that Ksi Lisims LNG's contribution to these cumulative effects would be limited, due to the project's remote location.

In reaching its conclusions, the EAO considered the effects in federal jurisdiction under the *Impact Assessment Act* and determined that pollution to the marine environment and to boundary, international, or interprovincial waters are not anticipated. While the EAO concluded that adverse residual and cumulative federal effects are not significant for aquatic species, migratory birds, federal lands, and greenhouse gas emissions from marine shipping and supporting marine traffic, adverse residual and cumulative effects are expected to be significant to a low to moderate extent for fish and fish habitat.

With respect to the Indigenous peoples of Canada, the EAO determined adverse residual, and cumulative federal effects are not significant for physical and cultural heritage and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance. However, the EAO concluded that adverse residual and cumulative effects are significant to a low extent for the current use of lands and resources for traditional purposes and health, social or economic conditions.

Ksi Lisims LNG also has the potential to provide significant economic benefits, particularly for the Nisga'a Nation and other Indigenous communities.

Based on the assessment, the EAO is of the view that:

- Provincial requirements for Ksi Lisims LNG established through proposed Certificate conditions and subsequent permitting processes would minimize adverse effects on the environment;
- Ksi Lisims LNG would foster a sound economy by providing continuing and new employment, contracting, and training opportunities, by generating higher wages in the region, and would contribute financial support to First Nations and taking steps towards the goal of economic reconciliation with Nisga'a Nation; and
- While Ksi Lisims LNG would have potential negative effects on the region's infrastructure including the already strained medical infrastructure, it would also contribute to the well-being of British Columbians and their communities, including First Nations communities, by managing the effects of Ksi Lisims LNG on topics important to First Nations and local communities, by capacity building within First Nations communities and by ensuring Nisga'a Nation perspectives and interests are integrated in construction, operation and decommissioning of the facility.

## RÉSUMÉ

### Aperçu du Rapport d'Évaluation

Le présent rapport d'évaluation résume les conclusions et les recommandations de l'évaluation environnementale du projet de liquéfaction de gaz naturel et de terminal maritime Ksi Lisims LNG (« Ksi Lisims » ou « le projet »), un projet de production, de stockage et de terminal maritime de gaz naturel liquéfié proposé par la Nation Nisga'a, Rockies LNG Limited Partnership et Western LNG LLC (chacun étant un promoteur et désignés collectivement dans le présent document par le terme « promoteurs »). Ce rapport vise à informer les ministres provinciaux responsables de la décision de délivrer ou non un certificat d'évaluation environnementale et le ministre fédéral de l'Environnement et du Changement climatique (ou le gouverneur en conseil) pour la prise de décision en vertu de la *Loi sur l'évaluation d'impact*.

Le rapport d'évaluation présente les questions clés, la mobilisation avec les Nations autochtones, les effets environnementaux, sociaux, sanitaires, économiques et culturels, y compris les effets cumulatifs, ainsi que les mesures proposées pour atténuer les effets négatifs potentiels.

### Détails du Projet

Les promoteurs proposent de développer conjointement le projet Ksi Lisims LNG, situé à l'extrémité nord de l'île Pearse, dans le nord-ouest de la Colombie-Britannique. Les promoteurs soulignent que Ksi Lisims LNG vise à exporter du gaz naturel canadien vers les marchés mondiaux tout en contribuant à l'autodétermination économique de la Nation Nisga'a et en fournissant une source d'énergie à faible teneur en carbone pour répondre à la demande internationale.

Ksi Lisims LNG recevrait jusqu'à 2 milliards de pieds cubes par jour de gaz naturel de qualité gazoduc et aurait une capacité totale de stockage de 490 000 mètres cubes de gaz naturel liquéfié, répartie entre deux installations flottantes de production, de stockage et de déchargement de gaz naturel liquéfié. Ksi Lisims LNG exporterait jusqu'à 22,4 milliards de mètres cubes de gaz naturel par an, y compris un écart annuel de 15 %, vers les marchés mondiaux.

L'empreinte terrestre de Ksi Lisims LNG est estimée à un maximum de 43,6 hectares (ha), tandis que l'empreinte marine est estimée à un maximum de 19 ha, y compris la partie de la ligne de transport submergée qui serait située dans l'empreinte marine identifiée.

### Examen Réglementaire

Ksi Lisims LNG fait l'objet d'une évaluation environnementale en vertu de l'*Environmental Assessment Act* de la Colombie-Britannique et d'une évaluation d'impact en vertu de la *Loi sur l'évaluation d'impact* du Canada. Le 6 avril 2023, le ministre fédéral de l'Environnement et du Changement climatique a approuvé le remplacement de l'évaluation d'impact fédérale par l'évaluation provinciale de la Colombie-Britannique. Le Bureau d'évaluation environnementale (BEE) a réalisé cette évaluation de substitution afin de répondre aux exigences provinciales et fédérales, permettant ainsi de prendre des décisions en vertu de l'*Environmental Assessment Act* (2018) de la Colombie-Britannique et de la *Loi sur l'évaluation d'impact* du Canada.

Le BEE a préparé le présent rapport d'évaluation en consultation avec un comité consultatif technique composé de représentants des autorités fédérales, provinciales et locales ayant des mandats et des compétences pertinentes pour l'examen du projet Ksi Lisims LNG, ainsi que de représentants des nations autochtones susceptibles d'être affectées par les activités du projet. L'Agence d'évaluation d'impact du Canada a également fourni des conseils au BEE en ce qui concerne le respect des exigences de la *Loi sur l'évaluation d'impact*.

Le BEE a entrepris des activités de consultation publique au cours de l'évaluation environnementale, notamment en organisant quatre périodes de consultation publique et en mettant en place un comité consultatif communautaire. Tous les commentaires du public, ainsi que les réponses des promoteurs et du BEE à ces commentaires, ont été pris en compte dans l'évaluation environnementale.

## Évaluation des Effets

Le BEE a évalué tous les renseignements requis par l'*Environmental Assessment Act* et les effets relevant de la compétence fédérale, conformément à la *Loi sur l'évaluation d'impact*. L'évaluation s'est appuyée sur la demande révisée fournie par les promoteurs ainsi que sur les commentaires reçus du comité consultatif technique, des nations autochtones, du comité consultatif communautaire et du public.

Le BEE a évalué les effets sur les composantes valorisées indiquées comme potentiellement affectées par Ksi Lisims LNG, à savoir la qualité de l'air, l'acoustique, la végétation et les zones humides, la faune et son habitat, le poisson d'eau douce et leur habitat, les eaux souterraines, les eaux de surface, les ressources marines, l'emploi et l'économie, l'utilisation de la mer, les infrastructures et les services, la santé et le bien-être de la communauté, les ressources archéologiques et patrimoniales, et la santé humaine. Le BEE a examiné si des effets négatifs sur ces composantes valorisées seraient importants.

Pour toutes les nations autochtones potentiellement affectées par Ksi Lisims LNG, le BEE a évalué les répercussions potentielles de Ksi Lisims LNG sur les droits et titres ancestraux revendiqués ou établis, tels que reconnus et confirmés par l'article 35 de la *Loi constitutionnelle de 1982*, ainsi que sur tout intérêt plus général lié à une nation autochtone (collectivement, les « intérêts autochtones »).

L'évaluation a également pris en compte d'autres aspects de l'évaluation, comme l'exigent les lois provinciales et fédérales, notamment les risques et incertitudes associés aux effets, les interactions entre les effets, les risques de défaillance et d'accidents, les effets disproportionnés sur des populations humaines distinctes, les effets sur les facteurs biophysiques qui soutiennent les fonctions des écosystèmes, les effets sur les générations actuelles et futures, les contributions à la durabilité, la cohérence avec les plans d'aménagement du territoire, les émissions de gaz à effet de serre, les solutions de rechange pour la réalisation du projet et les modifications potentielles du projet susceptibles d'être liées à l'environnement.

Pour répondre aux exigences fédérales, le BEE a évalué les effets négatifs relevant de la compétence fédérale comme l'exige la *Loi sur l'évaluation d'impact*, à savoir un changement négatif sur les poissons et leur habitat, les espèces aquatiques, les oiseaux migrateurs et l'environnement sur le territoire domaniale, les effets causés par la pollution de l'environnement marin à l'étranger et dans les eaux limitrophes, internationales ou interprovinciales, et les effets négatifs d'un ouvrage ou d'une entreprise fédérale (comme des émissions de gaz à effet de serre provenant de la navigation maritime et du trafic maritime connexe). Le BEE a également évalué les effets négatifs de compétence fédérale sur les peuples autochtones du Canada, à savoir, des répercussions négatives résultant de tout changement à l'environnement sur le patrimoine culturel et le patrimoine naturel, sur l'usage courant des terres et des ressources à des fins traditionnelles, et sur toute structure, tout site ou toute chose d'importance sur le plan historique, archéologique, paléontologique ou architectural, ainsi que tout changement négatif non négligeable aux conditions sanitaires, sociales ou économiques. Le BEE a déterminé si les effets négatifs de compétence fédérale sont susceptibles d'être, dans une certaine mesure, importants et, le cas échéant, dans quelle mesure.

## Consultation auprès des Autochtones

La Nation Nisga'a a joué plusieurs rôles tout au long de l'évaluation environnementale de Ksi Lisims LNG, notamment à titre de membre de l'équipe du promoteur, partie au Traité des Nisga'a, propriétaire en fief simple des terres sur lesquelles seraient situées les composantes en terre ferme de Ksi Lisims LNG, et d'organisme de réglementation pour toutes les autorisations requises en vertu du Traité. La Nation Nisga'a, représentée par le gouvernement Nisga'a Lisims (GNL), a travaillé en collaboration avec le BEE et l'Agence d'évaluation d'impact du Canada pour faciliter un processus d'évaluation environnementale rapide et efficace du projet, ainsi que pour permettre à chaque partie d'exercer indépendamment ses obligations respectives en matière d'évaluation environnementale.

Les effets potentiels de Ksi Lisims LNG se produiraient dans les territoires des nations autochtones suivantes (classées par ordre alphabétique):

- La Première Nation Gitga'at;
- La Nation Gitxaala;
- La Nation Haïda, représentée par le Conseil de la Nation Haïda;
- La Première Nation Kitselas;
- La Première Nation Kitsumkalum;
- La Bande Lax Kw'alaams;
- La Première Nation Metlakatla; et
- La Nation Nisga'a, représentée par le GNL.

Le BEE, au nom de la Couronne provinciale et fédérale, a consulté ces nations autochtones tout au long du processus d'évaluation de substitution. L'Agence d'évaluation d'impact du Canada a travaillé en coordination avec le BEE sur les activités de consultation qui ont mené à la décision de substitution et tout au long de la phase d'évaluation des effets.

Le BEE a fait appel à Gitxsan Wilp Denimget, au Bureau de gestion Gitxsan Laxyip représentant Nass Watershed Simoogit, et aux chefs héréditaires Gitanyow. Le BEE a également consulté la Nation Métis de la Colombie-Britannique, au nom de la Couronne fédérale, dans le cadre de l'évaluation de substitution.

Les principales préoccupations soulevées pendant la consultation concernaient les effets potentiels sur les ressources marines, l'utilisation de la mer, les pratiques culturelles, les effets socio-économiques et les effets cumulatifs dans la région.

Le rapport souligne les efforts déployés pour intégrer le savoir autochtone au processus d'évaluation et décrit les processus de recherche de consensus avec les nations autochtones participantes.

### Questions Clés

Plusieurs questions clés ont été soulevées au cours du processus d'évaluation :

1. **Émissions de Gaz à Effet de Serre** : La contribution du projet aux changements climatiques était une préoccupation majeure. Bien que les promoteurs affirment que le projet contribuera à réduire les émissions mondiales en remplaçant des sources d'énergie à forte teneur en carbone, des inquiétudes subsistent quant à sa conformité avec les objectifs provinciaux et fédéraux en matière de changements climatiques. Des mesures d'atténuation et des conditions ont été proposées pour répondre à cette préoccupation, parallèlement aux cadres législatifs et politiques visant à atteindre les futurs objectifs de carboneutralité de la Colombie-Britannique et du Canada.
2. **Transport Maritime** : L'augmentation du trafic maritime a suscité des inquiétudes quant à ses effets sur les mammifères marins, la pêche et les personnes qui dépendent du marin et de ses ressources. Des mesures d'atténuation et des conditions ont été proposées pour minimiser ces effets.
3. **Effets sur les Ressources Marines** : Des inquiétudes ont été exprimées quant à l'incertitude entourant l'évaluation des effets potentiels des effluents et du bruit sous-marin sur la vie marine et les habitats marins essentiels. Des mesures d'atténuation et des conditions ont été proposées pour minimiser ces effets.
4. **Impacts Socio-Économiques** : On s'attend à ce que le projet ait des retombées économiques, mais il suscite des inquiétudes quant à la pression qu'il pourrait exercer sur les services locaux, les logements et les infrastructures,

ainsi que sur les personnes dont la santé et le bien-être dépendent de ces services, de ces logements et de ces infrastructures. Des mesures d'atténuation et des conditions ont été proposées pour minimiser ces effets.

### Mesures visant à Réduire les Effets

Pour atténuer les effets négatifs potentiels, les promoteurs ont proposé une série de mesures d'atténuation dans le cadre de la conception et de l'exploitation du projet. En outre, le BEE a proposé des conditions provinciales juridiquement contraignantes en cas de délivrance d'un certificat d'évaluation environnementale. Le BEE a également recommandé à l'Agence d'évaluation d'impact du Canada des mesures d'atténuation clés et des programmes de suivi afin d'éclairer la prise de décision fédérale en vertu de la *Loi sur l'évaluation d'impact*.

S'il est approuvé, le projet Ksi Lisims LNG nécessitera également un certain nombre d'approbations et de permis provinciaux, fédéraux et municipaux supplémentaires qui imposeront des exigences supplémentaires.

### Conclusions

Le BEE a examiné attentivement tous les renseignements soumis par les promoteurs, les nations autochtones, les gouvernements locaux, le public, le comité consultatif communautaire et le comité consultatif technique. En fonction d'une analyse approfondie des documents d'évaluation, des mesures d'atténuation proposées, de la mise en œuvre acceptable des conditions provinciales proposées, des principales mesures d'atténuation recommandées et des programmes de suivi fédéraux en vertu de la *Loi sur l'évaluation d'impact*, ainsi que des exigences en matière de permis et autres exigences réglementaires auxquelles le projet serait soumis, le BEE a déterminé que Ksi Lisims LNG n'est pas susceptible d'entraîner des effets négatifs importants propres au projet ou de contribuer de manière significative à des effets cumulatifs négatifs. Cependant, le BEE reconnaît que les effets cumulatifs sur la santé et le bien-être de la collectivité résultant des effets résiduels de Ksi Lisims LNG interagissant avec les effets d'autres projets passés, présents et raisonnablement prévisibles sont susceptibles d'être importants. Le BEE reconnaît toutefois que la contribution de Ksi Lisims LNG à ces effets cumulatifs serait limitée en raison de l'emplacement éloigné du projet.

Pour parvenir à ses conclusions, le BEE a examiné les effets relevant de la compétence fédérale en vertu de la *Loi sur l'évaluation d'impact* et a déterminé qu'il n'était pas prévu de pollution du milieu marin et des eaux limitrophes, internationales ou interprovinciales. Bien que le BEE ait conclu que les effets négatifs résiduels et cumulatifs relevant de la compétence fédérale ne sont pas importants pour les espèces aquatiques, les oiseaux migrateurs, le territoire domanial et les émissions de gaz à effet de serre provenant de la navigation maritime et du trafic maritime connexe, on s'attend à ce que les effets négatifs résiduels et cumulatifs soient importants dans une mesure allant de faible à modérée pour les poissons et leur habitat.

En ce qui concerne les peuples autochtones du Canada, le BEE a déterminé que les effets résiduels et cumulatifs négatifs relevant de la compétence fédérale ne sont pas importants pour le patrimoine naturel et culturel, et pour toute construction, tout site ou toute chose d'importance sur le plan historique, archéologique, paléontologique ou architectural. Toutefois, le BEE a conclu que les effets résiduels et cumulatifs négatifs sont importants dans une faible mesure en ce qui concerne l'usage courant des terres et des ressources à des fins traditionnelles, et les conditions sanitaires, sociales ou économiques.

Le projet Ksi Lisims LNG pourrait également avoir des retombées économiques importantes, en particulier pour la Nation Nisga'a et d'autres collectivités autochtones.

Selon cette évaluation, le BEE est d'avis que :

- Les exigences provinciales concernant Ksi Lisims LNG, établies par les conditions du certificat proposé et les processus de délivrance de permis subséquents, réduiraient au minimum les effets négatifs sur l'environnement;
- Ksi Lisims LNG favoriserait une économie saine en offrant des possibilités continues et nouvelles d'emploi, de passation de marchés et de formation, en générant des salaires plus élevés dans la région, en apportant un

soutien financier aux Premières Nations et en prenant des mesures pour atteindre l'objectif de réconciliation économique avec la Nation Nisga'a; et

- Bien que Ksi Lisims LNG puisse avoir des effets négatifs sur les infrastructures de la région, notamment sur l'infrastructure médicale déjà mise à rude épreuve, il contribuerait également au bien-être des Britanno-Colombiens et de leurs collectivités, y compris les collectivités des Premières Nations, en gérant les effets du projet de Ksi Lisims LNG dans des aspects importants pour les Premières Nations et les communautés locales, en renforçant les capacités des collectivités des Premières Nations et en veillant à ce que les perspectives et les intérêts de la Nation Nisga'a soient pris en compte durant la construction, l'exploitation et la désaffectation de l'installation.

DRAFT

## 1.0 PURPOSE OF THIS ASSESSMENT REPORT

This Assessment Report (Report) provides the findings and recommendations of the environmental assessment conducted by the Environmental Assessment Office (EAO) for the Ksi Lisims LNG Application for an Environmental Assessment Certificate (Application) submitted by the Nisga'a Nation, Rockies LNG Limited Partnership, and Western LNG LLC (each a Proponent and collectively referred to herein as the Proponents) on October 16, 2023.

This Report is provided to the provincial Ministers who are responsible for making the decision on Ksi Lisims LNG under Section 29 of the *Environmental Assessment Act* (2018) (the Act). For Ksi Lisims LNG, the deciding provincial Ministers are the Minister of Environment and Climate Change Strategy and the Minister of Energy, Mines and Low Carbon Innovation (together referred to as 'the Ministers').

This Report is also submitted to the federal Minister of Environment and Climate Change to inform their decision-making, fulfilling the requirements of both the federal *Impact Assessment Act* (IAA), the Act, and the conditions for substitution outlined in the [Notice of Substitution Approval](#) under the IAA.

### 1.1. Reader's Guide to this Report

This Report describes:

- An overview of Ksi Lisims LNG ([section 2.0](#)) and context of the region ([section 3.0](#));
- The EAO's environmental assessment process ([section 4.0](#)) including other assessment matters based on IAA requirements including those outlined in the Notice of Substitution Approval ([Appendix 15.0](#));
- The engagement undertaken with all advisors and stakeholders, including the Technical Advisory Committee, Community Advisory Committee, the public, and local governments ([section 5.0](#));
- The engagement with Indigenous peoples, including the EAO's efforts to seek consensus with participating Indigenous nations and Nisga'a Nation, participating Indigenous nations' notice of consent or lack of consent, and a summary of the effects to these Indigenous peoples including Haida Nation, as well as Métis Nation British Columbia on behalf of Canada ([section 6.0](#));
- The predicted effects of Ksi Lisims LNG ([section 7.0](#));
- The key concerns raised during the environmental assessment ([section 8.0](#)); **Error! Reference source not found.**
- The proposed Environmental Assessment Certificate (Certificate) conditions ([section 9.0](#)) and EAO's Recommended Key Mitigation Measures and Follow-Up Programs under the IAA ([Appendix 2](#));
- The contribution of Ksi Lisims LNG to sustainability in British Columbia (B.C.) ([section 10.0](#)); and
- The EAO's conclusions ([section 11.0](#)).

This Report does not replicate the content presented in the Proponents' Revised Application. In the preparation of this Report, the following information has been considered:

- The Proponents' [Revised Application](#), which includes supplemental information provided by the Proponents during the Application Review phase of the environmental assessment;
- Advice and comments provided by the Technical Advisory Committee, Community Advisory Committee, Indigenous People, local governments, and the public on the Application, supplemental information, Revised Application, and a draft of this Report;
- Requirements of and conclusions under the federal *Impact Assessment Act* ([Appendix 15](#)); and
- Requirements of the Nisga'a Final Agreement.



## 1.2. The Purposes of the Environmental Assessment Office

The *purposes of the EAO* are to carry out its responsibilities under the Act, to promote sustainability by protecting the environment and fostering a sound economy and the well-being of British Columbians and their communities (sustainability purpose), and to support reconciliation with Indigenous peoples in B.C (reconciliation purpose). Through its work with Indigenous peoples, the EAO is committed to advancing reconciliation by implementing the United Nations Declaration on the Rights of Indigenous Peoples.

This Report and the environmental assessment process for Ksi Lisims LNG are intended to support the fulfillment of these purposes of the EAO specific to this project.

## 2.0 PROJECT OVERVIEW

### 2.1. Proponent Description

The Nisga'a Nation, Rockies LNG Limited Partnership and Western LNG LLC (each a Proponent and collectively referred to herein as the Proponents), are proposing to jointly develop the Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims LNG or the Project). Nisga'a Nation is a self-governing First Nation on the west coast of B.C, holding constitutionally protected rights and legislative jurisdiction outlined in the Nisga'a Final Agreement (Nisga'a Treaty). Rockies LNG Limited Partnership is a consortium of upstream natural gas producers that together produce a major part of the natural gas extracted from the Western Canadian Sedimentary Basin. Western LNG LLC is a Houston, Texas-based company with experience in the development and operation of liquified natural gas (LNG) facilities. The Proponents have developed and executed a joint development agreement whereby senior personnel from all three organizations jointly manage and control Ksi Lisims LNG's activities through a steering committee, which would continue until the beginning of construction. The company that will construct, own, and operate the assets of the Project is Ksi Lisims LNG Tolling Limited Partnership (Ksi Lisims Tolling LP), which is headquartered in Vancouver, B.C.

The ownership structure for Ksi Lisims LNG ensures that Ksi Lisims LNG, which would be located on Nisga'a Land, would be operated in a manner that is consistent with Nisga'a Nation's commitment to stewardship of the land.

The principal point of contact for Ksi Lisims LNG is:

#### Principal contact for the Environmental Assessment

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Vice President, Environment & Regulatory Affairs  
Ksi Lisims LNG  
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Email: [info@ksilisimslng.com](mailto:info@ksilisimslng.com)  
Website: [www.ksilisimslng.com](http://www.ksilisimslng.com)

#### Primary Environmental Assessment Consultants to the Proponents

Stantec Consulting Ltd.  
500-4515 Central Boulevard  
Burnaby, British Columbia V5H 0C6  
Website: [www.stantec.com](http://www.stantec.com)

## 2.2. Project Description and Schedule

The Proponents propose to construct, operate, and decommission Ksi Lisims LNG, a floating liquefied natural gas production, storage and offloading facility, and marine terminal on the northwest coast of B.C., depicted in figure 2-3, below. Ksi Lisims LNG would receive up to two billion cubic feet per day of pipeline grade natural gas and would have a total storage capacity of 490,000 cubic metres of liquefied natural gas, divided between two floating liquid natural gas production, storage, and offloading facilities. Ksi Lisims LNG would export up to 22.4 billion cubic metres per year of natural gas, including a 15 percent annual tolerance, to global markets.



Figure 2-1 Photo of Wil Milit, present day. Proposed location of Ksi Lisims LNG

Ksi Lisims LNG’s onsite components would include two floating liquid natural gas production, storage, and offloading facilities, a marine terminal, and supporting infrastructure, which would include a natural gas receiving station, an electrical substation, a water desalination system, project buildings, access roads, and a helipad. Figure 2-5, below, depicts these components, as well as other components which are discussed in [Section 1.4](#) of the Revised Application.

The terrestrial footprint of Ksi Lisims LNG is estimated to be a maximum of 43.6 hectares (ha), while the marine footprint is estimated to be a maximum of 19 ha including the portion of the submerged transmission line that would be located within the identified marine footprint. Workforce accommodation facilities are included within these footprints and include: 1) a temporary, self-contained floating hotel (floatel) located within the Water Lot in Portland Canal to house the construction workforce, and 2) a permanent accommodation facility located onshore to house the operations workforce.



Figure 2-2 Photo of the Mylor Peninsula, the marine entry site for the electric transmission line

Within five years of the beginning of operations, Ksi Lisims LNG would be powered by a third-party transmission line connected to BC Hydro’s electrical grid. The 287-kilovolt electric transmission line would measure approximately 114 to 127 kilometres, depending upon which of the three potential routes is selected at the conclusion of the engineering design route selection process. All three route options that were assessed and are discussed in [Appendix F](#) of the Revised Application, follow the same alignment from the site of Ksi Lisims LNG, through the Portland Canal, across the Portland Inlet, landing at a site on the Mylor Peninsula. Only one of the three transmission line routing options would be constructed and would be subject to regulatory authorizations outside of the environmental assessment process.

The transmission line would be developed by Nisga’a Nation to supply electricity to Ksi Lisims LNG, back-up power to Nisga’a Villages, and interconnect with potential new electric generation projects in the region. The westernmost 31 to 44 kilometres (depending upon routing) of this transmission line, which extends from Ksi Lisims LNG to the edge of Nisga’a Lands, is included in this assessment of potential effects of Ksi Lisims LNG and is defined as the “transmission line assessment area” throughout this Report. While the assessment of potential effects of this portion of the transmission line were included in the environmental assessment of Ksi Lisims LNG, the design, including decisions on routing, construction, and operation of the transmission line project component would be the responsibility of Nisga’a Nation and not the Proponents of Ksi Lisims LNG. However, the Proponents of Ksi Lisims LNG have committed to mitigation measures

as described in [Appendix A](#) of the Revised Application, to address the potential effects of the transmission line between Nisga'a Lands (as defined under the Nisga'a Treaty). Should Ksi Lisims LNG begin operations prior to connecting to BC Hydro's grid, electrical power would temporarily be provided by power barges fueled by natural gas. Once Ksi Lisims LNG's connection to the BC Hydro grid is complete, the power barges would be decommissioned and removed from site.

The Ksi Lisims LNG environmental assessment includes an assessment of marine shipping activities, including marine traffic that is in support of Ksi Lisims LNG's construction and operations. The shipping route extends between the Ksi Lisims LNG site to Canada's territorial sea limit at 12 nautical miles from the coast, as depicted in figure 2-6, below. In-bound liquefied natural gas carriers are anticipated to enter Canadian waters from the west, crossing the territorial sea limit at 12 nautical miles from the coast. Carriers would then pass through the Dixon Entrance north of Haida Gwaii, passing Triple Island near which B.C. Coast Pilots would board the carrier. With pilots on-board, carriers would travel east, south of the Dundas Island group, then north through Chatham Sound, Main Passage, through the Portland Inlet, and then northeast into Portland Canal. The Proponents estimate a total of between 140 and 160 shipments of liquefied natural gas per year, depending upon the size of the carriers used, noting that Ksi Lisims LNG would be designed to receive liquefied natural gas carriers with a nominal capacity of up to 217,000 cubic metres.

Additional vessels would arrive at and depart from Ksi Lisims LNG as part of its construction and operations as well as during decommissioning. This includes piloted vessels to transport natural gas liquids,<sup>1</sup> which will call on the terminal every 30 to 40 days and use same shipping route as will be used for LNG carriers. Marine vessels carrying materials, and ferries carrying Ksi Lisims LNG's workforce would also travel between the project site and Gingolx (at a distance of approximately 15 kilometres) and Prince Rupert or Port Edward (at a distance of approximately 110 kilometres).

Ksi Lisims LNG's onshore facilities would be located on Category A land (District Lots 5431 and 7235) owned in fee simple by Nisga'a Nation and located within the Nass Area, as defined in the Nisga'a Treaty. The marine components of Ksi Lisims LNG would be located in the adjacent Water Lot in Portland Canal. The Proponents will apply to the Ministry of Forests or the B.C Energy Regulator to acquire a Water Lot lease for the submerged Crown land to encompass the area required for the marine components of Ksi Lisims LNG.



Figure 2-3 Artist's rendering of Ksi Lisims LNG, as proposed

The community nearest to Ksi Lisims LNG is Gingolx, a Nisga'a village located approximately 15 kilometres across the Portland Canal and Portland Inlet. Ksi Lisims LNG's shipping route would overlap with the territories of the following First Nations: Nisga'a Nation, Metlakatla First Nation, Lax Kw'alaams Band, Kitselas First Nation, Gitxaala Nation, Kitsumkalum First Nation, Haida Nation, and Gitga'at First Nation. In granting the EAO's request to substitute the federal impact assessment process for the provincial environmental assessment process, the Impact Assessment Agency of Canada required the EAO to consult with the Métis Nation of British Columbia on behalf of the Government of Canada.

Construction of the Project is anticipated to span three to four years. 6 The -operational lifespan of the Project is anticipated to be a minimum of 30 years, starting in 2028 7 (i.e., in operation until at least 2058) and could operate up to a maximum of 40 years as per the natural 8 gas export licence granted by the Canadian Energy Regulator ([GL-346](#) issued December 14, 2022).

<sup>1</sup> Natural gas liquids (also known as condensate) are a byproduct of natural gas processing.

The Proponents have provided the following estimated schedule for the phases of Ksi Lisims LNG’s construction, operation and decommissioning, described in Table 1.

Table 1: Project Activities and Anticipated Schedule

Project Phase	Anticipated Start	Anticipated End
Permitting and development of environmental management plans	Q2 2024	Q2 2025
Construction	Q3 2025	Q2 2028
Commissioning	Q2 2028	Q2 2028
Operations and maintenance	Q3 2028	2058*
Decommissioning	2058	2059

\* NOTE: This represents a 30-year operations period, but it could be extended to 40 years based on the gas export licence that has been issued to the Proponents.

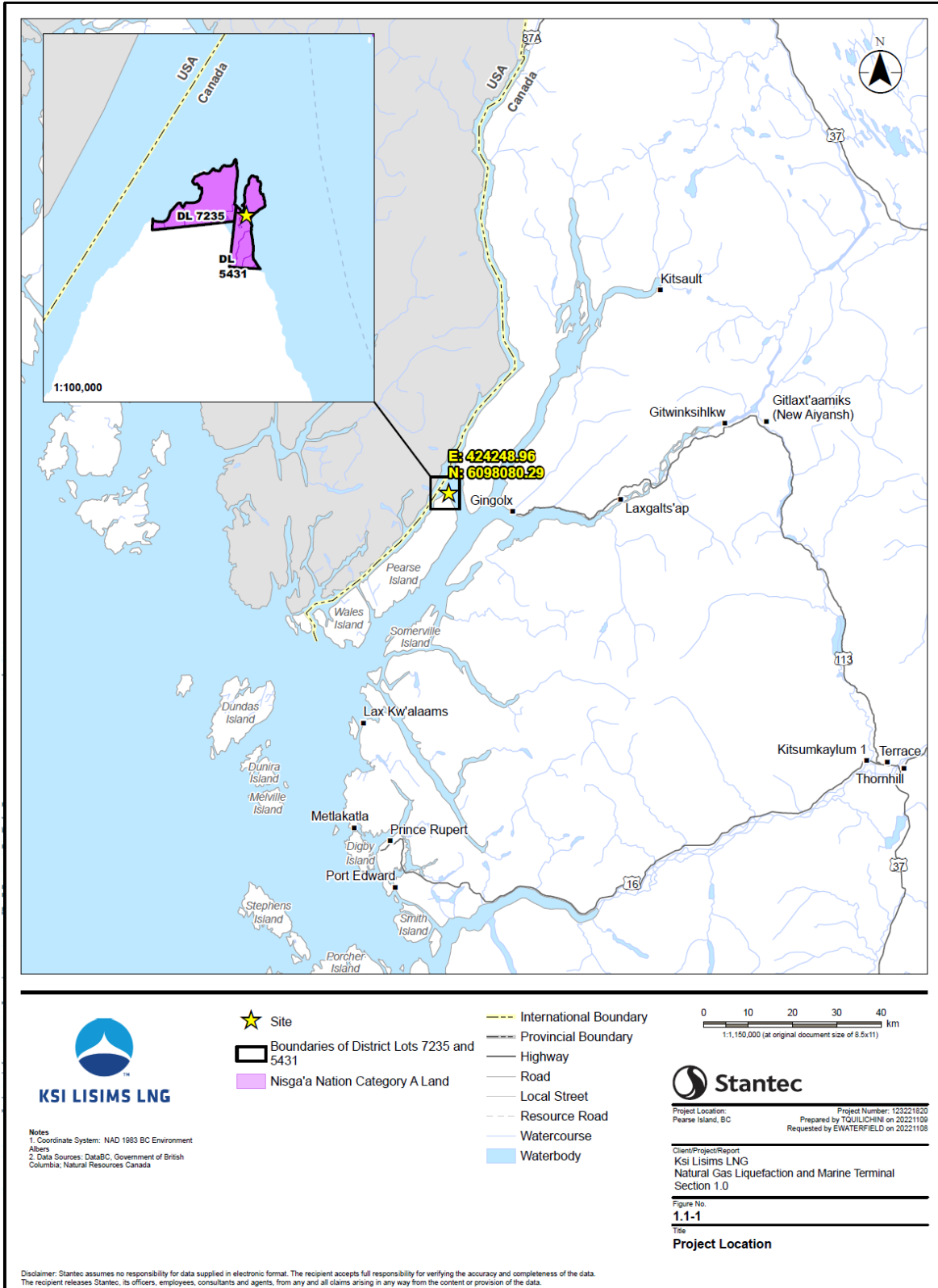


Figure 2-4: Project Location

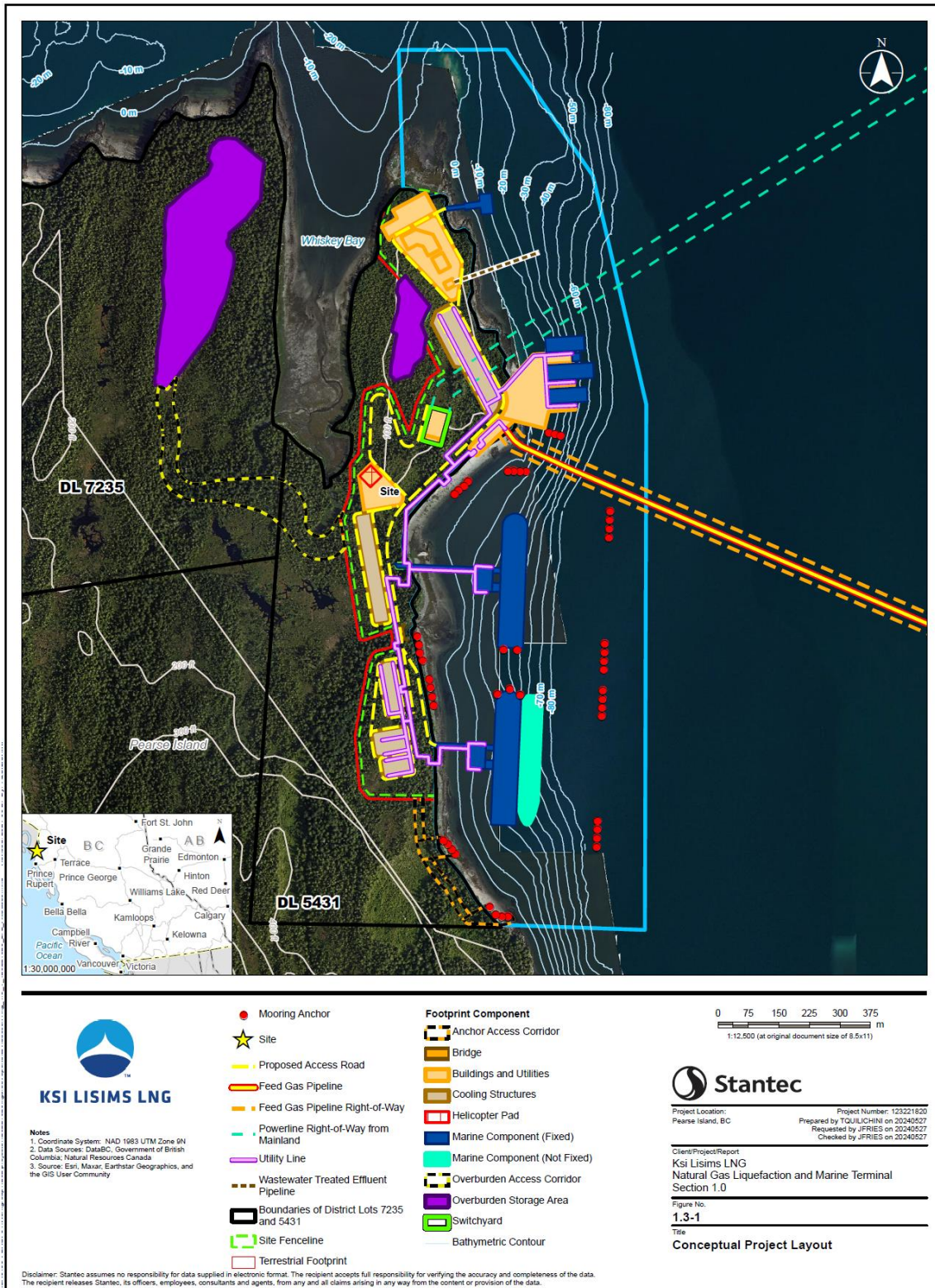


Figure 2-5: Conceptual Project Layout

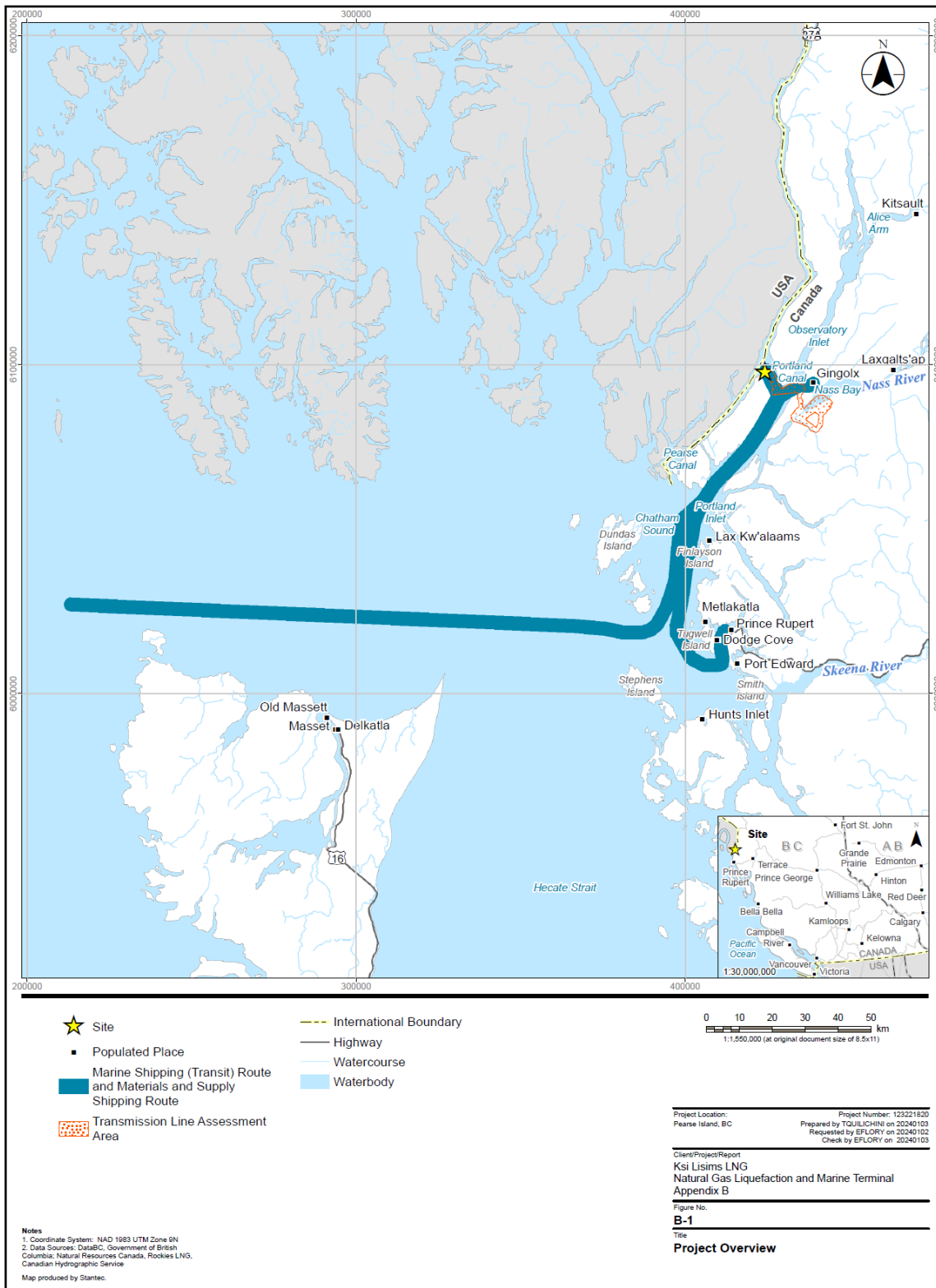


Figure 2-6: Project Location

### 2.3. Purpose and Need for the Designated Project

Paragraph 22(1)(d) of the IAA specifies that the assessment of a designated project must take into account the purpose and need for the designated project. The Proponents have identified Ksi Lisims LNG as a key element in its economic and social development strategy.

Ksi Lisims LNG would be developed and operated by a partnership between Nisga'a Nation and co-developers with knowledge and experience in natural gas production and the development and operation of LNG facilities. The Revised Application describes four foundational purposes that Ksi Lisims LNG has been developed to serve, which include:

- Supporting economic self-determination for Nisga'a Nation and improving the quality of life for Nisga'a citizens;
- Creating direct and indirect economic benefits for other First Nations, B.C., Alberta, and Canada;
- Building capacity to export Canadian natural gas to growing international markets; and
- Providing a lower carbon-intensive energy source to meet global energy demands.

Nisga'a Nation has identified Ksi Lisims LNG as a key to its economic and social development strategy, noting that Ksi Lisims LNG would advance Nisga'a Nation's goal of economic self-determination by providing training, jobs, new business opportunities, and continued growth for Nisga'a citizens. The Proponents further state that direct and indirect benefits would accrue to other First Nations, B.C., Alberta, and Canada in the form of training, employment, economic growth, and taxes.

The Proponents in its Revised Application notes that demand for natural gas is expected to nearly double over the next twenty years, according to Shell's LNG Outlook 2021<sup>2</sup>. The Proponents outline that Ksi Lisims LNG would provide an opportunity for Canadian natural gas producers to meet this growing demand with LNG that is produced with lower greenhouse gas emission intensity as compared to other global LNG facilities. Powered by renewable hydroelectricity from BC Hydro, Ksi Lisims LNG is expected to have one of the lowest greenhouse gas emission profiles of any LNG facility in the world, once a BC Hydro grid connection occurs. In 2023, the Canadian Energy Regulator published a report on Canada's Energy Future 2023: Energy Supply and Demand Projections to 2050<sup>3</sup>, which assessed the amount of natural gas that Canada exports as LNG in three different possible future scenarios.

### 2.4. Alternatives to the Project

Paragraph 22(1)(f) of the IAA requires the assessment take into account any alternatives to the designated project that are technically and economically feasible and are directly related to the designated project. Subsection 2.3 above discusses the purpose and need for Ksi Lisims LNG which is to:

- Develop the infrastructure needed to export lower carbon-intensive natural gas from western Canada to international markets; and
- Advance Nisga'a Nation's economic self-determination through development on Nisga'a Lands, as defined in the Nisga'a Final Agreement, while promoting economic development opportunities that would provide a higher quality of life for Nisga'a citizens.

The Revised Application provides an analysis of how the Proponents considered the following sustainability principles in reviewing alternatives to the project:

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<sup>2</sup> <https://www.shell.com/what-we-do/oil-and-natural-gas/liquefied-natural-gas-lng/lng-outlook-2021.html#vanity-aHR0cHM6Ly93d3cuc2hlcGwuyY29tL2VuZXJneS1hbmQtaW5ub3ZhdGlvbi9uYXR1cmFsLWdhcy9saXF1ZWZpZWQtbmF0dXJhbC1nYXMTbG5nL2xuZy1vdXRsb29rLTIwMjEuaHRtbA>

<sup>3</sup> [CER – Canada's Energy Future 2023: CER's first long-term Outlook modeling Net-Zero by 2050 \(cer-rec.gc.ca\)](https://www.cer-rec.gc.ca/en/energy-future-2023)



- Interconnectedness and interdependence of human-ecological systems;
- Well-being of present and future generations;
- Positive effects and reduce adverse effects; and
- Precautionary principle, uncertainty, and risk of irreversible harm.

According to the Revised Application, no other technically and economically feasible option has been identified that would achieve the foundational purposes that Ksi Lisims LNG was designed to realize. Nisga’a Nation along with member nations of the First Nations Climate Initiative, have advanced LNG export facilities as a cornerstone of its plan to fight climate change while supporting First Nations’ self-determination, including economic self-determination. The Revised Application notes that Ksi Lisims LNG is the culmination of a decade of advancing the development of an LNG project on the northwest coast of B.C., which the Proponents note would provide economic opportunity to Nisga’a Nation and its citizens, while in its view providing a solution to the global challenge of a decarbonizing economy.

The Proponents considered alternative sites for LNG export facilities, including Observatory Inlet, Dogfish Bay, and Nasoga Gulf, and note that siting LNG export facilities outside of Nisga’a Lands would fall short of realizing the primary objective of contributing to economic development opportunities for Nisga’a citizens. Wil Milit was ultimately selected for its proximity to established shipping routes, its distance from residential communities, and in an effort to eliminate potential impacts on traditional marine harvests.

For an analysis of alternatives through the sustainability lens, please see [Appendix 15](#).

## 2.5. Project Anticipated Expenditures

Anticipated expenditures for Ksi Lisims LNG would depend upon the length of time that Ksi Lisims LNG is powered by natural gas barges instead of BC Hydro’s electrical grid, as drawing power from natural gas would require higher expenditures during the operations phase. The Proponents assert that Ksi Lisims LNG would be powered by the BC Hydro electrical grid within five years of the beginning of operations and have estimated expenditures based on the following scenarios:

- **Base Case Scenario:** connection to the BC Hydro grid is available prior to the start of Ksi Lisims LNG’s commercial operation; and
- **Power Barge Scenario:** temporary power barges are required to provide electrical power for operation until connection to BC Hydro grid is established.

Ksi Lisims LNG has a projected initial capital cost of \$9.9 billion for the base case scenario. Should power barges be required, the estimated capital cost would increase to \$11.8 billion. Annual operation costs for the base case scenario are estimated at \$677 million, while annual operation costs for the power barge scenario are estimated to be \$324 million. The Base case scenario includes the expected cost of purchasing electricity from BC Hydro. The annual operation cost in both scenarios does not include the cost of feed gas and the cost of the additional feed gas that would be used as fuel for the power generation equipment on the power barges is not considered when estimating the operation cost. Decommissioning costs are estimated at \$415 to \$450 million.

## 3.0 REGIONAL AND REGULATORY CONTEXT

The purpose of this section is to provide the reader with high-level information about the region where Ksi Lisims LNG is proposed.

### 3.1. First Nations

Ksi Lisims LNG is proposed within, or near the territory of the following First Nations:

- Nisga’a Nation;
- Gitga’at First Nation;
- Gitxaala Nation;
- Kitselas First Nation;
- Kitsumkalum First Nation;
- Lax Kw’alaams Band;
- Metlakatla First Nation; and
- Haida Nation.

Throughout this document, the use of the term ‘territory’ refers to the asserted territories of First Nations unless the territories are established treaty lands or otherwise established by law or recognized by B.C. and Canada. The environmental assessment process is not a Rights-determining process. Through the environmental assessment process, the EAO seeks to understand what the effects of Ksi Lisims LNG would be on each First Nation and their asserted or established Aboriginal rights or Treaty rights, as recognized and affirmed by Section 35 of the *Constitution Act, 1982* (Section 35 rights). Engagement with these First Nations is described in [section 6.0](#) of this Report.

Six of the First Nations listed above chose to participate in the environmental assessment process as ‘participating Indigenous nations’. Any First Nation, where there is a reasonable possibility that the First Nation or their Section 35 rights could be adversely affected by a project, may choose to participate in an environmental assessment process as a participating Indigenous nation. Participating Indigenous nations are afforded specific procedural rights within the Act, including capacity funding, consensus seeking processes, a procedure to communicate consent or withhold consent at specific decision points, and access to facilitated dispute resolution. For more information on participating Indigenous nations in the Act, see the [EAO’s guidance materials](#).

Seeking consensus during the Ksi Lisims LNG environmental assessment process was undertaken through cooperation and collaboration between the EAO and representatives of participating Indigenous nations. The participating Indigenous nations were able to submit notifications of consent or lack of consent at the conclusion of the environmental assessment process. These notifications are included in the referral to provincial Ministers and must be considered when making their decision regarding whether to issue a Certificate. If the recommendation of the Chief Executive Assessment Officer (CEAO) to provincial Ministers in relation to the sustainability purpose of the EAO does not align with the notification of consent or lack of consent of a participating Indigenous nation, the provincial Ministers must offer to meet with the participating Indigenous nation to seek consensus prior to making their decision. The outcomes of this consensus and consent process during Ksi Lisims LNG’s environmental assessment are provided in [section 12](#) (Notifications of Consent or Lack of Consent by Participating Indigenous Nations) of this Report.

### 3.2. Communities

Ksi Lisims LNG would be located on Pearse Island, which is undeveloped and uninhabited. Nonetheless, communities in northwest B.C. have the potential to experience interactions with Ksi Lisims LNG due to their proximity to the site, or because those locations may serve as transfer points for goods and personnel transiting to the site by road, marine vessel and, in case of emergency, by air. These communities include:

**The Nisga’a Village of Gingolx:** Positioned on the point of land where the Nass River meets the Portland Inlet and surrounded by the mountains of the Coast Range, the Nisga’a Village of Gingolx is home to roughly 367 people. Until its connection to Highway 113/ Nisga’a Highway in 2002, Gingolx was accessible only by sea or air. Known as the “seafood



Figure 3-1 Aerial photo of Gingolx, viewed from the South

capital of the Nass”, residents of Gingolx have been sustained by harvest from the sea for generations. With Gingolx’s enhanced connection to the mainland, Nisga’a residents welcome visitors to experience the village’s panoramic views and rich cultural history during Crabfest, an annual celebration of music, seafood, and Nisga’a hospitality.

Gingolx is located approximately 15 kilometres from the Ksi Lisims LNG site, although separated from the site by the Portland Canal and Portland Inlet. Ksi Lisims LNG would not be directly visible from Gingolx, although individuals in Gingolx may be able to see the glow of Ksi Lisims LNG’s lighting, particularly during overcast conditions. Gingolx would serve as a transfer point for materials and personnel being transported to the Ksi Lisims LNG site via marine vessels.

**The City of Terrace:** The City of Terrace, located adjacent to the Skeena River and amidst the Coast Mountains, derives its name from the glacial deposits that formed the terraces upon which the city was built. Positioned at the intersection of Highway 16, Highway 37, and Highway 113/Nisga’a Highway, Terrace serves as the service, educational, medical, industrial, and transportation hub of northwest B.C. The city is home to approximately 12,700 residents and hosts a fluctuating population of individuals relocating to Terrace temporarily to take advantage of employment opportunities.

Located approximately 140 kilometers along Highway 16 from Prince Rupert, and approximately 170 kilometers along Highway 113/Nisga’a Highway from Gingolx, Terrace would serve as a transportation hub for materials and personnel transiting to Ksi Lisims LNG. Terrace’s Northwest Regional Airport serves as the region’s hub for air transportation, and the likely point of arrival for members of Ksi Lisims LNG’s workforce that reside outside of the region.

**The City of Prince Rupert:** Prince Rupert has long been an intersection of trade and commerce and is currently home to approximately 12,200 residents. Located on Kaien Island on B.C.’s north coast, and approximately 50 kilometres south of the Alaskan panhandle, Prince Rupert is connected to the mainland via a short bridge on Highway 16. Prince Rupert, geographic setting and infrastructure makes it an air, land, and water transportation hub for the region. The Port of Prince Rupert is the deepest natural harbour in North America and remains ice-free year-round. As the western terminus of Canadian National Railway Company’s transcontinental rail network, Prince Rupert links cargo from across North America to international ports, and passengers from Prince Rupert to major cities across North America.

Prince Rupert would serve as a transfer point for materials being transported to the Ksi Lisims LNG site via marine vessels, traveling a distance of approximately 110 kilometres. Members of Ksi Lisims LNG’s workforce may also travel to and from the project site via ferries departing from Prince Rupert.

**The District of Port Edward:** Located just 16 kilometres from Prince Rupert via Highway 16, the District of Port Edward is a charming coastal community of 470 residents. Like Prince Rupert, Port Edward is known for its rich maritime history and fishing heritage, which celebrated at the North Pacific Cannery National Historic Site. Fishing and maritime activities continue to play a role in Port Edward’s economy, with transportation, construction, and tourism growing in importance in the local economy.

Port Edward may serve as a transfer point for materials being transported to the Ksi Lisims LNG site via marine vessels, traveling a distance of approximately 110 kilometres. Members of Ksi Lisims LNG’s workforce may also travel to and from the project site via ferries departing from Port Edward.

### 3.3. Geography and Ecology

Ksi Lisims LNG would be located in the northwestern coastal region of B.C., approximately two kilometres east of B.C.'s border with Alaska. Ksi Lisims, which means “from the Nass” in the Nisga’a language, would be situated within the Nass Area, as defined in the Nisga’a Treaty. The project site is within the Southern Boundary Ranges Ecoregion, which is an area of wet rugged mountains that are capped with glaciers, small icefields, and exposed granitic and metamorphic bedrock covering approximately 722,943 ha.

Ksi Lisims LNG’s onshore components would be located at a site identified as Wil Milit, which is a former Indian Reserve located on the northeastern end of Pearse Island. Now owned in fee simple by Nisga’a Nation, Wil Milit features varied ecology, including upland forest, floodplains, swamps, bogs, shallow open water, and estuarine and tidal water wetlands. The Project Site has experienced minor human impact due to historical logging and small patches of more recent logging.



Figure 3-2: Artist's rendering of Ksi Lisims LNG, view from the waterline

The marine components at the Ksi Lisims LNG site would be located in a Water Lot adjacent to the Project Site on the northern point of Pearse Island and extending into the Portland Canal. The marine waters in the vicinity of the site are within the Inner Pacific Shelf Ecoregion and North Coast Fjords Ecoregion. The North Coast Fjords Ecoregion is the marine environment that occurs east of the Hectate Strait and consists of channels and deep fjords and covers approximately 930,628 ha.

The transmission line assessment area is located in the Nass Wildlife Area and within the Southern Boundary Ranges, North Coast Fjords, and the Kitimat Ranges Ecoregion. The Kitimat Ranges Ecoregion is an area of steep-sided mountains dissected by fjords and composed of largely eroded granitic rock. Regardless of which route is ultimately selected, a portion of the transmission line involves the installation of subsea cables beneath marine waters in portions of the Portland Inlet and the Portland Canal, coming aground at the Mylor Peninsula.

### 3.4. Regulatory Environment

#### 3.4.1. B.C. Environmental Assessment and Federal Impact Assessment

Ksi Lisims LNG would be a liquefied natural gas facility and subject to provincial review pursuant to the following sections of the *Reviewable Projects Regulation* (B.C. Reg. 243/2019; O.C. 607/2019):

- **Part 4** (Petroleum and Natural Gas Projects), because construction of Ksi Lisims LNG would result in a new energy storage facility with the design capacity to store greater than 136,000 cubic metres (m<sup>3</sup>) of liquefied natural gas;
- **Part 4** (Electricity Projects), because Ksi Lisims LNG involves a new power plant with electricity generation would exceed 50 megawatts; and
- **Part 5** (Water Management Projects), because the installation of mooring infrastructure would disturb more than 2 ha of foreshore and submerged land.

Ksi Lisims LNG is considered a designated project under the IAA as it triggers the following sections of the *Physical Activities Regulation* (SOR/2019-285):

- **Section 30** (Oil, Gas, and Other Fossil Fuels), because Ksi Lisims LNG involves the construction, operation, decommissioning, and abandonment of a new fossil fuel-fired power generating facility with a production capacity of 200 MW or more;
- **Section 37(d)** (Oil, Gas, and Other Fossil Fuels), because Ksi Lisims LNG would be a new facility for the liquefaction, storage, or regasification of liquefied natural gas, with a processing capacity of more than 3,000 tonnes per day and a storage capacity of more than 135,000 cubic metres; and
- **Section 52** (Transport), because Ksi Lisims LNG’s new marine terminal would be designed to handle ships larger than 25,000 deadweight tonnage.

Substitution was granted with the understanding that the assessment must meet the requirements of the IAA and would be conducted by the EAO in accordance with the [Impact Assessment Cooperation Agreement between Canada and British Columbia \(Cooperation Agreement\)](#) entered into by the federal Impact Assessment Agency of Canada (IAAC) and the EAO. Ultimately, substitution results in a single assessment process designed to support the separate decisions by provincial and federal decision makers and also supports Indigenous peoples’ decision making. This means that the EAO has prepared this assessment report on behalf of B.C. and Canada, and each government makes their own decisions whether to grant approval of the project based on the considerations defined in each of their respective Acts and noted in the [Notice of Substitution Approval](#).

During the environmental assessment, in October 2023, the Supreme Court of Canada opined that the IAA was partially unconstitutional. The Government of Canada worked to issue guidance on the interim administration of the IAA to provide continuity for proposed projects in the impact assessment process and worked to introduce targeted and meaningful proposed legislative amendments to the IAA. On June 20, 2024, the amended IAA came into force. The amendments addressed the Supreme Court of Canada’s concerns by focusing on the decision-making provisions and the definition of effects within federal jurisdiction and responded to the need to exercise cooperative federalism. On August 14, 2024, IAAC transitioned Ksi Lisims LNG to the amended IAA by reposting the Minister of Environment and Climate Change’s decision on substitution, deeming any step completed before the amended IAA came into force to have been taken under the amended IAA. The [Notice of Transition to the Amended Impact Assessment Act](#) and the [Notice of Substitution Approval under the Impact Assessment Act](#) were posted to the Canadian Impact Assessment Registry.

Both Canada and B.C. retain their duty to consult and, where appropriate, accommodate Indigenous peoples.

### 3.4.2. Land Use Plans

The following land and marine use plans are relevant to Ksi Lisims LNG’s geographic setting and marine transport routes:

- **A Land Use Plan for Nisga’a Lands:** The onshore components of Ksi Lisims LNG would be situated on Category A lands, as defined in the Nisga’a Treaty. The Land Use Plan for Nisga’a lands does not explicitly apply to Category A lands but does guide such land use decisions. The proposed site for Ksi Lisims LNG has been approved by Nisga’a Lisims Government.
- **Pacific North Coast Integrated Management Area:** Developed jointly by federal, provincial, and First Nation governments, this plan provides principles, goals, objectives and strategies on the management and planning of marine resources and activities.
- **Marine Plan Partnership for the North Pacific Coast:** Developed in partnership between First Nations and the province of B.C., this plan provides recommendations to achieve ecosystem health, social and cultural wellbeing, and economic development by using an ecosystem-based approach. The waters around Pearse Island are within an area designated as a ‘general management zone’ in the plan, which allocates space for wide variety of uses and activities.

- **North Coast Land and Resource Management Plan:** Provincial guidance document, providing direction for managing natural resources in the Skeena region. As the onshore component of Ksi Lisims LNG is on privately-owned land, the directives identified in the North Coast Land and Resource Management Plan do not apply, but rather offer guidelines for resource use. The transmission line assessment area is within the boundaries of the North Coast Land and Resource Area but situated outside of the areas for which development is prohibited.
- **Canada-British Columbia Marine Protected Area Network Strategy:** Collaborative effort between provincial, federal, and First Nation Governments to create network of marine protected areas in the Northern Shelf Bioregion of the west coast of B.C. Three network zones have been organized for implementation, with the establishment of category 1 zones targeted for 2025, category 2 zones targeted for 2030, and no current timeline for category 3 zones. The waters around Pearse Island are situated within a category 3 area.
- **Marine Plan Partnership:** formalized in 2011 and is a co-led initiative between the province and 17 partner Indigenous nations. The Marine Plan Partnership led to the development of four sub-regional marine plans which were signed in 2015 for Haida Gwaii, North Coast, Central Coast and Northern Vancouver Island, and a regional action framework which was completed in 2016.
- **Environmental Stewardship Initiative:** is a collaborative effort between the province, and 32 Indigenous nations in Northern B.C., which was initially launched in May 2014 in response to natural gas development throughout the region, with four regional forums. The North Coast Environmental Steward Initiative Regional Stewardship Forum areas of focus include both habitat restoration projects and longer-term value-based work to address cumulative effects within the traditional territories of the six participating North Coast Indigenous nations.
- **Integrated North Coast Cumulative Effects Program:** Is an alignment of the Marine Plan Partnership’s North Coast sub-region aligned with the North Coast Environmental Stewardship Initiative to produce an integrated North Coast cumulative effects workplan. The focus is to collaboratively monitor, assess and manage cumulative effects on core values within the traditional territories of the participating First Nations. The four initial values selected for assessment include: aquatic habitats – estuary, food security, access to resources, and salmon.
- **Oceans Protection Plan:** Many initiatives led by multiple federal departments with a focus on marine safety, environmental protection and working in partnership with Indigenous Peoples across Canada, including the Pacific North Coast First Nations.
- **Cumulative Effects of Marine Shipping Northern Shelf Bioregion Pilot Area:** Transport Canada is working with Indigenous peoples, coastal communities, and local stakeholders to identify and assess issues associated with marine shipping activities and their impact on the environment. The initiative is also collecting information, conducting analysis, and making recommendations to mitigate the impact of these marine shipping activities, which will help policy makers and communities make decisions that are based on evidence.

[Section 2.4](#) of the Revised Application describes the several arrangements that the Province of B.C. and Government of Canada have entered with First Nations relating to land use and marine use planning, LNG developments, LNG benefits, and reconciliation.

For further information regarding consistency with land use plans, refer to [Appendix 11](#).

### 3.4.3. Regulatory Coordination

In addition to provincial environmental assessment approval and federal impact assessment approval, Ksi Lisims LNG would need various authorizations from federal, provincial, and local governments. See [the Joint Permitting/Regulatory Coordination Plan](#) for more details.

### 3.4.4. Other Projects in the Region

The Revised Application identifies 25 past, present, and reasonably foreseeable future projects in the region that have the potential to interact cumulatively with the effects of Ksi Lisims LNG. These projects were considered where cumulative effects were assessed, and are shown on Figure 3-3, below.

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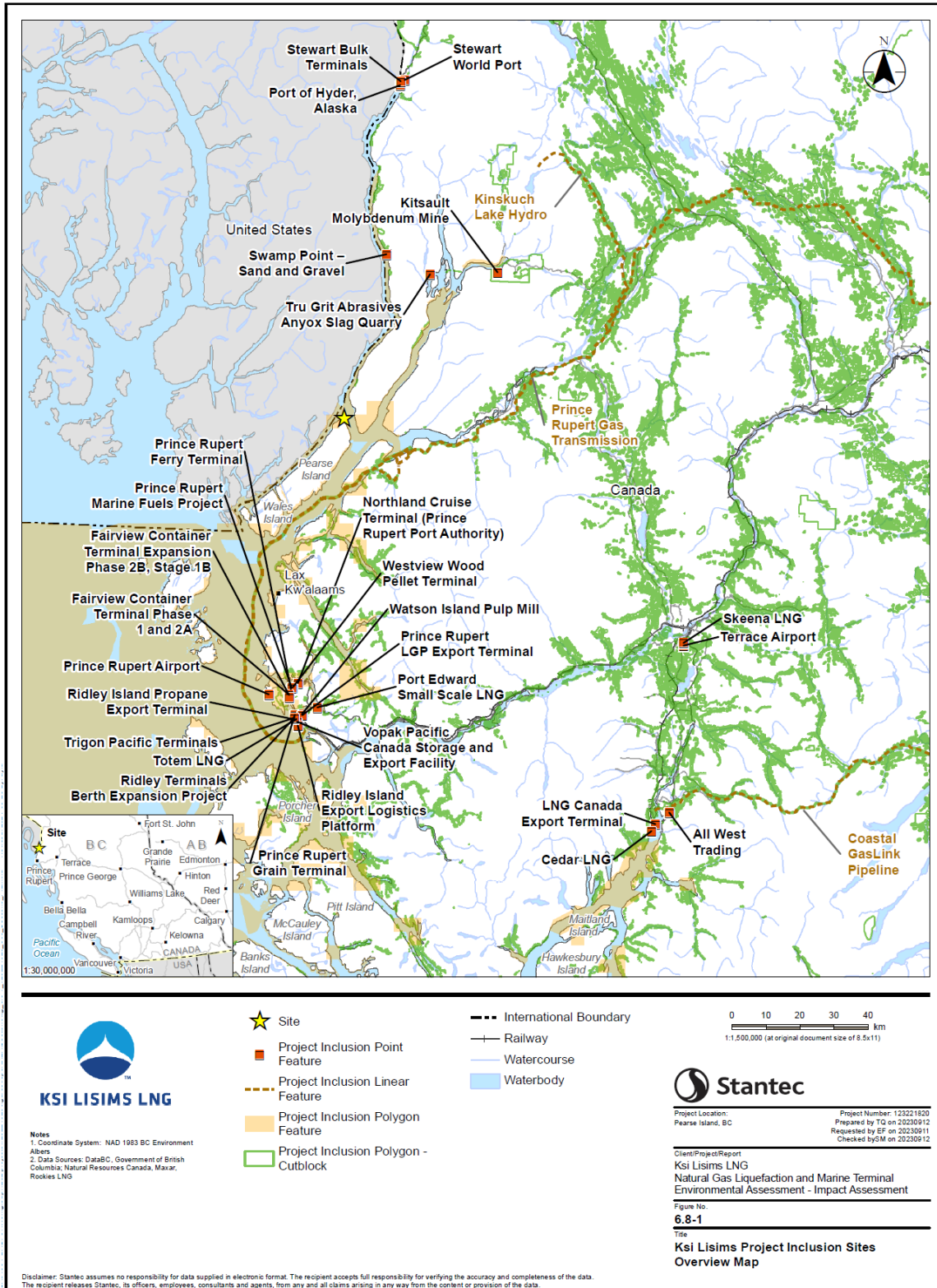


Figure 3-3: Ksi Lisims Project Inclusion Sites Overview Map



## 4.0 THE ENVIRONMENTAL ASSESSMENT PROCESS

The Act and its regulations establish the legal framework for the environmental assessment process for proposed major projects in B.C. The Act requires that projects, including both new and modifications to existing projects, that exceed thresholds defined in the [Reviewable Projects Regulation](#) and must undergo an environmental assessment and obtain a Certificate before proceeding.

The environmental assessment process as defined by the Act includes eight phases, as shown in figure 4-1, below. Table 2 lists the major milestones for each of the phases of the environmental assessment process for Ksi Lisims LNG. See [Appendix 1](#) for an overview of the phases of the environmental assessment process.

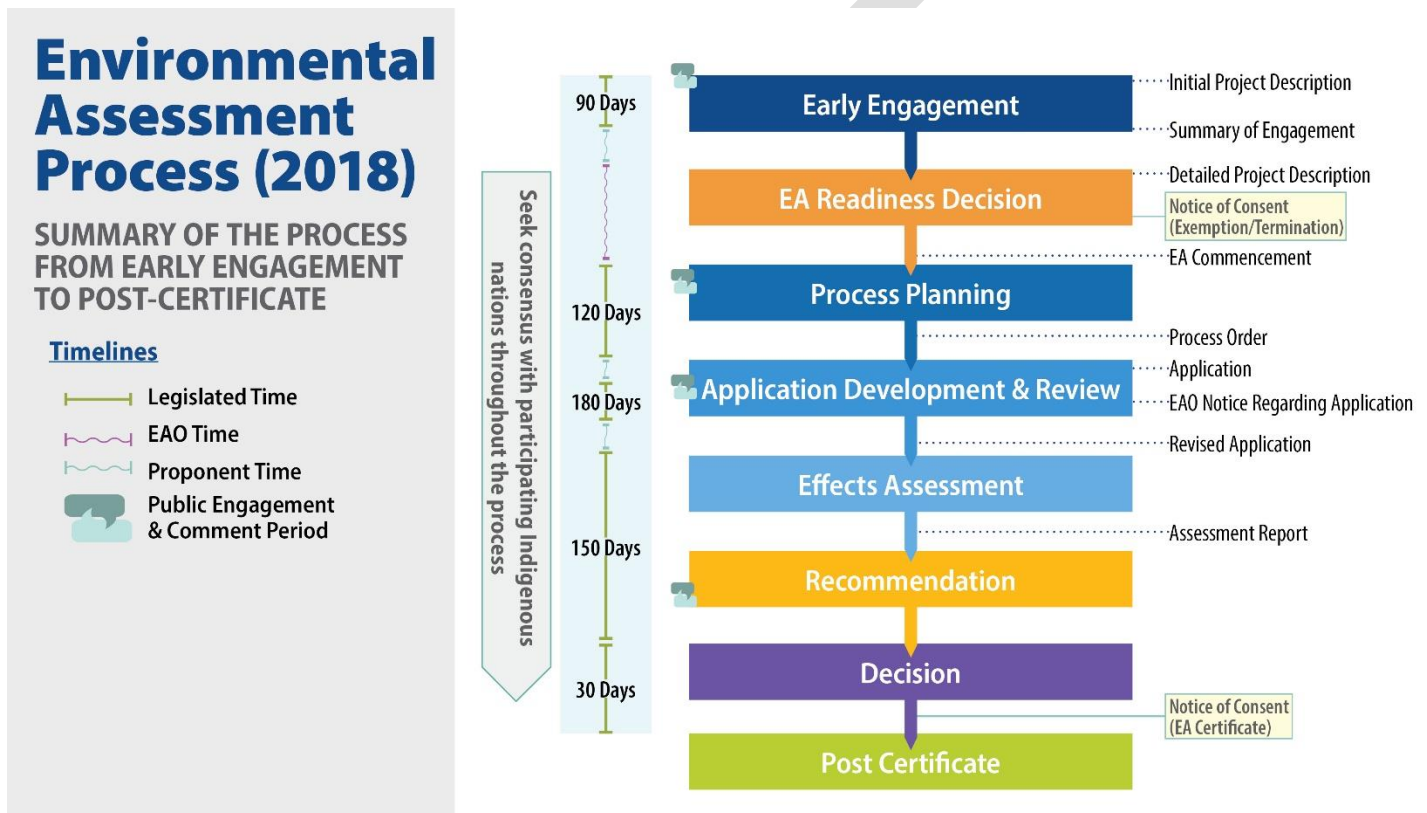


Figure 4-1: Overview of the B.C. Environment Assessment Process

Table 2: Major Milestones of the Environmental Assessment

Dates	Milestones
<b>Early Engagement</b>	
July 14, 2021	Proponent submits Initial Project Description and Engagement Plan to the EAO ( <a href="#">link</a> )
July 16, 2021	Proponents’ Initial Project Description is accepted by the IAAC
August 6, 2021	The EAO requests substitution should a federal impact assessment be required ( <a href="#">link</a> )

Dates	Milestones
August 18, 2021 – January 24, 2022	First Nations identify if they wish to be participating Indigenous nations.
October 14, 2021	The EAO and the IAAC issue a Joint Summary of Issues and Engagement document, which also identifies a list of participating Indigenous nations ( <a href="#">link</a> )
April 25, 2022	The Proponent submits a Detailed Project Description to the EAO ( <a href="#">link</a> )
<b>Readiness Decision</b>	
April 26, 2022	The EAO posts the Detailed Project Description
March 16, 2023	The EAO issues a Notice of Decision and posts reasons for decision ( <a href="#">link</a> )
<b>Process Planning</b>	
March 17, 2023	Proponent submits a revised Detailed Project Description and responses to Joint Summary of Issues and Engagement to the IAAC ( <a href="#">link</a> )
March 20, 2023	The EAO posts the revised Detailed Project Description
March 27, 2023	The IAAC posts decision that a federal Impact Assessment is required with reasons ( <a href="#">link</a> )
April 6, 2023	The IAAC posts the Notice of Substitution Approval under the IAA, granting substitution of the conduct of the Impact Assessment to the Province of B.C. ( <a href="#">link</a> )
July 13, 2023	The EAO issues the Process Order to Proponents ( <a href="#">link</a> )
<b>Application Development and Review</b>	
October 16, 2023	Proponent submits Application ( <a href="#">link</a> )
April 10, 2024	The EAO issues a Notice Regarding Application Review ( <a href="#">link</a> )
July 12, 2024	Proponent submits the Revised Application to the EAO
September 3, 2024	The EAO accepts the Revised Application
<b>Effects Assessment</b>	
January 31, 2024	The EAO refers decision materials to provincial Ministers for a decision on whether to issue a Certificate
January 31, 2024	The EAO submits a final Assessment Report to the federal Minister to inform the federal decision

## 5.0 STAKEHOLDER ENGAGEMENT

### 5.1. Technical Advisory Committee

The EAO established a Technical Advisory Committee, made up of federal, provincial, and local government staff or representatives with the mandates and expertise relevant to the review of Ksi Lisims LNG, as well as representatives of

the participating Indigenous nations. The purpose of the Technical Advisory Committee was to advise the EAO and participating Indigenous nations on technical matters related to the assessment and review the Application, Revised Application, and any supplemental materials. As per the Cooperation Agreement and the Notice of Substitution Approval under the IAA, the EAO agreed to provide federal authorities with the opportunity to participate in the assessment as members of the Technical Advisory Committee. The list of groups represented on the Technical Advisory Committee is available in [Appendix 4](#) **Error! Reference source not found..**

The EAO sought and considered advice from the Technical Advisory Committee to understand and assess any potential effects associated with Ksi Lisims LNG. Technical Advisory Committee members were responsible for providing timely advice to the EAO and participating Indigenous nations throughout the assessment.

The EAO reviewed the adequacy of the Proponents' responses to all comments received from Technical Advisory Committee members and held various meetings with Technical Advisory Committee members to discuss outstanding issues and concerns. In the development of this Report, recommended provincial conditions, and the EAO's recommended Key Mitigation Measures and Follow-Up Programs under the IAA (see [Appendix 2](#)), the EAO considered all comments and issues raised during the environmental assessment. The EAO also developed the Regulatory Coordination Issues Tracking Table that describes the key topics and issues that were raised during the assessment and how these were addressed in the assessment, or would be addressed by a subsequent permitting process, other regulatory process, or government initiative. The document will be provided to the statutory decision makers to show how issues have been addressed and where they are being carried forward to another regulatory process.

The full set of comments and resolution of issues is provided in the [Application Review Issues Tracking Table \(ITT\)](#). The key concerns are described in each of the valued component assessments detailed in [Appendix 6](#).

## 5.2. Community Advisory Committee

The EAO has the option to establish a Community Advisory Committee for environmental assessments, where there is sufficient public interest, to provide insight and advice to the EAO on potential effects of a project on nearby communities. Also, Paragraph 22(1)(m) of the IAA specifies that the assessment of a designated project must take into account community knowledge.

Responding to the expression of community interest in the Ksi Lisims LNG environmental assessment, the EAO established a Community Advisory Committee. During the first two public comment periods (during Early Engagement and Process Planning), the EAO provided an opportunity for any members of the public interested in joining the Community Advisory Committee to indicate this preference when submitting a public comment. Eight members of the public indicated their interest in joining, and the Community Advisory Committee was officially formed during the Process Planning phase, with each of the eight interested parties included as members. It is noted that this committee was formed of members who self-selected to join because of their interest in participating more fully in the environmental assessment process. The EAO developed the [Terms of Reference](#) establishing the goals and roles of the Community Advisory Committee and circulated these to committee members for review and feedback.

Community Advisory Committee members were kept informed of milestones in Ksi Lisims LNG's environmental assessment process, including the issuance of the Process Order, the EAO's receipt of the Proponents' Application for an environmental assessment certificate, all public comment periods, the conclusion of the Application Review phase, acceptance of the Revised Application, referral of Ksi Lisims LNG to Ministers for decision on an environmental assessment certificate, and issuance of any legal orders issued under the Act in relation to Ksi Lisims LNG. As part of these notifications, Community Advisory Committee members were provided access to project-related information, including the Process Order, Application, Issues Tracking Table, and the Notice to the Proponents regarding Application Review. Community Advisory Committee members choosing to submit comments via the [EAO's public consultation website](#) had the option to identify their comments as input from a Community Advisory Committee member.

### 5.3. Public

Public consultation is an important aspect of the environmental assessment process. Public participation in the environmental assessment process helps ensure that community values and public goals are considered in project planning and decision-making. Public comments also help the EAO ensure that all potential adverse effects of a project are captured and appropriately assessed. The IAA also specifies that the assessment of a designated project must take into account comments received from the public.

The EAO conducts its own public consultation but also requires additional public consultation from proponents. The EAO required the Proponents to prepare a [Public Engagement Plan](#). The plan laid out the Proponents' consultation objectives and activities leading up to the Proponents' submission of the Application for an environmental assessment certificate. The Proponents submitted a [Public Engagement Report](#) following the Application Review public comment period.

The EAO held *four* public comment periods for Ksi Lisims LNG, one jointly with the IAAC during Early Engagement, that included virtual and/or in-person open houses as shown in Table 3. The virtual open houses each included a presentation by the EAO on the current and upcoming phases of the environmental assessment process, a presentation by the Proponents on Ksi Lisims LNG, as relevant to the current phase, and an opportunity to ask questions online to the EAO, the IAAC, and the Proponents. The in-person open houses included poster boards with relevant technical experts available for the public to have discussions with from both the EAO and the Proponents. During public consultation, the EAO made efforts to engage diverse subgroups of the community in supporting the collection of information needed to complete the Gender-based Analysis Plus (GBA Plus<sup>4</sup>) analysis to examine effects on marginalized and vulnerable populations. The EAO notified Alaskan Tribes of key milestones of the Environmental Assessment, including public comment periods, as outlined in Schedule B (Assessment Plan) of the Process order, and in accordance with the [Memorandum of Understanding](#) and the Statement of Cooperation on the Protection of Transboundary Waters between the State of Alaska and the Province of B.C.

Table 3: Public Comment Periods and Open Houses

Phase	Comment Period Dates	Number of Comments	Date of Open Houses	Number of Attendees
Early Engagement	August 10, 2021 to September 24, 2021	71	September 8, 2021 Virtual (via MS Teams) 5:00 pm to 6:30 pm	37
			September 9, 2021 Virtual (via MS Teams) 7:00 pm to 8:30 pm	31
Process Planning	April 26, 2023 to May 29, 2023	44	May 3, 2023 Terrace, B.C. (In-person) 6:00 pm to 8:00 pm	34
			May 4, 2023 Prince Rupert, B.C. (In-person) 6:00 pm to 8:00 pm	37
			May 10, 2023 Virtual (via Zoom) 12:00 pm to 2:00 pm	40

<sup>4</sup> Further information about GBA Plus is available here: <https://www.canada.ca/en/women-gender-equality/gender-based-analysis-plus.html>

Application Review	November 1, 2023 to December 1, 2023	536	November 7, 2023 Prince Rupert, B.C. (In-person) 6:00 pm to 8:00 pm	17
			November 8, 2023 Terrace, B.C. (In-person) 6:00 pm to 8:00 pm	28
			November 14, 2023 Virtual (via Zoom) 12:00 pm to 2:00 pm	52
Effects Assessment	November 12, 2024 to December 12, 2024	TBD	No In-person open house for this phase	-
			November 28, 2024 Virtual (via Zoom) 12:00 pm to 2:00 pm	TBD

On February 18, 2022, IAAC posted a notification that Participant Funding was available to assist the participation of the public in the federal impact assessment of Ksi Lisims LNG. IAAC provided public participation funding to Climate Resilience Corporation, Council of Canadians – Terrace, BC Chapter, Douglas Channel Watch Society, and Witset First Nation for the Planning Phase and to Douglas Channel Watch Society and T Buck David Suzuki Environmental Foundation for the Application Review Phase of the Environmental Assessment (EA) under the IAA. IAAC will be considering the public comments on the draft potential federal conditions submitted during EAO’s public comment period in federal decision-making for Ksi Lisims LNG.

The key concerns raised during public engagement were related to climate change and greenhouse gas emissions, socio-economic effects, cumulative effects, effects on fish and marine mammals (i.e., marine resources), and concerns related to consultation with First Nations. An overview of these comment themes is provided below.

Public comments provided during the Application Review phase of the Ksi Lisims LNG environmental assessment were reflected in the EAO’s [Notice Regarding Application Review](#), while comments collected during the Process Planning phase are reflected in the EAO’s [Summary of Engagement for the Process Planning Phase](#). Together with IAAC, the EAO also prepared a [Joint Summary of Issues and Engagement](#) to reflect comments collected during the Early Engagement phase of the Ksi Lisims LNG environmental assessment. The full text of all public comments received during each of the public comment periods is available on [EAO’s Project Information Centre](#).

**Climate change and greenhouse gas emissions:** Members of the public noted concerns about climate change and greenhouse gas emissions, expressing preference for ceasing to approve fossil fuel projects in favor of alternative renewable energy projects, such as those powered by solar and wind. Commenters expressed views that LNG projects, such as Ksi Lisims LNG would obstruct the Province’s, and the country’s ability to transition from fossil fuels and would further entrench fossil fuels in the global economy. Other commenters expressed concern that Ksi Lisims LNG itself would lose economic viability as the global transition from fossil fuels continues. Concerns for additional greenhouse gas emissions, and the resultant contribution to climate change were often cited, as were questions about how Ksi Lisims LNG would impact provincial and federal greenhouse gas emissions targets and Canada’s environmental commitments on climate change. Some members of the public challenged the Proponents’ statement that Ksi Lisims LNG would reduce global greenhouse gas emissions, while others expressed concern for climate impacts related to activities upstream and downstream of Ksi Lisims LNG, including emissions from drilling, leakage from overseas construction, fugitive emissions from processing and transport, and ultimately from combustion of gas at the endpoint.

Greenhouse gas emissions and the potential effects that these emissions would have on the Province of B.C.'s ability to meet legislated emissions targets, are considered in [Appendix 12](#) of this Report. Additional details related to the Proponents' assessment of greenhouse gas emissions, how they meet the provincial and federal reduction targets, and the Proponent's plan to achieve net-zero by 2030 are discussed in section 08A and 08B of the [Revised Application](#), the [Strategic Assessment of Climate Change Technical Data Report](#), and the [Greenhouse Gases Technical Data Report](#). For further discussion on this topic including proposed conditions aimed at addressing potential effects related to climate change and greenhouse gas emissions, see [Appendix 12](#) (Greenhouse Gas Emissions).

**Socio-economic effects:** Many members of the public noted the potential for Ksi Lisims LNG to bring jobs and prosperity to the region, noting support for the project and the benefits that could accrue to individuals and businesses in the region, including to members of Nisga'a Nation and Nisga'a-owned businesses. Public comments also expressed concern for the potential impacts of population growth and transient workers, including decreased housing affordability, increased homelessness, increased crime rates, pressure on strained local infrastructure and services including the region's medical infrastructure, increased degree of financial disparity, increased crime, and decreased community wellbeing. Members of the public also expressed concern for the potential economic and social impacts of Ksi Lisims LNG's closure. For further discussion on this topic including proposed conditions aimed at addressing potential socio-economic effects, see [chapter 18.12](#) (Employment and Economy), [chapter 18.13](#) (Infrastructure and Services), [chapter 18.11](#) (Community Health and Wellness) and [Appendix 8](#) (Disproportionate Effects).

**Cumulative effects from other projects, including those related to Ksi Lisims LNG (e.g., pipeline and transmission line):**

Members of the public expressed concern about cumulative effects of Ksi Lisims LNG in combination with other projects in the region, noting particular concern for the electric transmission line and natural gas pipeline that would connect to Ksi Lisims LNG. Public comments about the Prince Rupert Gas Transmission (PRGT) pipeline related to potential impacts on air quality, salmon-bearing streams, old growth forests, water quality, and the adequacy of consultation with First Nations.

PRGT was granted an environmental assessment certificate in 2015 and is not included in the scope of the Ksi Lisims LNG environmental assessment. Nonetheless, PRGT and the entire portion of the proposed electric transmission line are both included, along with a number of other past, present, and reasonably foreseeable projects, in the cumulative effects assessment for Ksi Lisims LNG. As such, the potential for residual effects of Ksi Lisims LNG to interact with the residual effects of PRGT and the transmission line (and other projects in the region) have been assessed for each valued component. Cumulative effects are discussed in each valued component section of this Report.

The EAO notes that the section of the electric transmission line that extends from Nisga'a lands to the Project Site are within the scope of Ksi Lisims LNG's environmental assessment and potential effects associated with the construction and operation from this section of the transmission line have been assessed along with other project components and associated activities of Ksi Lisims LNG.

**Effects on fish and marine mammals:** Members of the public noted concerns about the potential Ksi Lisims LNG's construction, operation, and shipping to pose a threat to federally and provincially listed aquatic species at risk and their habitats, including risks to Northern Resident Killer Whales, Northern Transient Killer Whales, and Harbour Porpoises. Commenters specified concern about the risk of increased marine traffic and the potential for vessel strikes, as well as the potential for noise and light, disrupting life processes and degrading habitat for marine mammals, fish, and other marine resources.

Other commenters noted concern for the potential effects to mortality, quality, resilience, and productivity of various fish species, including salmon, eulachon, herring, other anadromous species, shellfish, and crustaceans. Many members of the public emphasized the importance of marine harvests for Nisga'a Nation and other nearby First Nations as a source of food security.

Potential impacts to individual First Nations' right to fish is discussed in the detailed assessment for each First Nation, in [Appendix 5](#). For further discussion on this topic including proposed conditions aimed at addressing potential effects related to marine use and marine resources (including fish and marine mammals), see [chapter 18.9](#) and [chapter 18.5](#).

**Consultation with First Nations:** Some members of the public raised concern about Indigenous rights and title, consultation with First Nations, and implementation of United Nations Declaration on the Rights of Indigenous Peoples. Other comments noted Nisga'a Nations right to self-governance and economic reconciliation, and Ksi Lisims LNG's role in achieving those goals. The EAO noted that one of the EAO's purposes is to support reconciliation with First Nations in B.C., including by supporting the implementation of the United Nations Declaration on the Rights of Indigenous Peoples. In seeking to fulfill this purpose, the EAO began consultation with potentially affected First Nations during the Early Engagement phase in 2021 and continued consultation throughout Ksi Lisims LNG's environmental assessment. Section 19(4) of the Act enables any participating Indigenous nation to carry out their own assessment with respect to the potential effects of Ksi Lisims LNG on the Nation and on its rights recognized and affirmed by Section 35 of the *Constitution Act, 1982*. Indeed, four participating Indigenous nations carried out independent assessments, and these reports are included in [Appendix 5](#) of this Assessment Report, which is provided to the Ministers to inform their decisions on whether to issue an environmental assessment certificate.

Additionally, the EAO has sought to achieve consensus with participating Indigenous nations at various milestones in the environmental assessment process, including seeking to achieve consensus on this Assessment Report, the proposed Certificate (including the proposed conditions), and the EAO's conclusion on whether the project is consistent with the promotion of sustainability. The Act provides participating Indigenous nations with the opportunity to provide notice of their consent or lack of consent on the EAO's recommendation to Provincial decision-makers. If the EAO's recommendation does not align with a Participating Indigenous nations notice of consent or lack of consent, the Provincial Ministers must offer a meeting to that participating Indigenous nation.

#### 5.4. Local Governments

Recognizing the potential for communities to be affected by Ksi Lisims LNG infrastructure and activities, the EAO invited representatives from the following local governments to join the Technical Advisory Committee:

- The Regional District of Kitimat-Stikine;
- The North Coast Regional District;
- The City of Terrace;
- The City of Prince Rupert; and
- The District of Stewart.

The EAO provided each local government with updates on milestones in the environmental assessment of Ksi Lisims LNG and provided opportunities to review and provide feedback on key project documents. Local governments, including the City of Terrace, the North Coast Regional District, and the Regional District of Kitimat-Stikine, noted the potential for Ksi Lisims LNG to benefit members of the local workforce and expressed interest in learning more about the Proponent's recruitment and retention policies from the construction through to the decommissioning phases.

Key concerns focused on Ksi Lisims LNG's potential to place additional demand on the region's infrastructure, including emergency and medical services, roads, bridges, ferries, recreation, potable water, waste management, and the regions' already constrained housing stock. Local governments specified that increased economic activity in the region has led to cumulative effects and noted that these adverse effects have the potential to affect people disproportionately, just as the benefits of these projects have the tendency to be allocated disproportionately. The City of Terrace further specified that Terrace's position as the region's hub means that increases in population and economic activity throughout the region tends to result in Terrace receiving a disproportionate share of strains on the city's already-strained social, emergency,

and medical infrastructure and services. These strains tend not to be commensurately offset by financial benefits, which shifts the burden to taxpayers to maintain service.

These effects, proposed mitigation measures, and conclusions are described in more detail in the following sections in this Report: [chapter 18.12](#) (Employment and Economy), [chapter 18.13](#) (Infrastructure and Services), [chapter 18.11](#) (Community Health and Wellness) and [Appendix 8](#) (Disproportionate Effects). The EAO proposed conditions to mitigate and monitor the effects to housing, traffic and waste through the Socioeconomic Management Plan, Road Transportation Management Plan, and Construction Environmental Management Plan. The EAO also proposed Condition 14 (Health and Medical Services Plan) to monitor and adaptively manage effects to health services through the Health and Medical Services Management Plan. Additionally, the EAO proposed Condition 11 (Community Feedback Process) for Ksi Lisims LNG to implement a community feedback process to identify and address community concerns and complaints through the construction and operations phases.

## 5.5. Alaska

Ksi Lisims LNG would be located approximately two kilometres from B.C.'s border with Alaska. Paragraph 22(1)(o) of the IAA also specifies that the assessment of a designated project must take into account comments from jurisdictions received during consultation. This being the case, the EAO invited the following state and federal agencies to become members of the Technical Advisory Committee:

- United States Environmental Protection Agency;
- Alaska Department of Natural Resources; and
- Alaska Department of Fish and Game.

## 6.0 INDIGENOUS NATION ENGAGEMENT AND SUMMARY OF EFFECTS

The Government of B.C. and Canada have a constitutional duty to consult and (where needed) accommodate First Nations where they have Section 35 rights that may be adversely impacted by provincial government decisions. [Section 25\(1\)](#) of the Act also requires that the effects of a project on Indigenous nations and their Section 35 rights must be assessed in every assessment (collectively, "Indigenous Interests"). In addition, the EAO conducted consultation with Indigenous peoples identified by the IAAC for consultation consistent with the [Notice of Substitution Approval](#) under the IAA. As per the Cooperation Agreement, Canada and B.C. each retain the responsibility to ensure that the duty to consult and, where appropriate, accommodate has been satisfied, including determining the Indigenous peoples to be consulted and determining the scope, content and adequacy of consultation, and that their respective treaty obligations have been satisfied and complied with in respect of the environmental assessment.

### 6.1. Proponent-Led Engagement Activities with First Nations

As part of the [Assessment Plan](#) (issued as an Appendix to the Process Order), the EAO directed the Proponents to undertake certain procedural aspects of consultation during the environmental assessment with First Nations. The Assessment Plan also required the Proponents to develop and share drafts of the Indigenous Engagement and Collaboration Plan and Report with First Nations at prescribed milestones during the environmental assessment. These documents were reviewed by First Nations and revised by the Proponents based on input received from and concerns expressed by First Nations prior to being submitted to the EAO. These documents enabled the EAO to:

- Understand the Proponents' engagement and consultation plan and subsequent efforts and the perspectives of the First Nations related to those efforts;
- Understand any issues and concerns identified by First Nations to the Proponents and how the Proponents have made efforts to respond to or address these issues;



- Evaluate the Proponents’ consultation and engagement plan for subsequent consultation activities required with First Nations during Application Review; and
- Direct the Proponents to take additional measures to satisfy the EAO and/or First Nation concerns/questions, when applicable.

The Proponents engaged with First Nations to complete Indigenous Knowledge studies and other reports specific to Ksi Lisims LNG. The Proponents received studies from the following First Nations:

- Nisga’a Nation;
- Gitga’at First Nation;
- Gitxaala Nation;
- Kitselas First Nation;
- Kitsumkalum First Nation;
- Lax Kw’alaams Band; and
- Metlakatla First Nation.

The Proponents engaged directly with First Nations throughout the environmental assessment for the purposes of information sharing and issues resolution. The Proponents engaged with First Nations according to their preferences. Examples of the Proponents’ engagement activities with First Nations included:

- Providing capacity funding, including funding for studies and nation-led rights assessments;
- Regularly updating the Ksi Lisims LNG website to ensure that it contained current information about the project including presentations, and information regarding the EA;
- Providing project updates through emails, virtual and in-person workshops and presentations, as well as monthly calls with each participating Indigenous nation;
- Participating in meetings and workshops and providing summaries for each engagement session;
- Responding to information requests; and
- Supporting and participating in council meetings, community events, meetings with hereditary leaders, youth, and elders as requested.

The Proponents recognize that each First Nation is best positioned to identify and engage with their memberships, and the Proponents attempted to reflect those nation-specific efforts within the Application. The Application assessed a combination of the following effects that varied on a nation-by-nation basis:

- Marine and terrestrial harvest and consumption;
- Governance, stewardship, and decision making;
- Livelihood and social and economic condition and development;
- Sacred places and heritage sites;
- Health, well-being, cultural well-being and safety;
- Culture, cultural identity, sense of place and transmission of knowledge; and
- Access and travel.

## 6.2. EAO-Led Engagement Activities

For all First Nations potentially affected by Ksi Lisims LNG, the assessment of potential effects of Ksi Lisims LNG are on Section 35 rights, as well as on any broader interests related to an Indigenous nation (collectively, “Indigenous Interests”). Further details on the assessment of effects to Indigenous Interests for each First Nation is listed below, and additional information is provided in the First Nation specific sections of this Report:

- Nisga’a Nation assessment is in [Appendix 5, section 17.1](#);

- Gitga’at First Nation assessment is in [Appendix 5, section 17.2](#);
- Gitxaala Nation assessment is in [Appendix 5, section 17.3](#);
- Kitselas First Nation assessment is in [Appendix 5, section 17.4](#);
- Kitsumkalum First Nation assessment is in [Appendix 5, section 17.5](#);
- Lax Kw’alaams Band assessment is in [Appendix 5, section 17.6](#);
- Metlakatla First Nation assessment is in [Appendix 5, section 17.10](#);
- Haida Nation assessment is in [Appendix 5, section 17.7](#);
- Gitxsan Wilp Denimget, Tsihl Gwellii Laxwiiyip assessment is in [Appendix 5, section 17.8](#); and
- Métis Nation of British Columbia assessment is in [Appendix 5, section 17.9](#).

EAO-led engagement activities supported the reconciliation purposes of the Act and to fulfill the Crown’s duty to consult. Participating Indigenous nations and the EAO worked together during the environmental assessment process with the goal of seeking to achieve consensus on key issues and documents in order to support participating Indigenous nation, provincial and federal decision-making. Approaches to consensus-seeking with the EAO varied for each participating Indigenous nation and, for some, included the identification of check-ins that aligned with key milestones in the environmental assessment process, and the development of a consensus tracking tool for documenting and communicating out issues resolution activities and outcomes.

The EAO worked collaboratively with First Nations on their First Nation assessments, as captured in the Assessment Plan.

- The EAO drafted the Nisga’a Nation assessment in respect to paragraph 8(e) and 8(f) of Chapter 10 of the Nisga’a Final Agreement, with opportunities for iterative review and input by Nisga’a Nation;
- The EAO drafted the Gitxaala Nation, Kitsumkalum First Nation, and Haida Nation assessments with opportunities for iterative review and input by the respective First nations;
- Gitga’at First Nation, Kitselas First Nation, Lax Kw’alaams Band and Metlakatla First Nation drafted their own assessments with opportunities for review and input by the EAO; and
- The EAO drafted the Métis Nation and Gitxsan Wilp Denimget assessments with opportunities to review and provide input on the draft referral materials.

### 6.3. Nisga’a Nation

The Nisga’a Nation, as represented by the Nisga’a Lisims Government (NLG), is a Modern Treaty Nation comprising nearly 7,000 Nisga’a citizens residing in the Nisga’a Villages of Gingolx, Laxgalts’ap, Gitwinksihlkw, Gitlaxt’aamiks, and beyond the Nass Valley across North America. NLG is responsible for healthcare, education, social services, lands and resources, economic development, environmental stewardship, fisheries and wildlife, and culture and heritage, in addition to representing the Nisga’a Nation in intergovernmental relations.

NLG fulfilled several roles throughout the Ksi Lisims LNG EA, including being a member of the Proponent team. Under the Nisga’a Final Agreement (Nisga’a Treaty), the Nisga’a Nation owns in fee simple the land on which upland components of Ksi Lisims LNG will be situated. Ksi Lisims LNG was subject to environmental assessment requirements under paragraphs 8(e) and 8(f) of Chapter 10 – *Environmental Assessment and Protection* of the Nisga’a Treaty. Paragraph 8(e) of Chapter 10 of the Nisga’a Treaty requires that all environmental assessment processes will, in addition to the requirements of applicable environmental assessment legislation, “assess whether the project can reasonably be expected to have adverse environmental effects on residents of Nisga’a Lands, Nisga’a Lands, or Nisga’a interests set out in the Final Agreement and, where appropriate, make recommendations to prevent or mitigate those effects.” Paragraph 8(f) of Chapter 10 of the Nisga’a Treaty requires that all environmental assessment processes will “assess the effects of the project on the existing and future economic, social, and cultural well-being of Nisga’a citizens who may be affected by the project”.

The EAO collaborated with NLG to assess the following Nisga'a interests: fish and aquatic plants (freshwater), fish and aquatic plants (marine), wildlife and migratory birds, botanical forest products, lands, existing and future economic well-being of Nisga'a citizens, existing and future social well-being of Nisga'a citizens, and existing and future cultural well-being of Nisga'a citizens.

Nisga'a citizens raised concerns that the location of the Project may result in residual effects on their fishing and harvesting activities, as well as other cultural and traditional activities. Specific concerns include potential impacts to salmon and eulachon runs and migrations, as well as increased harvested pressure on culturally important fish due to the influx of the Project workforce in the region. To address potential effects to Nisga'a Treaty interests and concerns, the Proponents engaged with NLG on proposed mitigation measures to address any concerns raised, the EAO engaged with NLG on proposed provincial conditions for the ministers decision, and IAAC engaged with NLG on proposed federal conditions for the ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with NLG are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Nisga'a's Indigenous interests can be found in [Appendix 17.1](#).

#### 6.4. Participating Indigenous Nations

Any First Nation, where there is a reasonable possibility that the First Nation or their Section 35 rights could be adversely affected by a project, may choose to participate in an environmental assessment process as a participating Indigenous nation. The scope of engagement with each participating Indigenous nation was identified in the [Process Order](#) that included specific information necessary to assess effects of Ksi Lisims LNG on the participating Indigenous nation's Indigenous Interests, the level of involvement of each participating Indigenous nation on the Technical Advisory Committee and its sub-committees, the timing and nature of specific engagement activities, and whether a participating Indigenous nation wished to conduct certain aspects of the effects assessment to their Indigenous Interests. A goal of this engagement was to build a shared understanding of the participating Indigenous nation's history, culture, traditions and connection to the land and resources. This included how the participating Indigenous nation has determined its priorities, visions, governance, and land use planning aspirations into the future.

The following First Nations were participating Indigenous nations for the Ksi Lisims LNG environmental assessment:

- Gitga'at First Nation;
- Gitxaala Nation;
- Kitselas First Nation;
- Kitsumkalum First Nation;
- Lax Kw'alaams Band; and
- Metlakatla First Nation.

EAO-led engagement with participating Indigenous nations included the following:

- Participation in the Technical Advisory Committee;
- Regular government-to-government meetings;
- Opportunities to identify Indigenous Interests that may be adversely affected by Ksi Lisims LNG and to discuss potential measures to avoid, mitigate, address or otherwise accommodate potential adverse effects on Indigenous Interests, as appropriate;
- Opportunities to participate in issue/topic-specific Technical Advisory Committee sessions with the EAO;
- Opportunities to review and comment on draft key documents, including: the Initial Project Description, Detailed Project Description, Readiness Decision Report, Process Order, Ksi Lisims LNG Application, supplemental materials and topic-specific memos, Revised Application, Assessment Report, the Environmental Assessment Certificate

schedules A and B: Project Description, and draft Table of Conditions, draft potential federal conditions, draft federal Project Description, Navigation Safety Assessment Report;

- Opportunity for participating Indigenous nations to draft the assessment on their Indigenous Interests within the EAO's Assessment Report as per section 19(4) of the Act;
- Consensus-seeking opportunities at each phase of the environmental assessment;
- Opportunity for participating Indigenous nations to submit a document outlining their views on the Assessment Report, Project Description and Table of Conditions to be included in referral materials to Ministers;
- Opportunity for participating Indigenous nations to submit a notice of consent or lack of consent in relation to the issuance of an Environmental Assessment Certificate, to be included in referral materials to provincial Ministers; and
- The EAO and IAAC provided Nisga'a Nation; Gitga'at First Nation; Gitxaala Nation; Kitselas First Nation; Kitsumkalum First Nation; Lax Kw'alaams Band; Metlakatla First Nation, Haida Nation and MNBC with grants/funding for their involvement in the environmental assessment.

#### 6.4.1. Gitga'at First Nation

The Gitga'at First Nation is one of the coastal Tsimshian tribes whose origins lie in ancient migrations and meldings of interior and coastal Indigenous people. The Gitga'at have provided oral history, ethnographic and historical information that conveys that the culture and identity of their people – the Gitga'at'a – is deeply tied to responsibilities and rights that are embedded in their *Adaawx* (oral histories) and *Ayaawx* (Indigenous laws). The information provided by Gitga'at describes how in historical times the Gitga'at'a travelled, occupied villages, carried out their responsibilities, and exercised their rights in their territory, an area which includes the lower Skeena River, Prince Rupert Harbour, Chatham Sound, Portland Inlet and Nass Bay. Although in present day most Gitga'at'a live in Hartley Bay and Prince Rupert where there are business and work opportunities, social connections and cultural events, and access to education, health and social services, the core of cultural and community well-being is sustained through their ongoing effort to exercise of their aboriginal and inherent Indigenous rights, customs and practices throughout their territory.

Gitga'at assessed and concluded on the following Indigenous interests with iterative review and input by the EAO: site occupation and resource harvesting rights, use and integrity of sacred and culturally important sites and land and marine-scape features, Indigenous governance, self-determination and territorial stewardship, and Indigenous community health and wellbeing.

Key concerns raised by Gitga'at through the environmental assessment focused on the proposed marine route and increased marine vessel traffic and on specific and cumulative effects to Gitga'at community members. The route poses risks to Gitga'at people being able to travel to and safely access and use traditional harvesting sites and sacred and culturally important locations. Other concerns included further alienation from traditional occupancy sites and resource harvesting locations; reduced opportunity to exercise cultural customs and practices, deteriorating quality of experience from noise and pollution, and threats to food security. Gitga'at members also expressed concerns about population and wealth influxes associated with the project workforce posing risks to the health and safety of Gitga'at members including the availability and affordability of housing, access to health services, and increases in drugs and alcohol abuse, human trafficking and crime, all of which are current crises for the community of Prince Rupert.

To address potential effects to Gitga'at interests and concerns, the Proponents engaged with Gitga'at on proposed mitigation measures, the EAO engaged with Gitga'at on proposed provincial conditions for ministers decision, and IAAC engaged with Gitga'at on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with Gitga'at are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Gitga'at's Indigenous interests can be found in [Appendix 17.2](#).

### 6.4.2. Gitxaala Nation

Gitxaala Nation (Gitxaala) Territory encompasses the lands and waters spanning from Prince Rupert Harbour, south to Aristazabal Island and includes Banks Island, McCauley Island, Pitt Island, the western side of Campania Island, portions of the mainland adjacent to Grenville Channel and surrounding waterways, as well as an oolichan fishing station on the Nass River.

Gitxaala hereditary leaders from the four clans, Gisbuutwada, Ganhada, Lax Sgyiik and Lax Gyibuu, manage and protect their territories and resources according to their ayaawx, traditional laws. Gitxaala harvesters use almost 100 different marine and terrestrial resources to feed their community. Gitxaala citizens, currently numbering 2094, wherever they reside, celebrate their history, practice their traditions, respect their laws, and cherish their lands, waters and resources.

The EAO collaborated with Gitxaala Territorial Management Agency (GTMA), who are mandated by Gitxaala leadership to act as the primary point of contact in regulatory processes on behalf of the Gitxaala, to assess and conclude on the following Indigenous interests: harvesting, use and integrity of Sacred and Important Places, governance, and health and wellbeing.

Key concerns raised by GTMA through the course of the environmental assessment included increase in marine vessel traffic on the coast and impacts to Gitxaala Nation and Gitxaala community members, including use of traditional harvesting sites and sacred and important places, safety concerns for access and travel for marine users, sensory disturbances, and health and wellbeing; impacts to marine resources from marine shipping including marine mammal vessel strikes, underwater noise disturbance to marine mammals and fish, and accidents and malfunction on marine and shoreline habitats; cumulative effects related to shipping, including wake waves, shoreline habitats, harvesting and safety and marine accidents and safety; the scope of the environmental assessment to not include the pipeline and only a part of the transmission line.

To address potential effects to Gitxaala interests and concerns, the Proponents engaged with GTMA on proposed mitigation measures, the EAO engaged with GTMA on proposed provincial conditions for ministers decision, and IAAC engaged with GTMA on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with GTMA are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Gitxaala's Indigenous interests can be found in [Appendix 17.3](#).

### 6.4.3. Kitselas First Nation

Kitselas First Nation has occupied the Skeena River and Kitselas Canyon areas since time immemorial. While Kitselas (Kitselas) means 'people of the Canyon' in the Tsimshian language of Sm'algyax, the Kitselas Territory is described as stretching from the Pacific Ocean, on British Columbia's North Coast, inland up the Skeena River Valley. Within the Territory, there are eight Reserve areas, most of which are along the Highway 16 corridor. Kitselas maintains strong ties to the coastal environment as reflected by the large marine harvest area within Kitselas' territory, as well as their coastal Reserve, Port Essington.

Kitselas is governed by the Kitselas Band Council, which consists of one Chief and several councillors. Kitselas also has a hereditary governance system. Kitselas is house-based and individuals identify with one of four clans: Laxgibuu (wolf), Ganhada (raven), Gispwudwada (blackfish/killer whale) and Laxsgiik (eagle). While the Chief and Council are the elected representatives for Kitselas, clan ties remain an important aspect of Kitselas governance, culture, and socio-economic conditions.

Kitselas drafted its own section using Kitselas' Values and methods for characterizing effects with iterative review and input by the EAO. Kitselas assessed and concluded on the following Kitselas Values: respect for Kitselas' history, respect for Kitselas' future, respect for Kitselas' lands, respect for Kitselas' authority, and respect for Kitselas' community.

Key concerns raised by Kitselas through the course of the environmental assessment included effects to members practicing traditional resource-based activities and related fish and wildlife populations; effects to territory available for spiritual and cultural use; effects to community and neighbourhood safety; and additional pressures on local health services.

To address potential effects to Kitselas interests and concerns, the Proponents engaged with Kitselas on proposed mitigation measures, the EAO engaged with Kitselas on proposed provincial conditions for ministers decision, and IAAC engaged with Kitselas on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with Kitselas are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Kitselas' Indigenous interests can be found in [Appendix 17.4](#).

#### 6.4.4. Kitsumkalum First Nation

Kitsumkalum First Nation (Kitsumkalum) is one of the original Galts'ap (community) who form the broader Tsimshian Nation. The main reserve lands are located where the mouth of the Skeena and Kalum Rivers meet. The Kitsumkalum territory covers approximately 5,941 km<sup>2</sup>, including the Kitsumkalum and Zymacord watersheds, Lakelse Lake, as well as the Skeena River and the Prince Rupert coast, spanning in the north from Portland Inlet, through Chatham Sound to the south in Grenville Channel. The majority of Kitsumkalum members live in Terrace and 25% live on-reserve, in IR-1, at the mouth of the Kitsumkalum River. Numerous members also live in Port Edward and Prince Rupert. As of February 2022, Kitsumkalum had a registered population of 809.

The EAO collaborated with Kitsumkalum to assess the following Indigenous interests: harvesting, use and integrity of sacred and culturally important sites and landscape features, First Nations governance, and health and wellbeing.

Key concerns raised by Kitsumkalum through the course of the environmental assessment included potential impacts to Kitsumkalum commercial and community fisheries from the Project, and cumulative effects of other projects that are associated with Ksi Lisims LNG that will mostly likely be built concurrently with the construction of Ksi Lisims LNG, such as a new natural gas pipeline, a new privately-owned 287 kilovolt transmission line, and a new 500 kilovolt BC Hydro transmission line; effects of increased traffic on the Highway 113 transportation corridor from Ksi Lisims LNG and the other projects associated with Ksi Lisims LNG; and regional social issues related to the influx of people into Terrace, and the associated systemic social issues that the region experiences when major projects are constructed, such as drug and alcohol addictions, homelessness and additional pressures on regional health care, and access to resources.

To address potential effects to Kitsumkalum interests and concerns, the Proponents engaged with Kitsumkalum on proposed mitigation measures, the EAO engaged with Kitsumkalum on proposed provincial conditions for ministers decision, and IAAC engaged with Kitsumkalum on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with Kitsumkalum are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Kitsumkalum's Indigenous interests can be found in [Appendix 17.5](#).

#### 6.4.5. Lax Kw'alaams Band

Lax Kw'alaams is the Island of Wild Roses. Lax Kw'alaams is a band as defined in the Indian Act and has approximately 4,000 members. The members of Lax Kw'alaams are the present-day descendants of nine Indigenous tribes that were originally organized before contact with Europeans into nine distinct political groups. These nine tribes are collectively known as the Allied Tsimshian Tribes or the Nine Tribes, whose names are the Gitwilgyoots, Gitzax'laaʔ, Gits'iis, Ginax'angiik, Gitnadoixs, Gitandoa, Gispaxlo'ots, Gilutz'aaʔ, and Gitlaan.

Lax Kw'alaams continues to assert and exercise jurisdiction over its traditional territory, including through the traditional *Ayaawx* (laws) and *Adaawx* kept by its members and the Nation's own land use planning processes that have been developed in response to increased development pressure in the Lax Kw'alaams' traditional territory.

The EAO assessed and concluded on the following Indigenous interests: harvesting, cultural continuity, community wellbeing, and stewardship and governance.

Key concerns raised by Lax Kw'alaams through the course of the environmental assessment included the effects of greenhouse gas emissions, impacts to Lax Kw'alaams members from effects to marine resources from the facility and marine shipping, the viability of using the traditional eulachon camp sites on the Nass, effects to terrestrial harvesting of wildlife and plants, direct impacts to Lax Kw'alaams governance from accidents and emergencies, impacts to cultural and traditional sites, impacts to the right of quiet enjoyment, and cumulative impacts on Lax Kw'alaams rights.

To address potential effects to Lax Kw'alaams interests and concerns, the Proponents engaged with Metlakatla on proposed mitigation measures, the EAO engaged with Metlakatla on proposed provincial conditions for ministers decision, and IAAC engaged with Lax Kw'alaams on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with La Kw'alaams are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Lax Kw'alaams' Indigenous interests can be found in [Appendix 17.6](#).

#### 6.4.6. Metlakatla First Nation

Metlakatla First Nation (Metlakatla) is a Coast Tsimshian Nation located on the northwest coast of British Columbia, with deep-rooted cultural, spiritual, and governance ties to its traditional lands and waters. Metlakatla's relationship to its lands and waters is enduring, shaped by thousands of years of careful use, intimate knowledge of its rhythms and cycles, and a sacred responsibility to protect and sustain its balance. Guided by *ayaawx*, the traditional legal system governing both social and environmental conduct, and *adaawx*, the oral histories that affirm territorial rights, lineage, and identity, Metlakatla has nurtured a profound connection with its territory. These systems have enabled Metlakatla to maintain a reciprocal relationship with the natural world, fostering a deep understanding of ecosystems and seasonal cycles, while ensuring resources are carefully managed to benefit future generations.

Metlakatla assessed the following Indigenous interests with iterative review and input by the EAO: harvesting, cultural continuity, community wellbeing, and stewardship and governance. As part of Metlakatla's ongoing rights impact assessment process, the community is currently finalizing the severity determination to assess the overall impacts of the Ksi Lisims LNG project on its rights and interests. Final conclusions regarding the severity of impacts will be made following consultation with community leadership.

Key concerns raised by Metlakatla through the course of the environmental assessment included effects to marine and terrestrial harvesting areas; ability to maintain cultural practices, identity and knowledge transmission; additional strain on social, economic and health conditions of Metlakatla members; and effects to Metlakatla's ability to exercise traditional authority, manage resources, and engage in governance-related decisions is expected to be undermined by the cumulative pressures of the project.

To address potential effects to Metlakatla interests and concerns, the Proponents engaged with Metlakatla on proposed mitigation measures, the EAO engaged with Metlakatla on proposed provincial conditions for ministers decision, and IAAC engaged with Metlakatla on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with Metlakatla are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Metlakatla's Indigenous interests can be found in [Appendix 17.10](#).

## 6.5. First Nations

### 6.5.1. Haida Nation

Haida Nation (Haida) territories comprise the entire Haida Gwaii archipelago, approximately 10,000 square kilometres (km) of land as well as their adjacent territorial waters. Haida Gwaii is comprised of two main islands, with Graham Island in the north and Moresby Island in the south as well as 200 smaller islands. Haida territorial waters include the entire Dixon Entrance, half of the Hecate Strait, halfway to Vancouver Island and westward into the abyssal ocean depths. The Council of the Haida Nation (CHN) is the governing body for the Haida Nation, as determined in the Haida Constitution. As of 2023, the registered population of Haida citizens is approximately 4,953.

The EAO engaged with CHN to assess and conclude on the following Indigenous interests: harvesting, use and integrity of sacred places and cultural heritage sites, and Haida governance.

Key concerns raised by CHN through the course of the environmental assessment focused on marine shipping in the open water assessment area and included: effects of potential accidents and malfunctions and navigational safety concerns resulting from an increase in vessel traffic (e.g. increase in vessel traffic and potential for collisions, shoreline groundings, fuel, oil and cargo spills, increased frequency of loitering, adequacy of response capacity and efficiency); decision to exclude SGáan Kínghlas-Bowie Seamount Marine Protected Area from the assessment area boundary; injury and mortality risks on marine mammals (especially Northern Resident Killer Whale) from LNG vessel noise and strikes; impacts to sensitive fish and marine mammal habitats and cultural values from unexpected (non-emergency) vessel anchoring and loitering, greenhouse gas emissions; invasive species introduction/spread from ship hulls and ballast water; community perceptions of safety and risk due to possibility of accidents and malfunctions; effects on local and traditional Haida fisheries; socio-economic impacts on tourism opportunities; cumulative effects of marine shipping, including increasing project shipping in Dixon Entrance; and absence of coast pilots on board vessels transiting through Dixon Entrance. CHN provided follow-up questions on the studies and assessment documents and proposed several measures for consideration by the Proponent and EAO and IAAC during the environmental assessment.

To address potential effects to Haida's interests and concerns, the Proponents reached out to the CHN on proposed mitigation measures, the EAO engaged with Haida on proposed provincial conditions for ministers decision, and IAAC engaged with Haida on proposed federal conditions for ministers decision based on the EAO's recommended key mitigation measures. The EAO notes that these discussions with CHN are ongoing during the remainder of the environmental assessment process.

A detailed assessment of Haida's Indigenous interests can be found in [Appendix 17.7](#).

### 6.5.2. Gitxsan Wilp Denimget, Tsihl Gwellii Laxwiiyip

The Gitxsan Nation's territory occupies 33,000 square km of land encompassing mountains, forests and large rivers, including the Babine, Bulkley, Kispiox and Skeena in Northwest British Columbia (BC), which is divided into 9 Laxyips (Watersheds). All Gitxsan belong to one of over sixty huwilp (houses), an organizational unit for social, economic and political purposes, each with its own territory. Each wilp (house) belongs to one of the four clans: Lax Gibuu (Wolf), Lax Seel/Ganeda (Frog), Giskaast (Fireweed) and Lax Skiik (Eagle) and are based on a matrilineal system, with house members tracing lineage through their mother's side.

Gitxsan Simogyet Denimget's Tsihl Gwellii Laxwiiyip (territory) extends to the outer edge of Gitxsan Nation lands, running along and paralleling Highway 113 from outside Rosswood, BC to the end of Sand Lake. As outlined in the Process Order, the EAO included the road transportation between Terrace and Gingolx for personnel and goods and materials as part of the scope for the Ksi Lisims LNG environmental assessment. The road transportation component of the Ksi Lisims LNG project overlaps with Wilp Denimget territory for approximately 20 km.

The EAO notified Gitxsan Simogyet Denimget of major project milestones of the environmental assessment.



The EAO assessed the following Indigenous Interests: harvesting rights, and health and well-being.

A detailed assessment of Gitxsan Simogyet Denimget's Indigenous interests can be found in [Appendix 5, section 17.8](#).

### 6.5.3. Gitxsan Nation as represented by Gitxsan Laxyip Management Office

The Gitxsan Laxyip Management Office (GLMO), representing huwilp in the upper Nass watershed, expressed an interest in the environmental assessment of Ksi Lisims LNG and requested inclusion in the assessment as a participating Indigenous nation. The chief executive assessment officer determined that there is no reasonable possibility the huwilp in the upper Nass or their rights will be adversely affected by Ksi Lisims LNG and denied the request under section 14(2) of the *Environmental Assessment Act*. The EAO responded to concerns raised by the GLMO, notified the GLMO of major project milestones of the environmental assessment where they had an opportunity to review and comment on materials, and offered to meet with GLMO on request. The approach to consultation with GLMO was captured in [Schedule B \(Assessment Plan\) of the Process Order](#).

A detailed description of how GLMO was consulted in the environmental assessment of Ksi Lisims LNG can be found in [Appendix 5, section 17.12](#).

### 6.5.4. Gitanyow Hereditary Chiefs

The Gitanyow Hereditary Chiefs expressed an interest in the environmental assessment of Ksi Lisims LNG. The EAO responded to concerns raised by the Gitanyow Hereditary Chiefs, notified the Gitanyow Hereditary Chiefs of major project milestones of the environmental assessment where they had an opportunity to review and comment on materials, and offered to meet with Gitanyow Hereditary Chiefs on request. The approach to consultation with Gitanyow Hereditary Chiefs was captured in [Schedule B \(Assessment Plan\) of the Process Order](#).

A detailed description of how Gitanyow Hereditary Chiefs was consulted in the environmental assessment of Ksi Lisims LNG can be found in [Appendix 5, section 17.11](#).

## 6.6. Métis Nation British Columbia<sup>5</sup>

Métis people are one of three Aboriginal peoples of Canada within the meaning of Section 35(2) of the *Constitution Act*, 1982. Métis people are descendants of unions between European men (explorers, fur traders and pioneers) and Aboriginal women that occurred in the eighteenth century. Métis Nation British Columbia (MNBC) is the Métis governing body in B.C. that represents the interests of over 19,000 citizens in 40 Métis Chartered Communities from seven regions in the province. MNBC indicates that it also represents the interests of nearly 90,000 self-identified Métis people in B.C. Since 2003, when the Métis leadership ratified the Métis Nation B.C. Constitution, MNBC has developed laws, regulations, and policies for maintaining, protecting, and furthering the interests of Métis in B.C.

The EAO notified MNBC of major project milestones on behalf of IAAC as part of the substituted assessment.

The EAO assessed the following MNBC interests: harvesting activities, sacred and culturally important sites and landscape features, and social and economic conditions.

A detailed assessment of MNBC's interests can be found in [Appendix 17.9](#).

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<sup>5</sup> In accordance with the substitution conditions and the Cooperation Agreement, the EAO delivered the procedural aspects of consultation with Métis Nation British Columbia on behalf of the Government of Canada and directed the Proponents to undertake specific consultation activities with Métis Nation British Columbia to meet the federal requirements of the Cooperation Agreement. Any consultation activities conducted by B.C. with Métis or organizations representing Métis within B.C. under a substituted impact assessment should be understood to have been conducted on behalf of the Government of Canada and should not be construed in any way as an acknowledgement by B.C. that it owes a duty of consultation or accommodation to Métis within B.C. under Section 35 of the Constitution Act.

## 6.7. Indigenous Knowledge

The Act establishes that one of the purposes of the EAO is to use the best available science, Indigenous Knowledge<sup>6</sup> and local knowledge in decision-making under the Act. The IAA also requires the consideration of Indigenous Knowledge provided with respect to the designated project. To meet the requirements of the Act and paragraph 22(1)(g) of the IAA, the EAO required that the best available science, Indigenous Knowledge and local knowledge be considered and integrated throughout the assessment process. Refer also to [Appendix 15](#) for Indigenous knowledge provided with respect to Ksi Lisims LNG.

The EAO recognizes that First Nations are best positioned to identify the sources of information, including Indigenous knowledge, appropriate for the use in the assessment of Ksi Lisims LNG. Indigenous Knowledge is the subset of a First Nation’s knowledge that the First Nation decides, through representatives chosen by themselves in accordance with their own procedures, is appropriate to be used in an environmental assessment. The Application described how scientific, Indigenous, and local knowledge were used in the assessment. During all phases of the environmental assessment, the EAO provided opportunities for the inclusion of Indigenous knowledge from First Nations and has integrated it throughout the assessment.

## 7.0 PREDICTED EFFECTS OF KSI LISIMS LNG

The EAO completed a detailed assessment of effects on the valued components, Indigenous Interests, and other assessment matters, as described under [Section 25](#) of the Act. The matters, or topics, to be assessed were determined by the EAO, in consultation with the Technical Advisory Committee and the public, and through consensus seeking with the participating Indigenous nations, through the [Application Information Requirements](#) set out by the EAO for Ksi Lisims LNG. These assessments incorporated information submitted by the Proponents, advice from the Technical Advisory Committee and Community Advisory Committee, local information and concerns raised by the public, and Indigenous knowledge provided by the participating Indigenous nations. A list of the factors assessed and where to find more detailed information is provided below in Table 4. The assessment and conclusion for federal effects are found in [Appendix 15](#).

Table 4: Valued Components, Indigenous Interests, and Other Assessment Factors Assessed

Environmental Effects	Health Effects
<i>Acoustic</i> ( <a href="#">chapter 18.1</a> )	<i>Acoustic</i> ( <a href="#">chapter 18.1</a> )
<i>Air Quality</i> ( <a href="#">chapter 18.2</a> )	<i>Community Health and Wellness</i> ( <a href="#">chapter 18.11</a> )
<i>Freshwater Fish and Fish Habitat</i> ( <a href="#">chapter 18.6</a> )	<i>Human Health</i> ( <a href="#">chapter 18.10</a> )
<i>Greenhouse Gas Emissions</i> ( <a href="#">Appendix 12</a> )	<b>Cultural Effects</b>
<i>Groundwater</i> ( <a href="#">chapter 18.3</a> )	<i>Archaeological and Heritage Resources</i> ( <a href="#">chapter 18.14</a> )
<i>Marine Resources</i> ( <a href="#">chapter 18.5</a> )	<b>Economic and Social Effects</b>
<i>Marine Use</i> ( <a href="#">chapter 18.9</a> )	<i>Infrastructure and Services</i> ( <a href="#">chapter 18.13</a> )
<i>Surface Water</i> ( <a href="#">chapter 18.4</a> )	
<i>Vegetation and Wetlands</i> ( <a href="#">chapter 18.8</a> )	

<sup>6</sup> Within the context of environmental assessments, Indigenous Knowledge is a unique way of knowing that is held by Indigenous Knowledge holders that pertains to the area within which a project may occur, including how that project may interact with the environment and people in the region. Indigenous Knowledge not only informs how projects should be delivered and their relationship to the land, but also informs Indigenous decision-making. [The EAO’s Guide to Indigenous Knowledge in Environmental Assessments](#) provides further detail on the EAO’s approach to the consideration of Indigenous Knowledge.

<p><i>Wildlife and Wildlife Habitat (<a href="#">chapter 18.7</a>)</i></p> <p><i>Effects on Biophysical Factors that Support Ecosystem Function (<a href="#">Appendix 9</a>)</i></p> <p><i>Potential Changes to Ksi Lisims LNG Caused by the Environment (<a href="#">Appendix 14</a>)</i></p>	<p><i>Employment and Economy (<a href="#">chapter 18.12</a>)</i></p> <p><i>Consistency with Land Use Plans (<a href="#">Appendix 11</a>)</i></p> <p><i>Disproportionate Effects on Distinct Human Populations (<a href="#">Appendix 8</a>)</i></p> <p><i>Effects on Current and Future Generations (<a href="#">Appendix 10</a>)</i></p>
<b>Effects to Indigenous Nations</b>	<b>Other Assessment Factors</b>
<p><i>Nisga'a Nation (<a href="#">Appendix 5, section 17.1</a>)</i></p> <p><i>Lax Kw'alaams Band (<a href="#">Appendix 5, section 17.6</a>)</i></p> <p><i>Metlakatla First Nation (<a href="#">Appendix 5, section 17.10</a>)</i></p> <p><i>Kitsumkalum First Nation (<a href="#">Appendix 5, section 17.5</a>)</i></p> <p><i>Kitseles First Nation (<a href="#">Appendix 5, section 17.4</a>)</i></p> <p><i>Gitxaala Nation (<a href="#">Appendix 5, section 17.3</a>)</i></p> <p><i>Gitga'at First Nation (<a href="#">Appendix 5, section 17.2</a>)</i></p> <p><i>Haida Nation (<a href="#">Appendix 5, section 17.7</a>)</i></p> <p><i>Metis Nation of British Columbia (<a href="#">Appendix 5, section 17.9</a>)</i></p> <p><i>Gitxsan Wilp Denimget, Tsihl Gwellii Laxwiiyip (<a href="#">Appendix 5, section 17.8</a>)</i></p>	<p><i>Risks of Malfunctions and Accidents (<a href="#">Appendix 7</a>)</i></p> <p><i>Alternative Means of Carrying out the Project (<a href="#">Appendix 13</a>)</i></p> <p><i>Project's Contribution to Sustainability (<a href="#">section 10.0</a>)</i></p>

Table 5 below outlines the EAO's predicted residual effects and conclusions on the identified valued components. The EAO's analysis that led to these conclusions can be found in [Appendix 6](#).

Table 5: Predicted Residual Effects and Conclusions on the Identified Valued Components

Valued Component	Residual Effect	Conclusion [i.e. significance]	Cumulative Effects
Air Quality	Increase of all air pollutants during construction and decommissioning of the Project	Not significant	Not significant
	Increase of all air pollutants during operations including marine shipping of the Project	Not significant	
Acoustic	Increase in noise levels due to activities related to the construction of the transmission line and the marine terminal	Not significant	Not significant
	Increase in noise levels due to activities related to the operation of the facility and marine shipping activities	Not significant	
	Increase in ground vibration due to activities during construction which would include blasting and have the potential to generate noise and ground vibration	Not significant	
Surface Water	Changes to surface water quantity	Not significant	Not significant
	Changes to chemical and physical composition of surface water	Not significant	

Valued Component	Residual Effect	Conclusion [i.e. significance]	Cumulative Effects
Groundwater	Changes to groundwater quantity	Not significant	Not significant
Vegetation and wetlands	Direct loss of plant species of interest	Not significant	Not significant
	Direct loss of ecological communities of interest (including Old Forest)	Not significant	
	Direct loss of wetlands	Not significant	
	Potential indirect effects to plant species of interest	Not significant	
	Potential indirect effects to ecological communities of interest	Not significant	
	Potential introduction of invasive plant species	Not significant	
	Change in the abundance and condition of plant	Not significant	
	Soil acidification and eutrophication	Not significant	
	Eutrophication effects to lichen	Not significant	
Wildlife and Wildlife Habitat	Direct loss of wildlife habitat	Not significant	Not significant
	Indirect loss of wildlife habitat	Not significant	
	Increased mortality risk	Not significant	
Freshwater Fish	Change in phytoplankton density	Not significant	Not significant
	Change in fish habitat	Not significant	
	Change in fish health, growth, survival or reproduction	Not significant	
Marine Resources	Change in water and sediment quality	Not significant	Not significant
	Change in habitat	Not significant	
	Change in behaviour	Not significant	
	Change in injury or mortality risk	Not significant	
Employment and Economy	Change in regional business	Not significant	Not significant
	Change in regional economy	Not significant	
Marine Use	Changes to marine navigation	Not significant	Not significant
	Changes to marine fisheries and other uses	Not significant	
	Changes in aesthetic conditions	Not significant	
Infrastructure and Services	Change in infrastructure and services	Not significant	Not significant
	Change in accommodation availability and affordability	Not significant	
	Change in transportation infrastructure	Not significant	
Community Health and Wellness	Change in community health	Not significant	Significant
	Change in community wellness	Not significant	

Valued Component	Residual Effect	Conclusion [i.e. significance]	Cumulative Effects
	Change in food security	Not significant	
	Change in health and medical infrastructure and services	Not significant	
Human Health	Change in human health from air quality	Not significant	Not significant
	Change in human health from noise	Not significant	
Archaeological and Heritage Resources	No negative residual effects identified		N/A

Table 6 below outlines the predicted positive effects. The analysis that led to these conclusions can be found in [Appendix 6](#).

Table 6: Predicted Positive Effects and Conclusions

Valued Component	Predicted Positive Effects
Community Health and Wellness	The Proponents noted Ksi Lisims LNG would bring higher tax revenues, local spending, and opportunities for employment and income advancement for the local workforce, which could have positive effects on the physical and mental health, and various social determinants of health within the local and Regional Assessment Area.
Employment and Economy	<p>The Revised Application, <a href="#">section 7.13</a>, describes the clear trend between increased income and employment status and health outcomes. Through employment and income, regional health status has the potential to improve over time, as well as household food security. Ksi Lisims LNG related mitigation measures have the potential to provide its workforce with access to health programs and services, accommodations, and food that workers may not have had previous to employment. Ksi Lisims LNG may improve access to local infrastructure and services through development of new regional infrastructure incidental to Ksi Lisims LNG (e.g. new third-party natural gas transmission pipeline and new third-party electrical transmission line connected to renewable electricity), see <a href="#">chapter 18.13</a>.</p> <p>Ksi Lisims LNG is anticipated to realize positive effects through direct, indirect, and induced employment and labour income (see <a href="#">chapter 18.12</a>). Additionally, Ksi Lisims LNG can contribute to local, regional, provincial, and federal GDP and government revenues that stem from Project demand and expenditures on labour, goods and services, which can increase the capacity for investment in local infrastructure and services such as recreation, health, and social services, which will benefit residents (see <a href="#">chapter 18.13</a>). Ksi Lisims LNG also serves to diversify the economic base, which will increase regional resiliency.</p> <p>The EAO also acknowledges that Ksi Lisims LNG would contribute to a number of positive effects to employment and the economy in the region, including.</p> <ul style="list-style-type: none"> <li>• Increased regional employment;</li> <li>• Increased regional economic activity (e.g., the gross domestic product);</li> <li>• Increased government revenues in the form of taxes and royalties;</li> <li>• Economic potential for regional businesses, including opportunities for increased revenues, and opportunities for establishing new businesses; and</li> <li>• Increased consumer spending from direct, indirect and induced workforce.</li> </ul>

Valued Component	Predicted Positive Effects
Infrastructure and Services	<p>The Application states that Ksi Lisims may support improved access to local infrastructure and services through the development of new regional infrastructure incidental to the Project (e.g., new third-party natural gas transmission pipeline and new third-party transmission line connected to renewable energy).</p> <p>The Application states that the presence of industrial projects and their workers may also have positive effects through the generation of revenue, which can increase the capacity for investment in local infrastructure and services.</p>

Table 7 below outlines the conclusions on the other assessment matters. The analysis that led to these conclusions can be found in Appendices 7 to 14. These conclusions consider the information and analysis presented in the respective chapter; the views of the Technical Advisory Committee, First Nations, and Proponents; as well as the proposed conditions identified in the **provincial Table of Conditions**; and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)).

Table 7: Predicted Effects and Conclusions on the Other Assessment Matters

Other Assessment Matters	Conclusion
Risks and uncertainties associated with effects, including the results of any interaction between effects	Risks and uncertainties associated with residual effects are assessed within each valued component chapter. Where residual effects on a valued component were predicted and the valued component was also considered a pathway for other potential effects on other valued components, as outlined in <a href="#">Table 5.1–1</a> of the Revised Application, the EAO considered the linkages between these valued components.
Risks of Malfunctions and Accidents	The EAO is of the view that the potential for severe- and high-risk effects due to malfunctions and accidents would be appropriately reduced and/ or managed to an acceptable level for Ksi Lisims LNG.
Disproportionate Effects on Distinct Human Populations and Gender Based Analysis Plus	The EAO concludes that there are unlikely to be significant adverse effects on distinct human populations.
Summary of Effects on Biophysical Factors that Support Ecosystem Function	The EAO concludes that there would be a low magnitude of effects on biophysical factors that support ecosystem function. The EAO is satisfied that effects on these factors would be appropriately mitigated and minimized to the extent possible for the Project.
Effects on Current and Future Generations	The EAO concludes that Ksi Lisims LNG would generally have positive effects on local employment and the economy associated with the development of Ksi Lisims LNG for future generations. The potential effects on marine ecosystems and access to traditional foods harvesting or traditional ceremonial practices is considered moderate, with the Proponents willingness to continually negotiate compensation agreements with effected First Nations as an adequate mitigation measure. Mitigation and conditions set out by the EAO will provide for acceptable levels of impact to the Valued Components and as such, the EAO concludes that it is unlikely that Ksi Lisims LNG will have negative effects on current and future generations.
Consistency with Land Use Plans	The EAO has considered the potential for Ksi Lisims LNG to affect the objectives of the Land Use Plan for Nisga’a Lands, Pacific North Coast Integrated Management Area Plan

Other Assessment Matters	Conclusion
	<p>(PNCIMAP 2017), Marine Plan Partnership for the North Pacific Coast (MaPP 2011), Canada – British Columbia Marine Protected Area Network Strategy (2014), North Coast Land and Resource Management Plan (2005), and seven First Nation Marine Plans. Ksi Lisims LNG is not expected to have an adverse effect on the overall objectives of these plans as currently ratified.</p>
Greenhouse Gas Emissions	<p>Recognizing that electrification of Ksi Lisims LNG will be a key aspect of the Proponents reaching a positive final investment decision on the Project, the requirements for the Proponents to adhere to the Net-Zero New Industry policy, the implementation of a net-zero plan, and the assumption that BC Hydro would be able to provide sufficient power to the Project the EAO is satisfied that should the Base Case scenario be achieved, Ksi Lisims LNG would not have significant adverse effects on greenhouse gas (GHG) emissions.</p> <p>However, despite this, there remains uncertainty around the timing of electrification, in which case the Alternative Case scenario may occur. In this situation, this would result in increased facility emissions and impact the Province’s ability to meet its emissions targets, should the Proponents not offset these additional emissions. Should the Alternative Case occur, the EAO is of the view this would result in potentially significant adverse effects on GHG emissions.</p>
Alternative Means of Carrying out Ksi Lisims	<p>The EAO concludes that the Proponents have adequately assessed alternative means for Ksi Lisims LNG and components of Ksi Lisims LNG design.</p>
Potential Changes to the Project Caused by the Environment	<p>The EAO concludes the effects of the environment would likely pose a low risk to Ksi Lisims LNG during construction and operations due to the engineering design of Ksi Lisims LNG to withstand the types of extreme weather events predicted in the region, and the low likelihood of severe seismic events occurring nearby during the life of the project.</p> <p>The EAO is satisfied that the effects of the environment would not have significant adverse effects on Ksi Lisims LNG.</p>
Requirements of the <i>Impact Assessment Act</i>	<p>In reaching its conclusions, the EAO considered the effects in federal jurisdiction under the <i>Impact Assessment Act</i> and determined that pollution to the marine environment and to boundary, international, or interprovincial waters are not anticipated. While the EAO concluded that adverse residual and cumulative federal effects are not significant for aquatic species, migratory birds, federal lands, and greenhouse gas emissions from marine shipping and supporting marine traffic, adverse residual and cumulative effects are expected to be significant to a low to moderate extent for fish and fish habitat.</p> <p>With respect to the Indigenous peoples of Canada, the EAO determined adverse residual and cumulative federal effects are not significant for physical and cultural heritage and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance. However, the EAO concluded that adverse residual and cumulative effects are significant to a low extent for the current use of lands and resources for traditional purposes and health, social or economic conditions.</p> <p>The EAO is of the view that Ksi Lisims LNG would hinder Canada’s ability to meet its environmental obligations to a low extent.</p> <p>The EAO is of the opinion that Ksi Lisims LNG would hinder Canada’s ability to meet its commitments in respect of climate change to a low extent; however, the implementation</p>

Other Assessment Matters	Conclusion
	of Ksi Lisims LNG’s net-zero plan should ensure that the Project complies with Canada’s longer-term commitments in respect of climate change.

## 8.0 KEY CONCERNS IDENTIFIED IN THE EAO’S ASSESSMENT OF EFFECTS

The matters, or topics, to be assessed were determined by the EAO, in consultation with the Technical Advisory Committee and the public, and through consensus seeking with the participating Indigenous nations, through the [Application Information Requirements](#) set out by the EAO for Ksi Lisims LNG. These assessments incorporate the factors set out in subsection 22(1) of the IAA and effects within federal jurisdiction, information submitted by the Proponents, advice from the Technical Advisory Committee and Community Advisory Committee, local information and concerns raised by the public, and Indigenous knowledge provided by the participating Indigenous nations. Key concerns, such as assessment matters, including how to identify, assess and manage potential environmental, economic, social, cultural and health effects, were considered following EAO’s [Effects Assessment Policy](#) guidance.

The remainder of this section summarizes the key themes that, due to their complexity and the level of concern from the Technical Advisory Committee, Community Advisory Committee, participating Indigenous nations and/or the public, became the main focus of the Ksi Lisims LNG environmental assessment.

[Appendix 2](#) provides the detailed assessment of potential effects of Ksi Lisims LNG on each of the key concerns, identifies mitigation measures, including the EAO’s recommended Key Mitigation Measures and Follow-Up Program under the IAA, discusses the key issues raised, and reaches conclusions on the significance of residual effects on each valued component and other required assessment matters, as required by [Section 25](#) of the Act and the factors set out in subsection 22(1) of the IAA.

### 8.1. Greenhouse gas emissions

The Proponents assessed two scenarios for the Project, a Base Case scenario for when the electricity from transmission line is available at the start of Operations; and an Alternative Case for when the electricity is supplied from temporary power barges for a period of up to five years if the connection to the transmission line is not complete at the start of the Operations phase. Under the Base Case, it is estimated that the Project would result in a total of 58,878 tonnes of CO<sub>2</sub>e per year (including emissions from land use change) during Construction and 252,635 tonnes of CO<sub>2</sub>e per year (direct and indirect emissions) during Operations. Under the Alternative Case, the Project would result in 212,110 tonnes of CO<sub>2</sub>e per year (including emissions from land use change) during Construction and 1,867,992 tonnes of CO<sub>2</sub>e per year (direct and indirect emissions) during Operations. The Proponents expect that direct greenhouse gas emissions during Decommissioning would be the same or lower than the construction emissions and conservatively estimated the emissions to be 45,381 tonnes of CO<sub>2</sub>e per year.

Under the *Climate Change Accountability Act*, the Province has committed to reducing the total provincial GHG emissions to 40 percent below 2007 levels by 2030, 60 percent by 2040, and 80 percent by 2050. Under the Base Case, Ksi Lisims LNG’s Operations will emit 0.59%, 0.89% and 1.68% of B.C.’s 2030, 2040, and 2050 emission reduction targets, respectively, before offset credits are considered. Additionally, the New Energy Action Framework requires all proposed LNG facilities in or entering the environmental assessment process to pass an emission test with a credible plan to be net zero by 2030. The Proponents submitted a Net-Zero Plan as part of the environmental assessment process which was subject to review by technical advisors and participating Indigenous nations.

In relation to the federal 2030 Emissions Reduction Plan targets, if Construction activities continue into 2030, GHG emissions would account for 0.003% of the target under the Base Case and 0.04% under the Alternative Case, inclusive of Project commissioning. If Operations begin in 2030, GHG emissions from the Project would represent 0.008% of the



target under the Base Case and 0.4% under Alternative Case, taking into account offset credits. Connection to BC Hydro grid under both scenarios would be through a transmission line. The 287 KV transmission line is expected to be approximately 114 to 127 kilometers in total length, consisting of up to 112 kilometers of overhead terrestrial alignment and approximately 15 to 25 kilometers of submarine alignment, depending on the routing.

As the connection to the BC Hydro transmission line and the timing of the connection plays a role in Ksi Lisims LNG's ability to meet the provincial and federal emission targets and the Project's ability to become net zero, Metlakatla First Nation, Lax Kw'alaams Band, Gitga'at First Nation, and Kitselas First Nation expressed concerns in this regard. The Proponents have suggested to work with First Nations to develop an offsetting program, to mitigate the emissions in case the connection to BC Hydro is delayed. The EAO has proposed Condition 12 (Greenhouse Gas Emissions and Net-Zero Plan) and Condition 19 (Project Electrification) to address Ksi Lisims LNG greenhouse gas emissions.

For further details on the assessment of effects to greenhouse gas emissions see [Appendix 12](#) (Greenhouse Gas Emissions).

## 8.2. Marine Shipping

As stated in the Revised Application, Ksi Lisims LNG would contribute to an additional 140 to 160 liquefied natural gas (LNG) carriers and 8-12 natural gas liquid (NGL) product carriers annually, which represents a 3-4 percent increase in the existing commercial vessel traffic, navigating along the marine shipping route. The existing marine infrastructure is primarily comprised of ports, small crafts harbours, marinas and moorage facilities, and aerodromes and seaplane bases. Port of Prince Rupert as one of the busiest ports in Canada, handles a variety of cargoes and manages ferry traffic. The marine waters of the region serve as marine navigation route for First Nations, commercial, industrial, and recreational users. The ecosystem, including river systems, are rich with spawning grounds. Salmon and trout are of importance to First Nations and many of the traditional harvesting areas are no longer accessible due to new technologies, government legislations, industrial and urban development and participation in the industrial and wage economies, settlement and resource harvesting by outsiders, and a shifting and diminished resource base.

The increase in marine shipping activities associated with Ksi Lisims LNG would have an effect on how First Nations can access the lands including spiritual sites within their territories. This sense of environmental dispossession affects their rights to self-determination and could be pathway to negative health effects. Change in aesthetic conditions, due to increased vessel traffic is another concern for First Nations. First Nations expressed that the project has the potential to alienate harvesting sites and that vessel wakes would dislodge marine vegetation and threaten the safety of harvesters. As the marine shipping route is described as mostly dominated by natural sounds, the increase in the number of vessels would alter the soundscape.

The marine shipping route is already impacted by existing vessel traffic and First Nations expressed concerns about the cumulative effects of increased marine shipping caused by Ksi Lisims LNG. The Proponents made revisions in the Revised Application to address the concerns about mitigation measures and data reliability.

In response to these concerns, the EAO proposed Certificate Condition 13 (Marine Transportation and Communication Plan) required from the Proponents. As part of the Construction Environmental Management Plan, the EAO proposed management plan to address the effects of noise levels in the marine environment and to also require the Proponents to mitigate the effects from project-induced noise impacts on community health and wellness. To address the effects of increased marine use on marine users and marine navigation, the EAO recommended a Key Mitigation Measure to IAAC aiming to address the marine navigation impacts for LNG carriers and NGL product vessel transiting the marine shipping route.

For further details on the assessment of effects from marine shipping see [chapter 18.9](#) (marine use) and [chapter 18.1](#) (acoustic).

### 8.3. Effects to Marine Resources

The Proponents outlined in the Revised Application that the Project is located in a relatively pristine area with limited human development except for some historical logging activities. The marine terminal Regional Assessment Area overlaps with several DFO designated important areas for fish and invertebrates, including eulachon, pollock, and tanner crab. The marine shipping Regional Assessment Area overlaps with six Ecologically and Biologically Significant Areas (EBSA) identified by DFO, including the Chatham Sound EBSA, which is designated for its physical characteristics, species assemblages (e.g., green sea urchins, Dungeness crab, shrimp), and use as fishing grounds for benthic invertebrate species. The main source of anthropogenic activity in the area is associated with Port of Prince Rupert with high volumes of ship traffic. The marine shipping open water assessment area overlaps with many DFO designated important areas as well as designated critical habitat for northern resident killer whales. The marine portion of the transmission line assessment area also overlap with many DFO designated important areas for marine fish and invertebrates including eulachon, pollock, and tanner crab.

Gitga'at First Nation, Lax Kw'alaams Band, Metlakatla First Nation, Kitselas First Nation, and Gitxaala Nation and technical advisors including DFO and Environment and Climate Change Canada expressed concerns over the impact of effluents, such as brine, on marine life by introducing harmful substances into the water and altering the water quality. The Proponents conducted an effluent model, and the results indicated the maximum predicted concentration of salinity maybe acutely toxic to sensitive aquatic life within 1 meter of the discharge location, which would be in contravention with the *Fisheries Act*. The Proponents also noted that the effluent model will continue to be refined as engineering designs are finalized and the results will be provided to support an application for a waste discharge authorization, which would require the Proponents to follow the B.C. Ministry of Environment and Climate Change Strategy (ENV)'s Technical Guidance.

Underwater noise caused by Construction activities has the potential to affect marine mammals and fish, including a variety of at-risk species, which are sensitive to acoustic disturbances. Gitxaala Nation, Gitga'at First Nation, Kitselas First Nation, Metlakatla First Nation, Lax Kw'alaams Band and technical advisors including DFO and Environment and Climate Change Canada were concerned that the underwater noise levels are expected to exceed the threshold for fish injury and mortality within 32 meters of the pile installation location. As the Project would contribute an additional 140 to 160 LNG carriers and 8 to 12 natural gas liquid products carriers, the noise from vessel movements is expected to exceed the threshold for marine mammal disturbance up to 11.5 km from the marine terminal. Increased vessel traffic would also lead to higher risk vessel strikes with marine mammals which can led to injury or death. DFO and Gitga'at First Nation expressed concerns about the risk of fish impingement and entrainment during the operation of the seawater intakes which may lead to injury or death. Uncertainty around the design of water intakes and its effects on impingement and entrainment of marine fish is another concern raised by DFO. The Proponents committed to design fish-friendly intake designs and to work with DFO and First Nations to ensure the effectiveness of the design.

The Project has the potential to negatively impact critical habitats for various marine species, which was expressed by DFO, Gitxaala Nation, Lax Kw'alaams Band, Metlakatla First Nation, and Environment and Climate Change Canada. The Proponents plan to implement habitat restoration projects, including a habitat offsetting plan to compensate for any habitat loss and establish conservation areas to protect critical habitats.

The EAO proposed Certificate Condition 9 (Construction Environmental Management Plan), requiring the Proponents to mitigate the effects of underwater noise on marine mammals and fish by maintaining underwater sound pressure to an acceptable level. The EAO has proposed a Key Mitigation Measure to IAAC to maintain peak underwater noise below threshold while pile driving and to consider noise transmission in the design of the marine terminal. The EAO proposed Condition 9 (Construction Environmental Management Plan) the Proponents to mitigate the increased risk of vessel strikes during construction and also recommended a Key Mitigation Measure to IAAC to have LNG vessels to reduce the risk of collision with marine mammals by reducing vessel speed, making adjustments to direction or both. The EAO also

recommended a Follow-up Program to IAAC aimed at addressing the risk of impingement and entrainment of fish when designing, installing and operating water intake structures. To respond to concerns about habitat alteration and disruption, the EAO has recommended a Key Mitigation Measure to IAAC which would require the Proponents to conduct high-risk activities such as marine infilling within windows of least risk. The Proponents would also need to address the effects of the Project activities on alteration, disruption, or destruction of marine species habitat through a habitat offsetting plan to support the *Fisheries Act* Authorization requirements.

For further details on the assessment of effects to marine resources see [chapter 18.5](#) (Marine Resources).

## 8.4. Socioeconomic effects

Employment in the northwest region of B.C. is largely dependent on forestry, mining, transportation, warehousing, and construction related to major infrastructure projects. Terrace and Prince Rupert serve as the service, supply, and population centers for the region. Both cities' populations account for approximately one third of the employment and economy Valued Component Local Assessment Area's total population of 37,700, as of 2021. As the capacity of infrastructure and service providers is typically sized and funded to match the residential population, a sudden increase in the temporary population of an area can result in a strain on such providers.

Construction of Ksi Lisims LNG is expected to last approximately three to four years and is anticipated to employ an average of 400 to 450 individuals, reaching a peak of approximately 800 for roughly one year. During Construction, the Ksi Lisims LNG workforce would be housed in a self-contained floatel. Following commissioning, Ksi Lisims LNG would be in operation for a minimum of 30 years, with a permanent workforce of between 150 and 250 individuals on-site. These workers would be living in an accommodation building that would be located on the northern tip of Pearse Island. Every three to five years, during the scheduled maintenance a "turnaround workforce" of approximately 75 to 150 additional individuals would be on-site. Shuttle services would serve to limit the Construction and Operations workforces' time and impact in onshore communities.

Influx of workers coming into the area can have a number of negative effects and is a source of concern for many First Nations, Northern Health, the City of Terrace, the City of Prince Rupert, and members of the public. Commenters linked transient workforces and industry-related population growth to an array of adverse social effects. This would also cause a potential increase in demand on the region's health and medical infrastructure and services. Increases in population and economic activity throughout the region tends to result in Terrace receiving a disproportionate share of strains on the city's already-strained social, emergency, and medical infrastructure and services. Influx of workers would also effect affordable housing accessibility. This effects Indigenous members and other subpopulations more severely.

Gitga'at First Nation, Kitsumkalum First Nation, the City of Terrace, and members of the public raised concerns about the potential that the benefits and the adverse effects of Ksi Lisims LNG could be distributed disproportionately among individuals in neighbouring communities with Terrace receiving a disproportionate share of strains.

In consideration of the concerns raised, the EAO proposes a Socioeconomic Management Plan, a Transportation Management Plan to assess traffic impacts, a Health and Medical Service Plan, and the Proponents participation in regional cumulative effects initiatives and community feedback process as Certificate conditions.

For further details on the assessment of effects to socioeconomic effects see [chapter 18.12](#) (employment and economy), [chapter 18.10](#) (human health), [18.13 \(infrastructure and Services\)](#), and [18.11 \(community health and wellness\)](#).

## 9.0 THE EAO'S PROPOSED CONDITIONS

As part of the recommendations of the CEAO to the Ministers, the EAO developed a proposed Certificate. This Certificate, if issued, would allow Ksi Lisims LNG to proceed to permitting and other authorizations. If the Ministers decide to issue a Certificate, it will include a certified project description and table of conditions. The certified project description outlines the components and activities of a project that are approved by the Certificate. The table of conditions sets out legally

binding requirements (or, conditions) to which the Holder must adhere throughout the life of the Project. These conditions describe ‘how’ a project must be implemented. Some of the conditions are procedural requirements common to all certified projects; others are project-specific and intended to prevent or reduce adverse effects. Conditions were developed following the [EAO’s Certificate Policy](#).

If a Certificate is issued, the Holder must design, build, operate and decommission Ksi Lisims LNG in accordance with the Certificate. The EAO’s Compliance and Enforcement branch would then become responsible for the verification and enforcement of the requirements in the Ksi Lisims LNG Certificate. The Compliance and Enforcement branch of the EAO conducts compliance inspections and, where required, uses enforcement to ensure that projects are compliant with the certificate conditions. For more information on compliance and enforcement, see the [EAO’s website](#).

For Ksi Lisims LNG, the EAO has proposed nine standard conditions which are common to all certified projects (see box at the end of this section) and thirteen project-specific conditions to prevent or reduce adverse effects identified through the environmental assessment. The following are Ksi Lisims LNG specific conditions and their purpose (full details will be included in the Certificate, if issued):

- **Condition 10 (Public Information):** This condition would require the Holders to share information regarding Ksi Lisims LNG with the public through a dedicated Project website, a phone line, and newspaper notice, or other equally effective media, if appropriate. Through these mediums, the Holder would share information such as contact information, project updates and engagement opportunities, results of monitoring programs, information about safety, and instructions for how to provide a complaint or comment.
- **Condition 11 (Community Feedback Process):** This condition would require the Holders to enable and collect public feedback, and to create a process for managing and responding to public comments and questions, and to develop reports in consultation with First Nations and Nisga’a Nation summarizing community feedback and engagement statistics and data which would be shared with specified groups and agencies.
- **Condition 12 (Greenhouse Gas Emissions and Net-Zero Plan):** This plan would require the Holders to implement its plan for achieving net-zero energy emissions by 2030 and update the plan in 2028 and again every five years in consultation with the Climate Action Secretariat, First Nations, and Nisga’a Nation.
- **Condition 13 (Marine Transportation Communication Plan):** This condition would require the Holders to develop a plan on Marine Transportation Communication in collaboration with First Nations, Nisga’a Nation, Haida Nation, the Canadian Coast Guard (CCG), and Transport Canada. The plan should outline how the Holders will communicate with marine users, First Nations and Nisga’a Nation about project activities and LNG shipping schedules, manage and respond to reports of LNG-related concerns, and describe the grievances process for First Nation and Nisga’a marine users who have been impacted by Ksi Lisims LNG-related marine transportation.
- **Condition 14 (Health and Medical Services Plan):** This plan would require the Holders to develop and implement a plan for how health and medical services would be provided to workers, based on the most up to date Northern Health guidance and reports, as well as knowledge from Nisga’a and participating Indigenous nations. The plan would address communicable disease and infection management and outbreak prevention, minimizing impacts to local non-urgent care services by encouraging workers to seek medical care in their home communities or in camps, and working with local health service providers on patient care and transfer, data collection, and reporting.
- **Condition 15 (Gender and Cultural Safety Plan):** This plan would require the Holders to develop a plan for gender and cultural safety applicable to all workers of the Project. The plan would consist of three components: a gender-based violence prevention program, including required training and a worker code of conduct, a confidential reporting system for individuals to report complaints of sexual exploitation, abuse, harassment, and gender-based violence associated with the Project, and a response mechanism to address how the Holders will respond.

- **Condition 16 (Worker Health and Wellness):** This condition would require the Holders to provide accessible medical and mental health services on-site, including sexual health support and resources and substance use training and support.
- **Condition 17 (Socioeconomic Management Plan):** This plan would require the Holders to produce a plan addressing management of potential Project-related impacts to local communities and their services, infrastructure and economy. The plan would describe regional employment strategies and training practices, measures to manage and reduce impacts associated with increased demand on housing, healthcare services, and outdoor recreation environments, and would facilitate engagement with local communities.
- **Condition 18 (Road Transportation Management Plan):** This plan would require the Holders to produce a plan in consultation with First Nations, Nisga'a Nation, and the Ministry of Transportation and Infrastructure (MOTI) to evaluate how Ksi Lisims LNG activities would affect vehicle traffic. The plan would include strategies for managing impacts to local services and infrastructure that may result from increased traffic, procedures for addressing transportation effects, emergency response plans, and restrictions on worker transportation methods.
- **Condition 19 (Project Electrification):** This condition requires the Holders to connect to the BC Hydro power grid to provide sufficient electrical capacity for Project Operations. While the Holders are permitted to use power barges to meet their electrical power needs, the Holders must discontinue the use of power barges within 30 days of receiving sufficient electrical capacity from BC Hydro.
- **Condition 20 (Transmission Line Development Report):** This condition would require Holders to produce a report confirming baseline conditions to support future regulatory authorizations for the development of the transmission line, including an outline of the results from the pre-construction surveys on the final transmission line route, confirming baseline conditions of sensitive areas like wetlands, aquatic and wildlife habitats, and archaeological sites that may be affected by transmission line development.
- **Condition 21 (Regional Cumulative Effects Initiatives):** This condition requires the Holders to participate (if invited) in any social and economic management committees set up by provincial or local governments to address regional socioeconomic and environmental issues. This would also include participating in airshed monitoring groups or programs established by the ENV and any relevant federal and provincial marine shipping initiatives intended to address the effects of marine shipping in the region.
- **Condition 22 (Marine Water Quality Baseline Reporting):** This condition requires the Holder to develop, conduct, and report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment. The Holders must also outline additional mitigation measures that will be implemented if the report identifies any additional effects not identified during the environmental assessment of the Project.

**The following conditions are standard in most Environmental Assessment Certificates and proposed for inclusion in the Ksi Lisims LNG Certificate:**

**Condition 1 (Document Review):** sets out timelines for EAO document reviews and requirements for plan implementation.

**Condition 2 (Document Updates):** allows the Holder or the EAO to require the Holder to make changes to any document if it is not meeting objectives, intended effects or to be consistent with changes in industry best practice or technology.

**Condition 3 (Document Development):** requires all documents to include purpose, roles and responsibilities, schedules, plans for evaluating mitigation effectiveness, schedules for reporting, schedules for document updates, and adaptive management.

**Condition 4 (Consultation):** sets out the details of what consultation entails. This includes providing a written record of comments received and explanation of how they have been considered and addressed.

**Condition 5 (Compliance Verification and Reporting):** allows the EAO to request information for the purposes of compliance inspection and verification and sets out requirements for compliance self-reports for Holders.

**Condition 6 (Project Status Notification):** requires the Holder to provide project status notification, primary contact details, and notice when primary contact for Ksi Lisims LNG changes.

**Condition 7 (Compliance Notification):** requires the Holder to notify the EAO in the event of any instances where it is has not fully complied with the Certificate.

**Condition 8 (Independent Environmental Monitor):** requires an Independent Environmental Monitor; includes a terms of reference that sets out the expectations and requirements for the Independent Environmental Monitor. This monitor could be an Indigenous monitor.

**Condition 9 (Construction Environmental Management Plan):** addresses standard issues with the potential to cause impacts to the environment during construction, including topics such as access management, a chance finds procedure for archaeological findings, management of invasive plants, and erosion and sediment control, among other topics.

## 10.0 KSI LISIMS LNG'S CONTRIBUTION TO SUSTAINABILITY

### 10.1. Introduction

Section 2 of the Act describes that the EAO's purpose is to promote sustainability by protecting the environment, fostering a sound economy, and the well-being of British Columbians and their communities. Section 29 of the Act describes that the CEAO must provide recommendations to the ministers for decision regarding whether a project is consistent with the promotion of sustainability. The purpose of this section is to provide the information to support this recommendation. The extent to which Ksi Lisims LNG contributes to sustainability, as required under paragraph 22(1)(h) of the IAA, is assessed in [Appendix 15](#).

### 10.2. Protecting the Environment

Ksi Lisims LNG would pose some challenges to the promotion of sustainability due to the proposed project activities, and its terrestrial and marine footprints. The EAO acknowledges that the Proponents of Ksi Lisims LNG have outlined a credible plan to be net zero by 2030 under a Base Case scenario and will operate using electricity provided by BC Hydro. However, the Project has the potential to use power barges during the first five years of operations depending on the timing of connection to the BC Hydro grid, under an Alternative Case scenario. The Alternative Case scenario would generate an additional 1.8 Mt CO<sub>2</sub>e of emissions, annually.

Project activities during Construction and Operation may affect marine resources through underwater noise and release of effluents that may be acutely toxic to aquatic life. In response, the Proponents have committed to refine their engineering and modelling to ensure compliance with respective regulations during subsequent permitting processes.

Through the proposed Certificate conditions, the Proponents would be required to develop management plans with the purpose of mitigating, monitoring and adaptively managing the effects of the Project to the environment, including to the air, water, vegetation, wildlife, freshwater fish, and marine resources. The EAO is proposing several Certificate conditions to help manage effects to the environment, including Condition 9 (Construction Environmental Management Plan), Condition 12 (Greenhouse Gas Emissions and Net-Zero Plan), Condition 19 (Project Electrification), Condition 21 (Regional Cumulative Effects Initiatives), and Condition 22 (Marine Water Quality Baseline Reporting).

As a substituted environmental assessment, Ksi Lisims LNG is subject to regulatory approvals from both the provincial and federal governments. As part of the environmental assessment process the EAO and IAAC has developed the [Joint Permitting/Regulatory Coordination Plan](#) to support an effective regulatory path for the Ksi Lisims LNG by including key federal, provincial, and Nisga’a Nation regulatory instruments including permits, licenses and authorizations that may be required.

The Ksi Lisims LNG would fall within the bounds of 12 existing provincial land use plans. Land use plans set high-level strategic direction which guides sustainable resource stewardship and management of provincial public land and waters. The Proponents assessed the consistency of the Project with these 12 plans and the EAO concluded that the Ksi Lisims LNG is not expected to have an adverse effect on the overall objectives of these plans as currently ratified

Relevant chapters: [Chapter 18.2 \(air quality\)](#), [Chapter 18.9 \(marine use\)](#), [chapter 18.5](#) (marine resources), [Chapter 18.6 \(freshwater fish and fish habitat\)](#), [chapter 18.7](#) (wildlife and wildlife habitat), [Chapter 18.8 \(vegetation and wetlands\)](#), [Appendix 12](#) (greenhouse gas emissions), [Appendix 11](#) (consistency with land use plans), and [Appendix 5 \(Detailed First Nation Assessments\)](#).

### 10.3. Fostering a Sound Economy

An important part of the Government of B.C.’s commitment to reconciliation with First Nations, as set out in the *Declaration on the Rights of Indigenous Peoples Act* (Declaration Act) Action Plan for 2022 – 2027, is the goal to ensure that First Nations have economic opportunities and benefit from the lands and resources in their territories<sup>7</sup>. One of the Declaration Act action plan’s themes of action is defined as “Social, Cultural and Economic Well-Being” which focuses on Indigenous Peoples in B.C. full enjoyment and exercise of their distinct rights to maintain, control, develop, protect and transmit their [cultural heritage](#), [traditional knowledge](#), [languages](#), food systems, sciences and technologies. These actions are supported by initiatives that promote connection, development, access and improvement, as well as full participation in all aspects of B.C.’s economy. The Government of B.C., Government of Canada and Nisga’a Nation through the Nisga’a Final Agreement recognize Nisga’a lands and facilitates joint economic initiatives in the development of the Nisga’a Nation natural resources<sup>8</sup>. With the provisions of economic development opportunities and reconciliation as part of the Declaration Act Action Plan, Ksi Lisims LNG would serve as a means towards reaching this goal, since Nisga’a Nation is one of the proponents of Ksi Lisims LNG and also through providing training and employment opportunities for the community.

Ksi Lisims LNG would provide residents from local, regional and First Nation communities over 30 years of employment opportunities and provide them with training opportunities. The Project will pay sales and property taxes to various governments contributing to local, regional and provincial tax bases. The Proponents committed to prioritize hiring local, regional and Indigenous workers, businesses and contractors. The Proponents also plan to develop and implement procurement and contracting strategies to facilitate economic participation by local, regional, B.C., and Canadian suppliers, contractors, and service providers. The Proponents would identify potential shortages of workers with specific skill requirements and training and work with local and regional training and educational facilities and communities to increase opportunities for Indigenous and local community members to obtain training. Current and future generations would benefit from increased employment opportunities, additional labor income as well as contracting opportunities for local and regional businesses. Additionally, the EAO is proposing Certificate Condition 17 (Socioeconomic Management Plan) to adaptively manage potential direct socioeconomic effects on services and infrastructure delivered by provincial agencies, local governments, First Nations and Nisga’a Nation. The EAO acknowledges that these opportunities would not be distributed among different First Nations and local population in the region equally, however the EAO anticipates that

<sup>7</sup> [declaration act action plan.pdf \(gov.bc.ca\)](#)

<sup>8</sup> <https://www.nisqaanation.ca/government/nisqaa-treaty/>

the creation of steady, well-paying jobs in the region during the lifetime of Ksi Lisims LNG would reduce population drift from the region and would bring new professionals attracted to opportunities. Since the Project is estimated to operate for at least 30 years, the EAO anticipates that unemployment would potentially increase after the decommissioning of the facility.

Relevant chapters: [chapter 18.12](#) (employment and economy), [chapter 18.11](#) (community health and wellness), [Appendix 10](#) (current and future generations), [Appendix 11](#) (consistency with land use plans), and [Appendix 5](#) (Detailed First Nation Assessments).

#### 10.4. The Well-being of British Columbians and Their Communities

The Project would lead to a population growth in the region and that would cause more pressure on the already strained medical infrastructure. The EAO considered the residual and cumulative effects of major projects in the region on the community health and wellness Valued Component, as well as the potential positive and adverse effects to communities near the Project site, including Indigenous communities.

The EAO concluded that Ksi Lisims LNG will not contribute to significant residual adverse effects to human health, noise, infrastructure and services, and current and future generations. To mitigate potential effects of Ksi Lisims LNG on housing affordability and to local health and emergency services due to the increases in employees associated with Ksi Lisims LNG, the EAO has proposed Condition 14 (Health and Medical Services Plan), and Condition 16 (Worker Health and Wellness).

The EAO determined that there are adverse cumulative effects to community health and wellness Valued component, as the effects of Ksi Lisims LNG would interact with the effects of other past, present, and reasonably foreseeable future projects. This is particularly the case when considering the potential for the effects of Ksi Lisims LNG to community health and wellness contributing to an interaction between the effects from multiple projects that are likely to be occurring in the region at the same time. Given the interaction between effects in consideration with the current context in the region and the resiliency to additional demands, the EAO concludes the cumulative effects to community health and wellness to be significant. The EAO recognizes, however, that Ksi Lisims LNG's contribution to these cumulative effects would be limited, due to the Project's remote location, and the EAO's conditions which include requirements for the Proponents to participate in regional cumulative effects initiatives.

Ksi Lisims LNG would contribute to the well-being of its employees individually through a focus on the development and implementation of gender equity and diversity policies focusing on Nisga'a Nation members, local and Indigenous persons, and women to increase employment opportunities among underrepresented populations. The EAO also proposed a Certificate Condition 15 (Gender and Cultural Safety Plan) requiring the Proponents to develop a gender and cultural safety plan aimed at gender-based violence prevention and response programs.

The economic and employment benefits outlined in the previous section would also contribute to the wellbeing of communities in the region, helping to deliver the jobs, opportunities, and services that British Columbians need to support their families and communities. Moreover, the Proponents have also committed to address effects on infrastructure and services during Construction and Operation phases of the Project through providing emergency services (such as police, ambulances, and fire protection), use of floatels during Construction, and waste management measures. Ksi Lisims LNG would develop Indigenous Engagement and Collaboration plans to maintain a positive long-term relationship with the First Nations in the region. The Proponents are committed to develop trainings aimed at promoting inclusivity, ethics and respectful workplace as well as cultural awareness. The Proponents would sponsor initiatives aimed at encouraging Indigenous and other local residents to complete high school. A community feedback tool or process would be developed and implemented to receive and address community suggestions, concerns, and complaints.

Relevant chapters: [chapter 18.12](#) (employment and economy), [chapter 18.13](#) (infrastructure and services), [chapter 18.11](#) (community health and wellness), [Appendix 10](#) (current and future generations), [Appendix 11](#) (consistency with land use plans), and [Appendix 5](#) (Detailed First Nation Assessments).



## 10.5. Sustainability Conclusion

Considering the above principles, the EAO is of the view that:

- Provincial requirements for Ksi Lisims LNG established through proposed Certificate conditions and subsequent permitting processes would minimize adverse effects on the environment;
- Ksi Lisims LNG would foster a sound economy by providing continuing and new employment, contracting, and training opportunities, by generating higher wages in the region, and would contribute financial support to First Nations and taking steps towards the goal of economic reconciliation with Nisga'a Nation; and
- While Ksi Lisims LNG would have potential negative effects on the region's infrastructure including the already strained medical infrastructure, it would also contribute to the well-being of British Columbians and their communities, including First Nations communities, by managing the effects of Ksi Lisims LNG on topics important to First Nations and local communities, by capacity building within First Nations communities and by ensuring Nisga'a Nation perspectives and interests are integrated in construction, operation and decommissioning of the facility.

The EAO has administered the Ksi Lisims LNG environmental assessment to allow for a clear understanding of Ksi Lisims LNG's contribution to the promotion of sustainability. The EAO notes that, while Ksi Lisims LNG is overall expected to have a positive contribution to sustainability, uncertainty remains related to some mitigation measures and interactions between Valued Components. Should a Certificate be issued for Ksi Lisims LNG, the EAO and other regulatory agencies will provide oversight through Certificate conditions and permit requirements. Considering all these factors, the EAO recommends that Ksi Lisims LNG is consistent with the promotion of sustainability in B.C.

## 11.0 CONCLUSIONS

Based on:

- Information contained in the Proponents Revised Application, as well as supplemental information provided by Indigenous peoples, Technical Advisory Committee, and Community Advisory Committee during review of the Application;
- The Proponent's and the EAO's and the IAAC's consultation and engagement with Indigenous peoples, provincial, and local government agencies, as well as the public;
- Comments received during the Ksi Lisims LNG environmental assessment made by Indigenous peoples, provincial, federal, and local government agencies as members of the EAO's Technical Advisory Committee, as well as the Proponents and the EAO's responses to those comments;
- Comments received during the Ksi Lisims LNG public comment periods and from members of the Community Advisory Committee, and the Proponents responses to those issues;
- Issues raised by Indigenous peoples regarding the potential effects of Ksi Lisims LNG on their Indigenous Interests, as well as the Proponents response and best effort to address those issues;
- Issues raised by Indigenous peoples and Community Advisory Committee that were outside of the scope of Ksi Lisims LNG, and the Proponents approaches to addressing those issues;
- The design of Ksi Lisims LNG as specified in the EAO's proposed Certified Project Description (Schedule A of the Certificate, if issued) which authorizes Ksi Lisims LNG's components and activities that may occur;
- Mitigation measures identified in the EAO's proposed Table of Conditions (Schedule B of the Certificate, if issued) to be implemented by the Proponents during all phases of Ksi Lisims LNG;

- The EAO’s recommended mitigation measures and Follow-up Programs under the IAA intended to inform federal conditions that would be implemented by the Proponents during all phases of Ksi Lisims LNG; and
- Permitting and other regulatory requirements that Ksi Lisims LNG would be subject to if it receives a Certificate.

Considering Indigenous peoples’ views of Ksi Lisims LNG including that:

- *[to be updated when the views of First Nations are received]*

The EAO is satisfied that:

- The environmental assessment process has adequately identified and assessed potential adverse environmental, economic, social, cultural and health effects of Ksi Lisims LNG, having regard to the proposed conditions set out in the Table of Conditions (Schedule B to the Certificate, if issued);
- Ksi Lisims LNG is expected to result in positive residual effects to regional employment, regional business and regional economy; and these positive effects have been maximized to the extent possible;
- Other assessment matters have been adequately assessed including: risks and uncertainties associated with effects, interactions between effects, the risks of malfunctions and accidents, disproportionate effects on distinct human populations, effects on biophysical factors that support ecosystem functions, effects on current and future generations, contributions to sustainability, consistency with land use plans, greenhouse gas emissions, alternative means for carrying out Ksi Lisims LNG, and potential changes to Ksi Lisims LNG that may be caused by the environment;
- Consultation with provincial and federal departments, local governments and the public has been adequately carried out;
- Issues identified by the Technical and Community Advisory Committees, as well as members of the public which were within the scope of this environmental assessment, were adequately and reasonably addressed during Application Review;
- Ksi Lisims LNG would result in adverse residual or cumulative effects to environmental, social, cultural, and health components, but with the application of mitigation measures and legally binding conditions, these effects would not be significant, with the exception for significant adverse cumulative effects to community health and wellness;
- Provincial requirements for Ksi Lisims LNG established through proposed Certificate conditions and subsequent permitting processes would minimize adverse effects on the environment;
- Ksi Lisims LNG would foster a sound economy by providing continuing and new employment, contracting, and training opportunities, by generating higher wages in the region, and would contribute financial support to First Nations and taking steps towards the goal of economic reconciliation with Nisga’a Nation;
- While Ksi Lisims LNG would have potential negative effects on the region’s infrastructure including the already strained medical infrastructure, it would also contribute to the well-being of British Columbians and their communities, including First Nations communities, by managing the effects of Ksi Lisims LNG on topics important to First Nations and local communities, by capacity building within First Nations communities and by ensuring Nisga’a Nation perspectives and interests are integrated in construction, operation and decommissioning of the facility;
- Practical means have been identified to prevent or reduce adverse effects, and these are included as appropriate in the Table of Conditions (Schedule B to the Certificate, if issued);

The EAO also notes that consultation with First Nations will be ongoing during the remainder of the environmental assessment process, including engagement on First Nation assessments, conditions, and recommended federal Mitigation

Measures under the IAA. This work includes engagement on First Nation’s views on seriousness of effects, and further dialogue on the sufficiency of proposed mitigation and accommodation measures. The EAO continues efforts to seek consensus with First Nations on the assessment of project effects to Indigenous Interests and proposed provincial conditions and federal Mitigation Measures under the IAA.

## 12.0 NOTIFICATIONS OF CONSENT OR LACK OF CONSENT BY PARTICIPATING INDIGENOUS NATIONS

One of the EAO’s purposes is to support reconciliation with Indigenous peoples in B.C. by recognizing the inherent jurisdiction of First Nations and their right to participate in decision making in matters that would affect their rights, through representatives chosen by themselves. In fulfillment of this purpose, it is an objective of the environmental assessment process that participating Indigenous nations have the opportunity to make informed decisions regarding consent in relation to a proposed project in accordance with their own laws and traditions. This is an expression of their right to self-determination and self government.

Under the Act, a participating Indigenous nation may choose to provide a notification of consent or lack of consent to the issuance of an environmental assessment certificate and reasons for that consent or lack of consent. Provincial decision-makers are required by the Act to consider these notifications of consent or lack of consent along side recommendations made by the CEAO when making a decision on whether or not to issue an environmental assessment certificate.

*[to be updated following notifications being received]*

## 13.0 APPENDIX 1 - THE ENVIRONMENTAL ASSESSMENT PROCESS

### 13.1. Early Engagement

The Early Engagement phase is the first phase of the provincial environmental assessment process and is an important preparatory stage during which meaningful conversations can begin about a proposed project with the proponent, Indigenous peoples, the public, local governments, provincial and federal government agencies, and other stakeholders to identify potential interests, issues and concerns early on in the process. The information gathered during the Early Engagement phase informs the development of the Initial Project Description and Detailed Project Description and may also inform subsequent phases of the environmental assessment. IAAC and the EAO worked cooperatively in a coordinated process for the initial phase of the Project's review in accordance with the [Cooperation Agreement](#), and in support of the principle of "one project, one assessment."

The Ksi Lisims LNG [Initial Project Description and Engagement Plan](#) was submitted by the Proponents to the EAO on July 5, 2021, under the *Environmental Assessment Act* (the Act). On August 6, 2021, the EAO submitted a request to the IAAC that the Government of B.C. conduct a single environmental assessment for Ksi Lisims LNG that meets the legislative requirements of both B.C. and Canada should a federal impact assessment be required under the *Impact Assessment Act* (IAA).

During the Early Engagement phase, IAAC and the EAO requested input from the public, potentially affected Indigenous peoples, and technical advisors from provincial and federal government agencies, local governments, and health authorities to understand their preferred means of engagement and to gather their initial interests, concerns, questions, feedback, and knowledge. As part of the public comment period, IAAC also invited comments from the public and Indigenous peoples on B.C.'s request that the conduct of the federal impact assessment be substituted to the Province. Comments received in relation to the substitution request were considered by the federal Minister of Environment and Climate Change in making the substitution decision (as per the IAA). To support engagement and feedback on the Initial Project Description, the EAO hosted two public virtual open houses and held meetings and teleconferences with technical advisors and potentially affected First Nations prior to and during the Early Engagement phase. IAAC posted a summary of the Initial Project Description in English and French to the [Canadian Impact Assessment Registry](#).

Pursuant to Section 13(5) of the Act, the EAO and IAAC's [Joint Summary of Issues and Engagement](#) was provided to the Proponents on October 14, 2021, setting out a summary of comments received on the Initial Project Description, a description of [the public comment period](#) including a summary of what the EAO heard during the Early Engagement Phase from the public, a list of technical advisors, and a list of the First Nations who submitted notice under Section 14(1) of the Act to be participating Indigenous nations.

Following IAAC's [Guide to Preparing an Initial Project Description and a Detailed Project Description](#) and the EAO's [Early Engagement Policy](#), the Proponents provided a draft Detailed Project Description, including a response to the Joint Summary of Issues and Engagement, that met both federal and provincial requirements for Ksi Lisims LNG on February 2, 2022. This was reviewed by the EAO, IAAC, participating Indigenous nations, First Nations, Métis Nation B.C., local governments and provincial government agencies, and comments were provided to the Proponents. On April 25, 2022, the Proponents filed a final Detailed Project Description for Ksi Lisims LNG, which formally began the Readiness Decision Phase. On March 17, 2023, the Proponents formally submitted the final Detailed Project Description to IAAC so that the IAAC could make a decision on whether or not an impact assessment is required for Ksi Lisims LNG could be determined. The Proponents provided an updated Detailed Project Description to the EAO concurrently with providing it to IAAC as part of the federal process. The Proponents [outlined the changes to the Detailed Project Description](#) were made for clarity and to meet requirements of the IAA. The EAO posted the [updated Detailed Project Description](#) to the EAO's EPIC website. On March 27, 2023, IAAC accepted the Detailed Project Description and response to Joint Summary of Issues and Engagement.

## 13.2. Readiness Decision

Under Section 16 of the Act, the CEAO determines whether a project should proceed to an environmental assessment that evaluates the effects of the project or should be referred to the Minister of Environment and Climate Change Strategy with a recommendation that the project be exempted from the requirement to obtain a Certificate, that the assessment be conducted by another assessment body (such as a review panel), or may not proceed as proposed. This is referred to as the “Readiness Decision.” There are four options for this decision: a requirement to revise the Detailed Project Description, the exemption of the project from the requirement to obtain a Certificate, the termination of the project, or the project can proceed to an environmental assessment.

The EAO sought advice from the technical advisors, including local governments, health authorities, provincial, and federal government agencies, on the sufficiency of the Detailed Project Description and the recommendation of the EAO on the Readiness Decision. The EAO sought consensus on the recommendation for the Readiness Decision with the participating Indigenous nations. On March 16, 2023, the CEAO determined that Ksi Lisims LNG could proceed to an environmental assessment. This decision was documented in the [Readiness Decision materials](#), including a report and reasons.

On March 27, 2023, IAAC decided that an impact assessment is required in accordance with Subsection 16(1) of the IAA for Ksi Lisims LNG and posted the [Notice of Impact Assessment Decision with Reasons](#) to the Canadian Impact Assessment Registry. This decision by IAAC was made on the basis that Ksi Lisims LNG may cause adverse effects within federal jurisdiction, including non-negligible adverse changes to fish and fish habitat, marine mammals, marine plants, migratory birds, federal lands, as well as the health, social, economic and environmental conditions of Indigenous Peoples. Ksi Lisims LNG may also adversely impact the rights of Indigenous Peoples.

On July 21, 2022, Lax Kw’alaams Band requested the initiation of dispute resolution under Section 5 of the Act for the pending readiness decision for Ksi Lisims LNG. The dispute resolution process concluded on February 16, 2023, with the submission of a [Dispute Resolution Final Report](#) by the dispute resolution facilitator, who was mutually selected by the parties of the dispute.

On April 6, 2023, the federal Minister of Environment and Climate Change [approved the EAO’s request for substitution](#). IAAC provided guidance and information directly to the EAO regarding the substituted process and federal requirements under the IAA.

## 13.3. Process Planning

The Readiness Decision to proceed to an environmental assessment then initiated the legislated 120-day Process Planning phase of the environmental assessment for Ksi Lisims LNG. During Process Planning, the EAO established a Technical Advisory Committee (see [section 5.1](#) of the Assessment Report), established a Community Advisory Committee (see [section 5.2](#) of the Assessment Report) and developed the following documents that set the scope, procedures, methods, and timelines for the environmental assessment of the proposed Ksi Lisims LNG project:

- The Process Order, including the Assessment Plan, Scope of Proposed Project and Environmental Assessment, and Application Information Requirements; and,
- The Joint Permitting/Regulatory Coordination Plan.

During the Process Planning phase, the EAO sought feedback on these draft Process Planning documents from participating Indigenous nations, the Technical Advisory Committee, and the public through a [public comment period](#), which also included three open houses (including one virtual and two in-person). The EAO then collected all the feedback received on the draft Process Planning documents, sought consensus with participating Indigenous nations, and issued the final [Process Order](#) and [Joint Permitting/Regulatory Coordination Plan](#) on July 13, 2023, to the Proponents. The EAO also developed a [Summary of Engagement – Process Planning Phase](#) document with more details.

### 13.4. Application Development and Review

During Application Development, the Proponents sought input from environmental assessment participants, including Indigenous peoples, to develop the Application with the intention to resolve issues early in the process. The Technical Advisory Committee, participating Indigenous nations, and First Nations engaged in the environmental assessment had the opportunity to review early information, including existing conditions reports, technical data reports and modelling plans by the Proponents. The Technical Advisory Committee, participating Indigenous nations, and other First Nations engaged in the environmental assessment had an opportunity to provide early comments to the Proponents on the information that would be included in the Application.

The Proponents submitted the Application to the EAO on October 16, 2023. During Application Review, the EAO, IAAC, participating Indigenous nations, the Technical Advisory Committee, and the Community Advisory Committee reviewed the Application. The Application was subject to one round of review by the public and the Community Advisory Committee and multiple rounds of review by the EAO, IAAC, participating Indigenous nations, and the Technical Advisory Committee were completed on the Application, including updated Application sections and the [updated transmission line assessment area supplemental information](#) provided by the Proponents. The EAO also held a [public comment period](#) and three open houses during this time, including one virtual and two in-person open houses.

Following the 180-day legislated time period for Application Review, on April 10, 2024, the EAO provided a [Notice Regarding Application Review](#), which included an overview of the issues and concerns raised during Application Review and direction from the EAO to the Proponents on additional information or revisions to include in the Revised Application.

The Proponents then continued to work on the resolution of issues raised during Application Review with the Technical Advisory Committee, participating Indigenous nations and First Nations engaged in the environmental assessment and to respond to the direction provided in the Notice. On July 12, 2024, the Proponents submitted the [Revised Application](#). The EAO reviewed the Revised Application and sought consensus with the participating Indigenous nations and accepted the Revised Application on September 3, 2024, for assessment.

### 13.5. Effects Assessment and Recommendation

Following the EAO's acceptance of the Revised Application, the Effects Assessment phase began. During this phase, the EAO completed its assessment and developed a draft Assessment Report (this Report). This assessment considered the potential effects to all matters listed under [Section 25](#) of the Act and the factors set out in subsection 22(1) of the IAA. The EAO also developed a proposed Certificate with conditions for the provincial Ministers' consideration when deciding whether to issue a Certificate. The EAO coordinated with IAAC during this phase so that IAAC could develop draft potential federal conditions to be considered for the federal Decision Statement. All the EAO documents have considered the input received through engagement with participating Indigenous nations, First Nations, Métis, the Technical Advisory Committee, the public, and the Community Advisory Committee.

The EAO completed a detailed assessment of effects on the valued components, Indigenous Interests, and other assessment matters, as described under [Section 25](#) of the Act. The matters, or topics, to be assessed had been determined by the EAO, in consultation with the Technical Advisory Committee and the public, and through consensus seeking with the participating Indigenous nations, through the [Application Information Requirements](#) set out by the EAO for Ksi Lisims LNG during the Process Planning phase. These assessments incorporated information submitted by the Proponents, advice from the Technical Advisory Committee and Community Advisory Committee, local information and concerns raised by the public, and Indigenous knowledge and other information provided by the participating Indigenous nations, First Nations, and Métis. The EAO also held a public comment period and a virtual information session on the draft Assessment Report, proposed Certificate and draft potential federal conditions.

The EAO sought consensus with the participating Indigenous nations on this draft Assessment Report and the proposed Certificate with conditions and project description. During the final public comment period, participating Indigenous

nations also had the opportunity to provide notice of their consent or lack of consent to issuing the environmental assessment certificate and reasons for that consent or lack of consent. The results of the consensus-seeking and provision of consent or lack of consent is described in [section 12](#) of the Assessment Report.

In keeping with the Cooperation Agreement, the EAO's assessment of Ksi Lisims LNG is consistent with the requirements and associated conditions in the Notice of Substitution Approval ([Notice of Substitution Approval under the Impact Assessment Act](#)) under the IAA. Specifically, the EAO considered the factors set out in subsection 22(1) of the IAA, the effects within federal jurisdiction set out in section 2 of the IAA, provided opportunities for the public to meaningfully participate in the EA, conducted consultation with Indigenous peoples that may be affected by the Project and provided opportunities for the IAAC and federal Crown departments to participate in consultation, and will provide an Assessment Report to the federal Minister of Environment and Climate Change that includes the findings and conclusions with respect to those factors.

### 13.6. Decision

For substituted assessments, both the provincial Ministers and federal Minister of Environment and Climate Change (or Governor in Council) retain the responsibility to decide on whether a project may proceed. The Ksi Lisims LNG Assessment Report (this Report), proposed Certificate, recommendations of the CEAO, and any notices of consent or lack of consent received from participating Indigenous nations will be referred to the provincial Ministers for decision. The provincial Ministers must consider these materials and any other public interest considerations and decide to issue (with conditions) or refuse a Certificate. The provincial Ministers must then publish reasons for their decision. The EAO will provide the Ksi Lisims LNG Assessment Report to the federal Minister of Environment and Climate Change for their decision-making with respect to areas of federal jurisdiction under the IAA. The federal Minister (or Governor in Council) will then consider the final Assessment Report in determining whether Ksi Lisims LNG is likely to cause significant adverse effects within federal jurisdiction, and the extent to which these effects are significant, after proposed mitigation measures are applied, and whether any significant adverse effects within federal jurisdiction are in the public interest. The federal Minister will then issue a Decision Statement under the IAA, along with a Project Recommendation under the Nisga'a Final Agreement.

### 13.7. Post-Certificate

If a Certificate and federal decision statement is issued that allows the Project to proceed, this phase may include mitigation effectiveness reports, audits, certificate amendments, certificate extensions, and certificate transfers.

The Compliance and Enforcement branch of the EAO conducts compliance inspections and, where required, uses enforcement to ensure that projects are compliant with the Certificate conditions. For more information on compliance and enforcement, see the [EAO's website](#).

IAAC's enforcement officers verify compliance and enforce conditions included in decision statements. These activities may include carrying out site inspections and investigations. For more information, see: [Compliance Promotion and Enforcement - Canada.ca](#).

## 14.0 APPENDIX 2 - THE EAO’S RECOMMENDED KEY MITIGATION MEASURES AND FOLLOW-UP PROGRAMS UNDER THE IAA

The recommended Key Mitigation Measures and Follow-up Programs under the IAA inform the draft federal conditions. If the Project is approved, the federal conditions would be legally binding on the Proponents, their successors or assigns, whereas the recommended Key Mitigation Measures and Follow-up Programs are not. Table 8 below outlines the Key Mitigation Measures and Follow-up Programs.

Table 8: Key Mitigation Measures and Follow-up Programs related to the floating LNG facilities, marine terminal and supporting infrastructure as specified in the draft Certified Project Description

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
Fish and fish habitat  Subparagraph (a)(i) of the definition of effects within federal jurisdiction in section 2 of the IAA	Freshwater fish and fish habitat	<ol style="list-style-type: none"> <li>1. Mitigate effects to freshwater fish and fish habitat including by:                             <ul style="list-style-type: none"> <li>○ Limiting water withdrawals in fish bearing streams to maintain flows needed to support fish and fish habitat consistent with British Columbia’s <i>Environmental Flow Needs Policy</i>,</li> <li>○ Isolating in-water construction activities in fish bearing streams from adjacent flowing water,</li> <li>○ Salvaging and relocating fish prior to in water construction activities requiring isolation and dewatering of fish habitat,</li> <li>○ Implementing water intake structures in fish bearing streams in a manner that minimizes the risk of entrainment and impingement of fish, and</li> <li>○ Designing all crossings of fish-bearing watercourses in a manner that avoids harm to fish and fish habitat and in compliance with the <i>Fisheries Act</i>.</li> </ul> </li> </ol>
	Freshwater fish and fish habitat  Marine resources	<ol style="list-style-type: none"> <li>2. Maintain erosion and sedimentation control measures during all phases of the Project to prevent release of sediments to the receiving environment.</li> </ol>
	Surface water	<ol style="list-style-type: none"> <li>3. Manage stormwater runoff so that discharges do not cause the receiving environment to exceed Canadian Council of Ministers of the Environment’s <i>Canadian Water Quality Guidelines</i> or B.C.’s <i>Water Quality Guidelines for the Protection of Aquatic Life</i>, whichever is lower at the time the Proponent takes action, for turbidity and total suspended solids levels for both short-term and long-term exposures.</li> </ol>



Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Surface water	<p><b>4.</b> Manage acid generation and metal leaching within the Designated Project area by:</p> <ul style="list-style-type: none"> <li>○ Characterizing, prior to construction, the acid rock drainage and metal leaching potential of materials to be used for construction; and</li> <li>○ Taking into account the geochemical testing, develop and implement measures to prevent the contamination of the receiving environment by acid-generating, metal-leaching, or potentially acid-generating materials.</li> </ul>
	Freshwater fish and fish habitat  Marine resources	<p><b>5.</b> Implement in consultation with Indigenous groups and Fisheries and Oceans Canada any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish.</p>
	Freshwater fish and fish habitat  Marine resources	<p><b>6.</b> For any fish habitat offsetting measure proposed in any offsetting plan that may cause adverse federal effects not considered in the impact assessment, Implement, following consultation with Indigenous groups and relevant authorities, measures to mitigate those effects.</p>
	Marine resources	<p><b>7.</b> Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act.</p>
	Marine resources	<p><b>8.</b> Maintain underwater peak sound pressure levels below 207 decibels within 10 metres of the pile while impact pile driving.</p> <ul style="list-style-type: none"> <li>○ Conducting impact pile driving only when conditions allow effective visual monitoring of exclusion zones.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Marine resources	<p><b>9.</b> Implement measures to mitigate adverse effects to marine fish and marine mammals caused by underwater noise emitted from construction by:</p> <ul style="list-style-type: none"> <li>○ Using soft start procedures for impact pile driving, to gradually increase the sound levels emitted by construction equipment before use at full operational power;</li> <li>○ Minimizing impulse noise emitted by construction activities, including by giving preference to the use of vibratory pile-driving over impact pile-driving; and</li> <li>○ Using sound attenuation method(s) and/or technology(ies) when conducting impact pile driving underwater.</li> </ul>
	Marine resources	<p><b>10.</b> Manage underwater noise from construction to prevent adverse behavioural changes, injury or mortality to marine mammals by:</p> <ul style="list-style-type: none"> <li>○ Identifying construction activities that generate noise over 160 dB and 190 dB.</li> <li>○ Setting boundaries for noise impact areas where noise levels are predicted to reach 160 dB for all marine mammals except pinnipeds.</li> <li>○ Setting boundaries for noise impact areas where noise levels are predicted to reach 190 dB or at 150 meters for pinnipeds, whichever is greater.</li> <li>○ Employing a marine mammal observer to detect and report marine mammals.</li> <li>○ Halting construction if marine mammals are detected within their noise impact area and resuming only after they leave or are not sighted for 30 minutes.</li> <li>○ Carry out impact pile driving only when environmental conditions enable effective visual monitoring of the noise impact areas.</li> <li>○ Continuously monitoring noise levels at the boundaries and halting construction if thresholds are exceeded until noise is reduced.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Marine resources	<p><b>11.</b> Consider approaches to reduce generation and transmission of underwater noise caused by operation of marine infrastructure including the floating LNG facility.</p>
	Marine resources	<p><b>12.</b> Require the operators of LNG carriers and NGL product vessels to navigate safely in the presence of marine mammals by reducing vessel speed, making adjustments to direction, or both to maintain distance from marine mammals and minimize the risk of collision with marine mammals, subject to navigational safety. In the event of a collision, LNG carrier operators should report any collision with marine mammals along the Marine Shipping Route to the Proponent as soon as feasible, after reporting it to DFO’s Observe, Record and Report 24 hour hotline or future equivalent reporting program. In case of contact the Operator and Proponent shall:</p> <ul style="list-style-type: none"> <li>○ Require the operators of LNG carriers and NGL product vessels to record and report the vessel speed at the time of collision, if available, to the Proponent.</li> <li>○ Provide Indigenous groups and IAAC with the information on collision(s) with marine mammal(s) reported to the Proponent within 72 hours of receiving it.</li> </ul>
	Marine resources	<p><b>13.</b> Implement a follow-up program to address underwater noise impacts on marine fish and mammals from operation of the marine terminal.</p>
	<p>Freshwater fish and fish habitat</p> <p>Marine resources</p>	<p><b>14.</b> Implement a follow-up program during all phases of the Project to address adverse effects on fish and fish habitat from changes in water quality, in consultation with Indigenous groups and relevant authorities. The program should:</p> <ul style="list-style-type: none"> <li>○ Monitor total suspended solids, turbidity and metals at watercourses;</li> <li>○ Monitor turbidity and total suspended solids at the perimeter of in-water work areas susceptible to exceed applicable turbidity and total suspended solids thresholds established in the <i>Canadian Water Quality Guidelines for the Protection of Aquatic Life</i> and <i>British Columbia’s Water Quality Guidelines</i>.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
		<ul style="list-style-type: none"> <li>○ Taking into account B.C.’s <i>Marine Monitoring Guidance</i>, monitor contaminants of potential concern, salinity, dissolved oxygen, metals, nutrients, total suspended solids and temperature beginning a minimum of one year prior any activity that may impact water quality and during operation, including.                             <ul style="list-style-type: none"> <li>▪ One meter below surface, at the depth of marine discharge(s), and one meter above bottom</li> <li>▪ At least quarterly and during ebbing and flooding tides</li> </ul> </li> <li>○ Compare results of monitoring with the Canadian Council of Ministers of the Environment’s <i>Canadian Water Quality Guidelines for the Protection of Aquatic Life</i> and the B.C.’s <i>Water Quality Guidelines and Working Sediment Quality Guidelines</i> to determine whether modified or additional mitigation measures are required.</li> </ul>
	Marine resources	<p><b>15.</b> Implement a follow-up program to address effects on fish and fish habitat from changes in marine sediment quality and benthic invertebrate communities. The program should:</p> <ul style="list-style-type: none"> <li>○ Complete toxicity tests</li> <li>○ Monitor marine sediment quality and benthic invertebrate communities at locations related to discharge of desalination effluent beginning a minimum of one year prior to any activity that may impact sediments and benthic invertebrates.</li> <li>○ Compare results of monitoring with the Canadian Council of Ministers of the Environment’s <i>Canadian Water Quality Guidelines for the Protection of Aquatic Life</i> and the B.C.’s <i>Water Quality Guidelines and Working Sediment Quality Guidelines</i> to determine whether modified or additional mitigation measures are required.</li> <li>○ Compare the results of benthic community monitoring with baseline to determine whether modified or additional mitigation measures are required.</li> </ul>
	Marine resources	<p><b>16.</b> Implement a follow-up program with respect to entrainment and impingement of fish from the marine water intakes.</p>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
Migratory birds  Subparagraph (a)(iii) of the definition of effects within federal jurisdiction in section 2 of the IAA	Wildlife	<b>17.</b> Carry out the Project in a manner that protects migratory birds and avoids injuring, killing or harassing migratory birds or destroying, taking or disturbing their eggs, or damaging, destroying, removing or disturbing their nests, while taking into account Environment and Climate Change Canada’s Guidelines to avoid harm to migratory birds.
	Wildlife	<b>18.</b> If the Proponent shall determine the presence, or likely presence of migratory bird nest(s) protected under the <i>Migratory Birds Convention Act</i> , that may be adversely affected by any Project activity prior to initiating the activity. The Proponent shall delineate set back distances around the nest within which activity shall not occur.
	Wildlife	<b>19.</b> The Proponent shall delineate set back distances around the nest(s) within which that activity shall not occur while the nest(s) are protected under the <i>Migratory Birds Convention Act</i> and its regulations.
	Wildlife  Acoustic	<b>20.</b> Ensure that ground vibration does not exceed 12.5 millimeters per second, and air overpressure does not exceed 128 decibels when undertaking any blasting activities.
	Wildlife	<b>21.</b> Develop and implement mitigation measures for marbled murrelet by: <ul style="list-style-type: none"> <li>○ Undertaking a low-level aerial or ground survey, prior to undertaking vegetation clearing to verify if biophysical attributes that represent nesting critical habitat for marbled murrelet according to Environment and Climate Change Canada’s <i>Amended Recovery Strategy for the Marbled Murrelet in Canada</i>, are present in any of the areas to be cleared. Taking into account Environment and Climate Change Canada’s <i>Guidance and Tools to Support the Identification of Potential Marbled Murrelet Suitable Nesting Habitat</i>;</li> <li>○ not undertaking vegetation clearing during nesting season (April 1 to September 14) if the survey indicates that biophysical attributes that represent nesting critical habitat for marbled murrelet are present; and</li> <li>○ applying the mitigation hierarchy to address adverse effects to marbled murrelet that cannot be avoided including by prioritizing reducing adverse effects over offsetting adverse effects.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Wildlife	<b>22.</b> Control lighting required for the Project including the direction, timing, intensity and glare of light fixtures, to mitigate adverse effects on migratory birds, while meeting operational health and safety requirements.
	Wildlife	<b>23.</b> Implement a follow-up program for migratory birds and their habitat. The program should include: <ul style="list-style-type: none"> <li>○ recording discovery of bird mortality or injury during routine inspections and maintenance activities.</li> </ul>
Health, social or economic conditions of the Indigenous peoples of Canada  Paragraph (d) of the definition of effects within federal jurisdiction in section 2 of the IAA	Air quality	<b>24.</b> Minimize the quantity of vented or flared gas and the duration of venting or flaring events to the minimum required for emergency or maintenance purposes.
	Community health and wellness	<b>25.</b> Develop a Health and Medical Services Plan to mitigate impacts on local health services used by Indigenous peoples. The plan should: <ul style="list-style-type: none"> <li>○ Implement disease and infection management measures;</li> <li>○ Define non-urgent and urgent health conditions, and treatment locations;</li> <li>○ Provide onsite first-aid stations, medical rooms, and certified medical staff for onsite treatment;</li> <li>○ Maintain communication procedures for outside emergency aid and coordinate urgent care with local providers;</li> <li>○ Establish a workplace health promotion program; and</li> <li>○ Provide access to an employee assistance program offering confidential support for personal issues affecting work performance.</li> </ul>
	Community health and wellness	<b>26.</b> Implement a Training and Employment Plan, in consultation with Indigenous groups, Indigenous Services Canada and other relevant authorities, to increase employment opportunities for Indigenous peoples. The plan should: <ul style="list-style-type: none"> <li>○ Identify required skills and training for Project employment;</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Employment and economy	<ul style="list-style-type: none"> <li>○ Identify and address skill gaps among Indigenous peoples with measures such as on-the-job training and apprenticeships; and</li> <li>○ Inform Indigenous groups of employment and procurement opportunities.</li> </ul>
	Employment and economy	<p><b>27.</b> Implement measures to promote safe, respectful, and inclusive conduct in the workplace and community. Measures should include actions to respond to call to justice 13.1 in <i>Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls</i>. In doing so, the measure should include:</p> <ul style="list-style-type: none"> <li>○ A workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-specific processes, including sexual harassment counseling and confidential, culturally sensitive care;</li> <li>○ A zero-tolerance policy for drug and alcohol use or possession during work hours;</li> <li>○ Mandatory cross-cultural awareness training, developed with Indigenous groups, for all Project employees and contractors; and</li> <li>○ A Worker Code of Conduct outlining expectations and requirements, ensuring all employees and contractors are aware of and comply with it.</li> </ul>
Current use of lands and resources for traditional purposes	Fish and fish habitat	<p><b>28.</b> Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project within the Project area unless an employee or contractor is provided access as a member of an Indigenous group for traditional purposes or for exercising Aboriginal or treaty rights.</p>
Subparagraph (c)(ii) of the definition of effects	Vegetation and wetlands	<p><b>29.</b> Implement measures to prevent the spread of invasive plant species.</p>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
within federal jurisdiction in section 2 of the IAA	Vegetation and wetlands	<p><b>30.</b> Conduct progressive reclamation of temporarily disturbed areas, using plant species of interest to Indigenous peoples, identified in consultation with Nisga’a Nation, to establish self-sustaining vegetation.</p>
	Infrastructure and services	<p><b>31.</b> Implement a community feedback protocol, in consultation with Indigenous groups, to address adverse federal effects resulting from the Designated Project and associated marine shipping. The protocol should include:</p> <ul style="list-style-type: none"> <li>○ Clear communication of feedback procedures, developed with Indigenous groups, detailing how feedback can be provided, handled, and potentially used to modify mitigation measures;</li> <li>○ Prompt recording of feedback within 48 hours;</li> <li>○ Timely implementation of necessary mitigation measures in response to feedback;</li> <li>○ Regular summary reports to Indigenous groups, detailing feedback, location-specific information, implemented measures, and justifications for any unfeasible measures;</li> <li>○ Offers to meet with Indigenous groups to discuss reports and improve the protocol; and</li> <li>○ Provision of updated protocols to Indigenous groups if changes are made.</li> </ul>
	Marine use	<p><b>32.</b> Implement a Marine Transportation Communication Plan for LNG carriers and NGL product vessels transiting the marine shipping route, developed in consultation with Indigenous groups, CCG, and relevant authorities. The plan should:</p> <ul style="list-style-type: none"> <li>○ Provide up-to-date information to Indigenous groups about Project activities affecting marine access and use;</li> <li>○ Use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements;</li> <li>○ Explore additional communication services where MCTS is unreliable;</li> <li>○ Establish procedures for proactive, regular communication about:                             <ul style="list-style-type: none"> <li>▪ Vessel traffic schedules;</li> <li>▪ Operational safety zones and navigation aids;</li> </ul> </li> </ul>



Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
		<ul style="list-style-type: none"> <li>▪ Collision prevention measures;</li> <li>▪ Emergency response procedures;</li> <li>○ Create procedures for Indigenous groups to share information about their fishing activities and potential Project interferences.</li> </ul>
	Marine use	<p><b>33.</b> Regularly review the Marine Transportation Communications Plan with Indigenous groups and relevant authorities. Provide updated versions to IAAC, Indigenous groups, and relevant authorities within 30 days of any changes.</p>
	Marine use	<p><b>34.</b> Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.</p>
<p>Physical and cultural heritage and structures, sites or things of historical, archaeological, paleontological or architectural significance</p> <p>Subparagraph (c)(i) and (c)(iii) of the definition of effects within federal jurisdiction in section 2 of the IAA</p>	<p>Archaeological and heritage resources</p>	<p><b>35.</b> Consult with Indigenous groups, B.C.’s Energy Regulator, and relevant authorities to develop a chance find protocol for the Project. Implement this protocol during all phases if any historical, archaeological, paleontological, or architectural significance (including culturally modified trees) is discovered. The protocol should include:</p> <ul style="list-style-type: none"> <li>○ Immediately halt work at the discovery site, except for necessary protective actions;</li> <li>○ Establish a 30-metre no-work zone around the discovery;</li> <li>○ Notify Indigenous groups, B.C.’s Energy Regulator, IAAC, and other relevant authorities within 24 hours, allowing Indigenous groups to monitor archaeological works;</li> <li>○ Assess the discovery site; and</li> <li>○ Record, analyze, and mitigate adverse environmental effects on the discovery according to legal and regulatory requirements.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
Accidents and malfunctions (including Navigation Safety)  Subparagraph 22(1)(a)(i) of the IAA	Malfunctions and accidents	<p><b>36.</b> Prevent and mitigate accidents and malfunctions causing adverse environmental effects by:</p> <ul style="list-style-type: none"> <li>○ Designing Project infrastructure to meet seismic design criteria;</li> <li>○ Designing Project infrastructure in consideration of marine geological hazards;</li> <li>○ Implementing fire and spill prevention measures; and</li> <li>○ Refueling vehicles and equipment only in designated areas to prevent fuel spills and ground contamination.</li> </ul>
	Malfunctions and accidents	<p><b>37.</b> Conduct safety assessments of marine navigation and berthing before the first LNG or NGL vessel arrives. Participate in a Joint Navigational Risk Assessment including a full mission bridge simulation with B.C. Coast Pilot (BCCP)s and the Pacific Pilotage Authority to identify and implement mitigation measures. Assess:</p> <ul style="list-style-type: none"> <li>○ berthing scenarios;</li> <li>○ tug escort scenarios;</li> <li>○ operational limits including wind speeds and wave action; and</li> <li>○ marine route navigation, including recommended speed profile and needs for additional aids to navigation.</li> </ul>
	Malfunctions and accidents	<p><b>38.</b> Implement an Accidents and Malfunctions Response Plan, in consultation with Indigenous groups, CCG, and relevant authorities, following CAN/ Canadian Standards Association (CSA) Z246.2 standards. The plan should include:</p> <ul style="list-style-type: none"> <li>○ Types of accidents and malfunctions that may cause adverse environmental effects;</li> <li>○ Measures to mitigate adverse effects for each type of accident or malfunction; and</li> <li>○ Roles and responsibilities of all parties involved, including the Proponent, Western Canada Marine Response Corporation, tug operators, relevant authorities, and any other responders.</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
	Malfunctions and accidents	<b>39.</b> Keep the Accidents and Malfunctions Response Plan updated for each phase. Submit any updates to IAAC and consulted parties within 30 days.
	Malfunctions and accidents	<b>40.</b> Require that tugboats for escorting and berthing LNG carriers and NGL product vessels be equipped with firefighting and spill response equipment, and ensure operators are trained in first response, firefighting, oil spill response, and other emergency procedures.
	Malfunctions and accidents	<b>41.</b> Train all relevant Project employees and contractors, including tug operators, on accident prevention and response measures from the Accident and Malfunction Response Plan and document employee participation in the training.
	Malfunctions and accidents	<p><b>42.</b> In the event of an accident or malfunction with potential adverse environmental effects:</p> <ul style="list-style-type: none"> <li>○ Immediately implement appropriate response measures;</li> <li>○ Notify relevant emergency response authorities as per legal requirements;</li> <li>○ Notify Indigenous groups and IAAC within 24 hours, detailing: <ul style="list-style-type: none"> <li>▪ Date, time, and location of the incident;</li> <li>▪ Summary of the incident;</li> <li>▪ Substances and quantity released;</li> <li>▪ Authorities notified and involved in the response;</li> </ul> </li> <li>○ Submit a detailed report to IAAC within 30 days, including: <ul style="list-style-type: none"> <li>▪ Description of the incident and its effects;</li> <li>▪ Mitigation measures taken;</li> <li>▪ Feedback from Indigenous groups and authorities;</li> <li>▪ Residual effects and additional mitigation measures;</li> </ul> </li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
		<ul style="list-style-type: none"> <li>▪ Implementation of the Response Plan; and</li> <li>○ Submit a follow-up report to IAAC within 90 days, detailing:                             <ul style="list-style-type: none"> <li>▪ Changes to prevent recurrence;</li> <li>▪ Additional mitigation and monitoring measures;</li> <li>▪ Further feedback from Indigenous groups and authorities.</li> </ul> </li> </ul>
	Malfunctions and accidents	<p><b>43.</b> Develop an Accidents and Malfunctions Communication Plan, in consultation with Indigenous groups. The plan should include:</p> <ul style="list-style-type: none"> <li>○ Types of accidents and malfunctions requiring notification;</li> <li>○ Notification methods and opportunities for Indigenous groups to assist in the response; and</li> <li>○ Contact information for Proponent and Indigenous group representatives.</li> </ul>
	Malfunctions and accidents	<p><b>44.</b> Develop a Terminal Operations Manual in accordance with section 2.14 of <i>Transport Canada’s Navigation Safety Assessment Process National Guidelines</i> detailing specific operational procedures for the safety of the marine terminal and LNG carriers and NGL product vessels at the marine terminal and provide it to LNG carriers and NGL product vessel operators and their agents, ensuring understanding and compliance. The manual should include:</p> <ul style="list-style-type: none"> <li>○ Terminal communication procedures;</li> <li>○ Emergency procedures;</li> <li>○ Atmospheric conditions which would require stopping cargo transfer or vessel departure; and</li> <li>○ Waste management.</li> </ul>
	Malfunctions and accidents	<p><b>45.</b> Develop a Terminal Information Guide in accordance with section 2.13 of <i>Transport Canada’s Navigation Safety Assessment Process National Guidelines</i> detailing specific operational procedures for the route to and from the marine</p>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
		<p>terminal and provide it to LNG carriers and NGL product vessel operators and their agents, ensuring understanding and compliance. The manual should include:</p> <ul style="list-style-type: none"> <li>○ Tug escort requirements;</li> <li>○ Marine terminal entry requirements;</li> <li>○ Guidance related to marine mammals;</li> <li>○ Vessel speed profiles;</li> <li>○ Berthing procedures</li> <li>○ Mooring assistance</li> <li>○ Upper limits of berthing operations; and</li> <li>○ Areas of concentrated Indigenous fishing and harvesting.</li> </ul>
	Malfunctions and accidents	<p><b>46.</b> Provide the Terminal Operations Manual and Terminal Information Guide to Indigenous groups, Transport Canada, the Pacific Pilotage Authority, BCCPs, and other relevant authorities at least 6 months before the first LNG vessel arrives.</p>
	Malfunctions and accidents	<p><b>47.</b> Develop a vessel acceptance program to ensure that vessels have up-to-date certification and meet the requirements of the marine terminal.</p>
Transboundary air emissions from federally-regulated activities	Greenhouse gases	<p><b>48.</b> Ensure that the Project-related marine shipping does not emit more than net 0 kt CO<sub>2</sub> eq/year by January 1, 2050, as calculated by Canada’s <i>Draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on Quantification of Net GHG Emissions, Impact on Carbon Sinks, Mitigation Measures, Net-Zero Plan and Upstream GHG Assessment</i>.</p>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key Mitigation Measure(s) or follow-up program
Part of the definition of effects within federal jurisdiction in section 2 of the IAA		

Table 9: Key mitigation measures related to the transmission line as described in the draft Assessment Report

Federal conditions section and IAA linkage	B.C. EAO valued component	Key mitigation measure(s) or follow-up program
Fish and fish habitat  Subparagraph (a)(i) of the definition of effects within federal jurisdiction in section 2 of the IAA	Freshwater fish and fish habitat  Marine resources	<p><b>49.</b> Require the owner and operator of the transmission line to mitigate adverse federal effects of its construction by:</p> <ul style="list-style-type: none"> <li>○ Conducting pre-construction surveys to assess fish habitat along the transmission line route, by:                             <ul style="list-style-type: none"> <li>▪ Surveying for the presence and absence of sponge reefs and coral gardens.</li> <li>▪ Developing and implementing mitigation measures to avoid sponge reefs and coral gardens based on the surveys.</li> </ul> </li> <li>○ Implementing the following mitigation measures for fish and fish habitat:                             <ul style="list-style-type: none"> <li>▪ Isolate in-water construction activities in fish bearing streams from adjacent flowing water,</li> <li>▪ Design all crossings of fish-bearing watercourses in a manner that avoids harm to fish and fish habitat.</li> <li>▪ Maintain erosion and sedimentation control measures to prevent release of sediments to the receiving environment.</li> <li>▪ Manage stormwater runoff so that discharges do not cause the receiving environment to exceed Canadian Council of Ministers of the Environment’s Canadian Water Quality Guidelines or B.C.’s Water Quality Guidelines for the Protection of Aquatic Life, whichever is lower at the time the owner and operator of the</li> </ul> </li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key mitigation measure(s) or follow-up program
		<p>transmission line takes action, for turbidity and total suspended solids levels for both short-term and long-term exposures.</p> <ul style="list-style-type: none"> <li>▪ Manage acid generation and metal leaching within the transmission line route by:                             <ul style="list-style-type: none"> <li>▪ Characterizing, the acid rock drainage and metal leaching potential of materials to be used for construction; and</li> <li>▪ Taking into account the geochemical testing, develop and implement measures to prevent the contamination of the receiving environment by acid-generating, metal-leaching, or potentially acid-generating materials.</li> </ul> </li> </ul>
<p>Migratory birds</p> <p>Subparagraph (a)(iii) of the definition of effects within federal jurisdiction in section 2 of the IAA</p>	<p>Wildlife</p>	<p><b>50.</b> Require the owner and operator of the transmission line to mitigate adverse federal effects of its construction by:</p> <ul style="list-style-type: none"> <li>○ Implementing the following mitigation measures for migratory birds:                             <ul style="list-style-type: none"> <li>▪ Carry out the Project in a manner that protects migratory birds and avoids injuring, killing or harassing migratory birds or destroying, taking or disturbing their eggs, or damaging, destroying, removing or disturbing their nests, while taking into account Environment and Climate Change Canada’s <i>Guidelines to avoid harm to migratory birds</i>.</li> <li>▪ Determine the presence, or likely presence of migratory bird nest(s) protected under the Migratory Birds Convention Act, that may be adversely affected by the transmission line project activities prior to initiating the activities.</li> <li>▪ Delineate set back distances around the nest(s) within which that activity shall not occur while the nest(s) are protected under the <i>Migratory Birds Convention Act</i> and its regulations.</li> <li>▪ Ensure that ground vibration does not exceed 12.5 millimeters per second, and air overpressure does not exceed 128 decibels.</li> </ul> </li> </ul>
<p>Current use of lands and resources for traditional purposes</p>	<p>Various</p>	<p><b>51.</b> Require the owner and operator of the transmission line to mitigate adverse federal effects of its construction by:</p> <ul style="list-style-type: none"> <li>○ Implementing the following mitigation measures for current use of lands and resources for traditional purposes:</li> </ul>

Federal conditions section and IAA linkage	B.C. EAO valued component	Key mitigation measure(s) or follow-up program
<p>Subparagraph (c)(ii) of the definition of effects within federal jurisdiction in section 2 of the IAA</p>		<ul style="list-style-type: none"> <li>▪ Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes unless an employee or contractor is provided access as a member of an Indigenous group for traditional purposes or for exercising Aboriginal or treaty rights.</li> <li>▪ Prevent the spread of invasive plant species.</li> <li>▪ Conduct progressive reclamation of temporarily disturbed areas, using plant species of interest to Indigenous peoples, identified in consultation with Indigenous groups, to establish self-sustaining vegetation.</li> <li>▪ Implement a community feedback protocol, in consultation with Indigenous groups. The protocol should include:                         <ul style="list-style-type: none"> <li>▪ Clear communication of feedback procedures, developed with Indigenous groups, detailing how feedback can be provided, handled, and potentially used to modify mitigation measures;</li> <li>▪ Prompt recording of feedback within 48 hours;</li> <li>▪ Timely implementation of necessary mitigation measures in response to feedback;</li> <li>▪ Regular summary reports to Indigenous groups, detailing feedback, location-specific information, implemented measures, and justifications for any unfeasible measures;</li> <li>▪ Offers to meet with Indigenous groups to discuss reports and improve the protocol; and</li> <li>▪ Provision of updated protocols to Indigenous groups if changes are made.</li> </ul> </li> </ul>
<p>Physical and cultural heritage and structures, sites or things of historical, archaeological, paleontological or architectural significance</p>	<p>Archaeological and heritage resources</p>	<p><b>52.</b> Require the owner and operator of the transmission line to mitigate adverse federal effects of its construction by:</p> <ul style="list-style-type: none"> <li>○ Implement the following mitigation measures for physical and cultural heritage and structures, sites or things of historical, archaeological, paleontological or architectural significance:                         <ul style="list-style-type: none"> <li>▪ Consult with Indigenous groups, B.C.’s Energy Regulator, and relevant authorities to develop a chance find protocol for the transmission line. The protocol should include:                                 <ul style="list-style-type: none"> <li>▪ Immediately halt work at the discovery site, except for necessary protective actions;</li> <li>▪ Establish a 30-metre no-work zone around the discovery;</li> </ul> </li> </ul> </li> </ul>



Federal conditions section and IAA linkage	B.C. EAO valued component	Key mitigation measure(s) or follow-up program
<p>Subparagraph (c)(i) and (c)(iii) of the definition of effects within federal jurisdiction in section 2 of the IAA</p>		<ul style="list-style-type: none"> <li>▪ Notify Indigenous groups, B.C.’s Energy Regulator, IAAC, and other relevant authorities within 24 hours, allowing Indigenous groups to monitor archaeological works;</li> <li>▪ Assess the discovery site; and</li> </ul> <ul style="list-style-type: none"> <li>○ Record, analyze, and mitigate adverse environmental effects on the discovery according to legal and regulatory requirements.</li> </ul>

## 15.0 APPENDIX 3 - RESIDUAL EFFECTS CHARACTERIZATION DEFINITIONS

Residual effects are usually described using standard criteria: context, magnitude, extent, duration, reversibility and frequency. These criteria, as well as risk and uncertainty, are summarized in the following table.

Table 10: Valued Component Residual Effects Characterization Definitions<sup>9</sup>

Criteria	General Description	Assessment Definitions
Context	Consideration of context draws heavily on the description of existing conditions (the environmental, economic, social, cultural and/or health setting) of the Valued Component, which reflect cumulative effects of other projects, and activities that have been carried out, and especially information about the effect of natural and human-caused trends in the condition of the Valued Component.	<p><b>Low:</b> the receiving environment or population has low resilience to imposed stresses and will not easily adapt to the potential residual effect.</p> <p><b>Moderate:</b> the receiving environment or population has a moderate resilience to imposed stresses and may be able to respond and adapt to the potential residual effect.</p> <p><b>High:</b> the receiving environment or population has high natural resilience to imposed stresses and can respond and adapt to the potential residual effect.</p>
Magnitude	Magnitude refers to the expected size or severity of the residual effect. When evaluating magnitude of residual effects, consider the proportion of the Valued Component affected within the spatial boundaries and the relative effect (e.g., relative to natural annual variation in the magnitude of the Valued Component or other relevant characteristic).	<p><b>Negligible:</b> no detectable change from existing conditions.</p> <p><b>Low:</b> the potential residual effect will slightly alter or change the Valued Component without changing its role or function.</p> <p><b>Medium:</b> the potential residual effect will alter or change the nature, role, or function of a Valued Component but will not affect its integrity.</p> <p><b>High:</b> the potential residual effect will substantially alter or change the nature, role, or function of a Valued Component and may jeopardize the Valued Component's integrity.</p>
Extent	The spatial scale over which the residual effect is expected to occur.	<p><b>Limited:</b> the potential residual effect is restricted to the Ksi Lisims LNG footprint.</p> <p><b>Local:</b> the residual effect will be within the Local Assessment Area.</p> <p><b>Regional:</b> the potential residual effect will be within the Regional Assessment Area.</p> <p><b>Beyond Regional:</b> the potential residual effect will be beyond the Regional Assessment Area.</p>
Duration	The period during which the potential effect persists and acts upon the Valued Component. This	<p><b>Short-term:</b> the anticipated potential residual effect will be felt temporarily during Ksi Lisims LNG's construction or closure stages only. It</p>

<sup>9</sup> The characterization of effects for the Nisga'a Nation follows a similar method as for the Valued Components and First Nations but, as per the NLG guidelines, uses criteria for fish and aquatic, wildlife, migratory birds, botanical forest products and land as outlined in [the Revised Application section 14 \(Nisga'a Nation Assessment\)](#).

Criteria	General Description	Assessment Definitions
	may be longer than the duration of the physical work or activity that produced the potential residual effect.	<p>also applies to any effect that will occur for less than two years in operations.</p> <p><b>Medium-term:</b> the anticipated potential residual effect will be felt for a limited period of time greater than two years, generally corresponding to the operations phase and closure phase.</p> <p><b>Long-term:</b> the anticipated potential residual effect will be felt beyond closure.</p>
Reversibility	Whether or not the residual effect on the Valued Component can be reversed once the physical work or the activity causing the effects stop or mitigation measures take effect to eliminate the effect.	<p><b>Fully reversible:</b> may fully recover and return to its pre-project state.</p> <p><b>Partially reversible:</b> may partially recover from Ksi Lisims LNG changes.</p> <p><b>Irreversible:</b> will not recover and return to its pre-project state.</p>
Frequency	How often or how many times the anticipated residual effect may occur.	<p><b>Once:</b> the residual effect is confined to one discrete event.</p> <p><b>Regular:</b> the residual effect occurs at consistent intervals.</p> <p><b>Irregular:</b> the residual effect occurs at sporadic intervals.</p> <p><b>Continuous:</b> residual effects occur constantly.</p>
Affected Populations	A subset of the population being affected disproportionately by certain Valued Components. Examples of affected populations could include different groups within the Indigenous nation who may experience the effects in a different way, such as youth, Elders, or women.	<p><b>Even:</b> the potential effect is experienced by any or all sub-populations.</p> <p><b>Disproportionate:</b> the potential effect is experienced only by certain populations or experienced more acutely by certain sub-populations.</p>
Risk <sup>10</sup> (likelihood and consequences)	The likelihood (probability) of an event (incident) occurring and its consequences. Likelihood is whether a residual effect is likely to occur. It may be influenced by a variety of factors, such as the likelihood of a causal disturbance occurring or the likelihood of mitigation being successful. The consequences are the residual effect, positive or negative. The magnitude and extent of the	<p><b><u>Likelihood</u></b></p> <p><b>Low:</b> less than 40 percent chance of effect occurring</p> <p><b>Medium:</b> 40 to 80 percent chance of effect occurring</p> <p><b>High:</b> more than 80 percent chance of effect occurring</p> <p><b><u>Consequence</u></b></p> <p>Can be assessed as minor, moderate or major based on the combination of magnitude and extent.</p> <p><b><u>Risk</u></b> is consequence multiplied by likelihood.</p>

<sup>10</sup> These definitions for risk, likelihood, and consequences are not applicable to assessment of effects from malfunctions and accidents, see [Appendix 7](#) of the EAO's Assessment Report for more details.

Criteria	General Description	Assessment Definitions				
	residual effect provides information on the consequence, which in conjunction with likelihood, informs the understanding of risk.	Risk		Consequences		
				Major	Moderate	Minor
		Likelihood	High	High	Moderate	Low
			Medium	High	Moderate	Low
			Low	Moderate	Low	Low
Uncertainty	The natural variation in complex biophysical environments or the statistical variation in data sets and models that arises from the imperfection of unknown information. Where uncertainty is unable to be reduced, how it affects Valued Components needs to be described so that it can be considered in decision making	<p><b>Low:</b> there is a good understanding of the cause-effect relationship between Ksi Lisims LNG and the Valued Component, and sufficient data are available to support the assessment. The effectiveness of the selected mitigation measures is moderate to high. There is a low degree of uncertainty associated with data inputs and/or modelling techniques, and variation from the predicted effect is expected to be low.</p> <p><b>Moderate:</b> the cause-effect relationships between Ksi Lisims LNG and a Valued Component are not fully understood (e.g., several unknown external variables or data for the Ksi Lisims LNG project area are incomplete). The effectiveness of mitigation measures may be moderate or high. Modelling predictions are relatively confident.</p> <p><b>High:</b> the cause-effect relationships between Ksi Lisims LNG and a Valued Component are poorly understood. There may be several unknown external variables and/or data for the Ksi Lisims LNG project area that are incomplete. The effectiveness of the mitigation measures may not yet be proven. Modelling results may vary considerably given the data inputs. There is a high degree of uncertainty in the conclusions of the assessment.</p> <p>To consider when determining confidence: the reliability of data inputs and analytical methods used to predict project effects, the confidence regarding the effectiveness of mitigation measures, and the certainty of the predicted outcome.</p>				
Importance	Have any issues been identified as an interest/priority by potentially affected Indigenous nations, local governments, provincial and federal government agencies, or stakeholders.	<p><b>Low:</b> previously identified by some individuals, but not by Indigenous nations, community members, or government agencies.</p> <p><b>Moderate:</b> previously identified as an interest by Indigenous nations, community members, the public, local governments, and/or provincial and federal government agencies, but not stated as a top interest.</p> <p><b>High:</b> identified repeatedly as a top interest by Indigenous nations, community members, the public, local governments, and/or provincial or federal government agencies.</p>				

Criteria	General Description	Assessment Definitions
Significance <sup>11</sup>	A determination of the limit of acceptable change.	<b>Not Significant</b> <b>Significant</b>

Table 11: Residual Effects Characterization Definitions for Effects on Indigenous Interests

Characterization	General Description	Indigenous Interest Assessments
Context	How sensitive or resilient the Indigenous Interest is to the potential residual effect caused by Ksi Lisims LNG.	<p><b>Low resilience:</b> the Indigenous Interest has low resilience to imposed stresses and will not easily adapt to the potential residual effect</p> <p><b>Medium resilience:</b> the Indigenous Interest has a neutral resilience to imposed stresses and may be able to respond and adapt to the potential residual effect</p> <p><b>High resilience:</b> the Indigenous Interest has high resilience to imposed stresses and can respond and adapt to the potential residual effect</p>
Magnitude	The intensity or severity of the anticipated change. Considers the amount the Indigenous Interest is affected (e.g., relative to natural annual variation in the magnitude of change to the Indigenous Interest).	<p><b>Negligible:</b> no detectable change from existing conditions</p> <p><b>Low:</b> the potential residual effect will slightly alter or change existing conditions but is within historic norms and within the system’s capacity to respond</p> <p><b>Medium:</b> the potential residual effect will alter or change the nature, role, or function of existing conditions but is within historic norms and within the system’s capacity to respond</p> <p><b>High:</b> the potential residual effect will substantially alter or change the nature, role, or function of existing conditions and is beyond the system’s capacity to respond</p>
Extent	The spatial scale over which the residual effect is expected to occur.	<p><b>Site-specific</b> – the potential residual effect is restricted to Ksi Lisims LNG area</p> <p><b>Local</b> – the residual effect will be within the Local Assessment Area</p> <p><b>Regional:</b> the potential residual effect will be within the Regional Assessment Area</p> <p><b>Beyond Regional:</b> the potential residual effect will be beyond the Regional Assessment Area</p>
Duration	The period during which the potential effect persists and acts upon the Indigenous Interest. This may be longer than the duration of the physical work or activity that	<p><b>Short-term:</b> the anticipated potential residual effect will be felt temporarily during the construction or deconstruction phases only. It also applies to any effect that will occur for less than two years in operations</p>

<sup>11</sup> Extent of significance for adverse effects within federal jurisdiction is defined in [Appendix 15](#).

	produced the potential residual effect.	<p><b>Medium-term:</b> the anticipated potential residual effect will be felt for a limited period of time greater than two years, generally corresponding to operations and decommissioning</p> <p><b>Long-term:</b> the anticipated potential residual effect will be felt beyond decommissioning</p>																					
Frequency	How often or how many times the anticipated residual effect may occur.	<p><b>Single/Rare:</b> the residual effect is confined to one discrete event or rarely occurs</p> <p><b>Frequent/Regular:</b> the residual effect occurs at consistent intervals</p> <p><b>Irregular:</b> the residual effect occurs at sporadic intervals</p> <p><b>Continuous:</b> the residual effect occurs constantly</p>																					
Reversibility	Whether or not the residual effect on the Indigenous Interest can be reversed once the physical work or the activity causing the effects stop or mitigation measures take effect to eliminate the effect.	<p><b>Fully Reversible:</b> the residual effect is fully reversible</p> <p><b>Partially Reversible:</b> the residual effect is partially reversible</p> <p><b>Irreversible:</b> the residual effect is irreversible</p>																					
Affected Populations	The distribution of the effect amongst the population of affected First Nations.	<p><b>Even:</b> the potential effect is experienced by any or all sub-populations</p> <p><b>Disproportionate:</b> the potential effect is experienced only by certain populations or experienced more acutely by certain sub-populations</p>																					
Risk (likelihood and consequences)	<p>The likelihood (probability) of an event (incident) occurring and its consequences. Likelihood is whether a residual effect is likely to occur. It may be influenced by a variety of factors, such as the likelihood of a causal disturbance occurring or the likelihood of mitigation being successful. The consequences are the residual effect, positive or negative. The magnitude and extent of the residual effect provides information on the consequence, which in conjunction with likelihood, informs the understanding of risk.</p>	<p><u>Likelihood</u></p> <p><b>Low:</b> less than 40 percent chance of effect occurring</p> <p><b>Medium:</b> 40 to 80 percent chance of effect occurring</p> <p><b>High:</b> more than 80 percent chance of effect occurring</p> <p><u>Consequence</u></p> <p>Can be assessed as minor, moderate or major based on the combination of magnitude and extent.</p> <p><b>Risk</b> is consequence multiplied by likelihood.</p> <table border="1"> <thead> <tr> <th colspan="2" rowspan="2">Risk</th> <th colspan="3">Consequences</th> </tr> <tr> <th>Major</th> <th>Moderate</th> <th>Minor</th> </tr> </thead> <tbody> <tr> <th rowspan="3">Likelihood</th> <th>High</th> <td>High</td> <td>Moderate</td> <td>Low</td> </tr> <tr> <th>Medium</th> <td>High</td> <td>Moderate</td> <td>Low</td> </tr> <tr> <th>Low</th> <td>Moderate</td> <td>Low</td> <td>Low</td> </tr> </tbody> </table>	Risk		Consequences			Major	Moderate	Minor	Likelihood	High	High	Moderate	Low	Medium	High	Moderate	Low	Low	Moderate	Low	Low
Risk		Consequences																					
		Major	Moderate	Minor																			
Likelihood	High	High	Moderate	Low																			
	Medium	High	Moderate	Low																			
	Low	Moderate	Low	Low																			

<p><b>Potential Impact Rating</b></p>	<p>The seriousness of the impact from residual effect(s) to the Indigenous Interest from consideration of the context, magnitude, extent, duration, frequency, reversibility and affected populations.</p>	<p><b>Negligible:</b> the Indigenous Interest is not measurably impacted or modified by Ksi Lisims LNG</p> <p><b>Minor:</b> the Indigenous Interest is impacted or modified by Ksi Lisims LNG, but can continue at or near current conditions</p> <p><b>Moderate:</b> the Indigenous Interest is impacted or modified by Ksi Lisims LNG, and is approaching a threshold</p> <p><b>Severe:</b> the Indigenous Interest is impacted or modified by Ksi Lisims LNG, and has surpassed a threshold</p>
<p><b>Uncertainty</b></p>	<p>Number of uncertainties remaining / confidence in conclusions of the assessment of potential impact to Indigenous Interest.</p>	<p><b>Low:</b> there is a good understanding of the cause-effect relationship between Ksi Lisims LNG and the Indigenous Interest. Few or no unknown external influences for Ksi Lisims LNG area that are incomplete). The effectiveness of mitigation measures expected to be high. High level of certainty in the conclusions of the assessment of potential impact to Indigenous Interest</p> <p><b>Moderate:</b> the cause-effect relationships between Ksi Lisims LNG and a First Nation are not fully understood (e.g., a few unknown external influences for Ksi Lisims LNG area that are incomplete). The effectiveness of mitigation measures may be moderate or high. Moderate level of certainty in the conclusions of the assessment of potential impact to Indigenous Interest</p> <p><b>High:</b> the cause-effect relationships between Ksi Lisims LNG and an Indigenous Interest are poorly understood. There may be several unknown external influences for Ksi Lisims LNG area that is incomplete. The effectiveness of the mitigation measures may not yet be proven. There is a high degree of uncertainty in the conclusions of the assessment of potential impact to Indigenous Interest</p>

## **16.0 APPENDIX 4 - LIST OF PARTIES ON THE TECHNICAL ADVISORY COMMITTEE**

### **FIRST NATIONS AND REPRESENTATIVES**

Nisga'a Nation

Lax Kw'alaams Band

Metlakatla First Nation

Kitsumkalum First Nation

Kitselas First Nation

Gitxaala Nation

Gitga'at First Nation

Haida Nation

### **PROVINCIAL GOVERNMENT**

Ministry of Energy, Mines and Low Carbon Innovation

Ministry of Environment and Climate Change Strategy

Ministry of Water, Land and Resource Stewardship

Ministry of Forests

Ministry of Municipal Affairs

Ministry of Tourism, Arts, Culture and Sport

Ministry of Transportation and Infrastructure

British Columbia Energy Regulator

Ministry of Jobs, Economic Recovery and Innovation

### **FEDERAL GOVERNMENT**

Transport Canada

Fisheries and Oceans Canada

Canadian Coast Guard

Environment and Climate Change Canada

Natural Resources Canada

Health Canada

Public Health Agency of Canada

Women and Gender Equality Canada

Employment and Social Development Canada

Indigenous Services Canada



First Nations Health Authority  
Crown-Indigenous Relations and Northern Affairs  
Parks Canada  
Innovation, Science and Economic Development  
Public Safety Canada

**HEALTH AUTHORITIES**

Northern Health Authority

**LOCAL GOVERNMENT**

Regional District of Kitimat-Stikine  
North Coast Regional District  
City of Terrace  
City of Prince Rupert  
District of Stewart

**UNITED STATES FEDERAL AND STATE GOVERNMENTS**

United States Environmental Protection Agency  
Alaska Department of Natural Resources  
Alaska Department of Fish and Game

## 17.0 APPENDIX 5 – DETAILED FIRST NATION ASSESSMENTS

### 17.1. Nisga’a Nation

#### 17.1.1. Introduction

This assessment by the Nisga’a Lisims Government (NLG) and the EAO is intended to fulfil the Crown’s obligations to assess the potential effects of the Project on residents of Nisga’a Lands, Nisga’a Lands, or Nisga’a interests in accordance with Chapter 10 – *Environmental Assessment and Protection* (Chapter 10) of the *Nisga’a Final Agreement* (Nisga’a Treaty) and guidance provided to the Proponent, EAO, and IAAC by Nisga’a Lisims Government (NLG).

##### 17.1.1.1. Nisga’a Nation Chapter 10 Requirements

The Nisga’a Treaty between the Government of Canada, the Province of BC and the Nisga’a Nation came into effect on May 11, 2000. The Nisga’a Treaty sets out the Nisga’a Nation’s Section 35 rights, including: the Nisga’a Nation’s ownership of Nisga’a Lands in fee simple; the treaty right to manage and harvest fish, wildlife, migratory birds, and plants; and the legislative jurisdiction of NLG.

Paragraph 8(e) of Chapter 10 of the Nisga’a Treaty requires that all projects, as defined in the Nisga’a Treaty, in addition to the requirements of applicable EA legislation, “assess whether the project can reasonably be expected to have adverse environmental effects on residents of Nisga’a Lands, Nisga’a Lands, or Nisga’a interests set out in the Nisga’a Treaty and, where appropriate, make recommendations to prevent or mitigate those effects.”

Paragraph 8(f) of Chapter 10, of the Nisga’a Treaty requires that all projects, as defined in the Nisga’a Treaty, will, in addition to the requirements of applicable EA legislation, “assess the effects of the project on the existing and future economic, social, and cultural well-being of Nisga’a citizens who may be affected by the project”.

Further, Chapter 10, paragraph 8(h) of the Nisga’a Treaty provides for recommendations, based on the assessment, to the Party or Parties with decision-making authority over the project, in respect of whether the project should proceed.

On July 31, 2014, the Province of BC and NLG entered into a Dispute Resolution Settlement Agreement to resolve issues over the implementation of environmental assessment and consultation obligations under the Nisga’a Treaty, including those related to the Kitsault molybdenum mine. That agreement included Guiding Principles and an Appendix C, outlining the process for collaboration in EAs. Appendix C specifies how the EAO and NLG would collaborate and strive to reach consensus at key decision points through the course of future EAs, including relevant aspects of the EAO’s direction to a proponent, the screening of the Application related to the requirements of paragraph 8(e) and 8(f) Chapter 10, of the Nisga’a Treaty, and the Assessment Report analysis and conclusions related to the 8(e) and 8(f) assessments. The Appendix further outlines that the EAO and NLG would collaborate and attempt to conclude a compliance and enforcement framework, as well as specifying additional detail on what would be included in the 8(f) effects assessment.

On July 18, 2022, during the coordinated planning and assessment readiness phase NLG, the EAO and IAAC developed a collaborative workplan for the Ksi Lisims LNG environmental and impact assessment which sets out how the parties would work together throughout the environmental assessment of the Ksi Lisims LNG project. The parties met regularly throughout the assessment process to implement the collaborative workplan.

On April 6, 2023, the federal Minister of Environment and Climate Change approved the substitution of the conduct of the federal impact assessment to B.C., and IAAC notified EAO, the proponents and the Nisga’a Nation that the assessment would continue, subject to the *Impact Assessment Cooperation Agreement between Canada and British Columbia*. Among other purposes, that agreement establishes that the EAO will gather the information needed to inform a federal decision on the Project under the IAA, as well as information required to inform Canada’s assessment of the potential effects of

the Project on Nisga'a Nation and allow Canada to make its own determination of whether the requirements under Chapter 10 of the Nisga'a Treaty have been met. The substituted assessment will also contribute to Canada meeting its duty to consult with Indigenous groups whose rights and interests have the potential to be impacted if the Project is allowed to proceed.

On, July 13, 2023, the EAO issued the Process Order for Ksi Lisims LNG under Section 11 of the *Environmental Assessment Act*, including the Application Information Requirements (AIR) in Schedule A which outlined the information required to be provided by the Proponents to address and fulfill the provisions of the Nisga'a Treaty.

This chapter provides an assessment of the potential effects of the Ksi Lisims LNG project, mitigation measures and the EAO's conclusions, with respect to paragraphs 8(e) and 8(f) of Chapter 10 of the Nisga'a Treaty. A more detailed description of a range of Valued Components used to inform the assessments can be found in Chapter 11 of the Revised Application, submitted by the Proponents to the EAO on September 3, 2024..

A summary of the Proponents' engagement with the Nisga'a Nation is provided in Section 11.3 of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

#### **17.1.1.2. Nisga'a Treaty Rights and Interests**

Ksi Lisims LNG identified rights and interests to be assessed in the Revised Application through engagement with the Nisga'a Nation and with input from the EAO. The Proponents' engagement with NLG informed the Revised Application and its Nisga'a Effects Assessment, and included:

- Engaging with NLG staff to discuss the Nisga'a Effects Assessment approach, including relevant Nisga'a Treaty rights and interests, Valued Components and acceptable results, how the current state of a Nisga'a Treaty rights and interests or Valued Component would be identified, as well as timing, and capacity, as captured in the [Application Information Requirements](#);
- Meeting with NLG representatives to obtain relevant reports and information on potential Project-related issues that may result in potential adverse effects of the Project;
- Conducting primary research in collaboration with NLG to write an initial Nisga'a Effects Assessment to understand the degree of interaction between the Project or associated activities and Nisga'a Treaty rights and interests or Valued Components and identified potential residual effects and mitigations;
- Developing mitigation and follow-up compliance monitoring protocols in consultation with NLG;
- Providing an opportunity for Nisga'a representatives to review materials prepared for the Application; and
- Incorporating NLG comments into the Nisga'a Effects Assessment in the Revised Application to BC EAO and IAAC.

Based on the Revised Application and through discussion with NLG, the following Nisga'a Treaty rights and interests have been identified as having the potential to be affected by Ksi Lisims LNG:

- Fish and Aquatic Plants (Freshwater)
- Fish and Aquatic Plants (Marine)
- Wildlife and Migratory Birds
- Botanical Forest Products
- Lands
- Existing and future economic well-being of Nisga'a citizens

- Existing and future social well-being of Nisga’a citizens
- Existing and future cultural well-being of Nisga’a citizens

### **17.1.1.3. Information Used to Inform the Nisga’a Chapter 10 Assessment**

NLG, the EAO and IAAC used the following sources of information to prepare this assessment:

- Proponents’ Revised Application
- Draft Chapter 10 Assessment Guidance dated 2018 provided by NLG
- The results of the Social, Economic, Resource Use and Cultural (SERC) surveys conducted by the Proponent
- Engagements between NLG and EAO and IAAC throughout the Environmental Assessment Review process

## **17.1.2. Summary of Issues Raised by the Nisga’a Nation**

### **17.1.2.1. Fish and Fish Habitat**

Nisga’a citizens raised concerns that the location of the Project may result in residual effects on their fishing and harvesting activities, as well as other cultural and traditional activities. Specific concerns included potential impacts to salmon and eulachon runs and migrations, as well as increased harvesting pressure on culturally important fish due to the influx of the Project workforce in the region. Nisga’a Elders reported known halibut habitat and harvesting areas around northern Pearse Island and within Portland Canal, in areas transected by the Marine Shipping Route (MSR).

Nisga’a citizens also raised concerns that the location of the Project may result in residual effects on their fishing and harvesting activities in marine waters, as well as other cultural and traditional activities. Some respondents also raised concerns about the potential increased harvesting pressure on culturally important fish due to the influx of the project workforce into the region, and the Project interrupting the migration of fish and Nisga’a citizens ability to harvest seafood resources.

Major project activities, such as Ksi Lisims LNG, increase public awareness of the area, potentially attracting more visitors for tourism and recreational activities, particularly due to the area's natural beauty and opportunities for sport fishing. Nisga’a citizens highlighted the overall impact of major project activities drawing larger populations to the area, which could place additional pressure on fishing areas, and other culturally and traditionally significant locations.

### **17.1.2.2. Wildlife and Migratory Birds**

A majority of Nisga’a citizens reported that they anticipate that residual effects may occur on hunting activities, as well as other cultural and traditional activities in the Nass Area. Nisga’a citizens expressed concerns for illegal hunting by outside workers entering the area for the purpose of working on the Project, as well as environmental degradation including deforestation, pollution and potential spills which would impact wildlife habitat and health. Nisga’a citizens also expressed concern for the Project’s transportation route potentially disturbing traditional trap lines and hunting grounds.

### **17.1.2.3. Botanical Forest Products**

Nisga’a citizens indicated that residual effects would occur on plant harvesting activities, as well as other cultural and traditional activities in the Nass Area because of the Project. Nisga’a citizens travel to Wil Milit on day trips with their families to harvest botanical forest products, including culturally important plants and traditional medicines, and identified the importance of maintaining connection to the land. Nisga’a citizens noted that major project developments, such as Ksi Lisims LNG, increase public awareness of the area, potentially attracting more visitors for tourism and recreational activities, particularly due to the area's natural beauty and opportunities for sport fishing. Nisga’a citizens highlighted the overall impact of such projects in drawing larger populations to the area, which could place additional pressure on pine mushroom picking sites, and other culturally and traditionally significant locations.

#### 17.1.2.4. Lands and Access to Crown Lands

Nisga'a Elders identified campsites, habitation sites, and a trapline within DL 5431 and DL 7235 during the focus group held in Gingolx. During several focus groups, participants shared memories of family trips to Pearse Island and Portland Canal that occurred during their childhood.

#### 17.1.2.5. Existing and Future Economic Well-being of Nisga'a Citizens

According to the Revised Application, Nisga'a Lisims Government is the largest employer of Nisga'a citizens. Other significant sectors for Nisga'a citizens are provincial or federal government services, construction and retail, food and consumer services. Participation rates are lower and unemployment rates higher among persons on Nisga'a Lands and among citizens living off Nisga'a Lands than the provincial average. Unemployment rates in Nisga'a villages range from 28.3% to 47.4%, which is notably higher than the overall provincial rate of 4.7% and provincial Indigenous rate of 16%. According to the Revised Application, respondents to an employment survey cited bias/racism, lack of work experience, lack of transportation, and lack of training as the main reasons for unemployment. It is currently estimated that 90% of job openings in the Nass Valley Region in the coming years would be due to a retiring workforce; however, labour impacts of resource development projects in the region have the potential to increase employment should disconnects between required skillsets and positions be addressed.

#### 17.1.2.6. Existing and Future Social Well-being of Nisga'a Citizens

The Revised Application noted that Project-related population growth, project-related employment, working conditions and income may influence family and community well-being. Employment opportunities and working conditions may directly contribute to adverse and positive family dynamics and mental health outcomes. Crime and gender-based violence, alcohol and substance use, family dynamics, and mental health may change as a result of Project-related population growth and Project-related employment, working conditions, and income.

#### 17.1.2.7. Existing and Future Cultural Well-being of Nisga'a Citizens

Employment in major development projects is known to sometimes conflict with First Nations' ability to participate in and maintain important cultural activities and practices including hunting, fishing, gathering, and attending cultural events and ceremonies such as marriages, funerals, feasts, seasonal celebrations, or harvests; Ksi Lisims LNG may also contribute to similar effects on Nisga'a citizens.

The *Nisga'a Economic, Social, and Cultural Impact Assessment Guidelines* point to project employment as a potential barrier to individual Nisga'a citizen's participation in activities and practices essential to the maintenance of Nisga'a culture. These guidelines also call for an analysis of the potential for a Project to affect the Nisga'a language. The effects of resource development projects on language, or the ability for people to continue to speak and maintain their language, are generally the result of interactions between non-English or bilingual speakers and an English work environment, and the in-flux of English-speaking workers to host communities.

#### 17.1.3. Potential Effects on the Nisga'a Treaty Rights and Interests

The Proponents of the Ksi Lisims LNG Project identified a number of interactions between project activities and the Nisga'a Nation's rights and interests under paragraph 8(e) of Chapter 10 as shown in Table 11.9-1 of the Revised Application. Consistent with guidance provided by NLG and as described in Section 11.8.1 of the Revised Application, potential Project interactions were ranked by the Proponent as '0', '1', or '2' in the interaction tables for the assessment of each Nisga'a interest. Rank 0 interactions were not assessed further. Effects resulting from interactions that were Rank 1, while not assessed in detail, were considered in the cumulative effects assessment of each Nisga'a interest for the Project's contribution to cumulative effects from other projects, while Rank 2 interactions were assessed in more detail.

Interactions with the Nisga'a Nation Treaty rights and interests were compiled by the Proponent through ongoing consultation with NLG.

Project interactions between project activities and the Nisga'a Nation's rights and interests under paragraph 8(f) of Chapter 10 were identified by the Proponent and presented in Table 11.20-1 of the Revised Application. Interactions that have been identified (ranked as 1 or 2) were carried forward and assessed. Interactions with Nisga'a Treaty rights and interests were compiled through ongoing consultation with NLG and through a review of potential interactions between the Project's components and physical activities with applicable environmental or socio-economic conditions, as identified in Table 6.6.1, Section 6.6 of the Revised Application. The highest-ranking interaction was selected in cases where multiple Valued Components or potential effects inform the Nation-specific assessment (e.g., changes to infrastructure and services in Nisga'a Villages and occupational and non-occupational health risks, which both inform the existing and future social well-being of Nisga'a citizens).

#### **17.1.4. Summary of Predicted Residual Effects on Residents of Nisga'a Lands, Nisga'a Lands, and Nisga'a interests (Chapter 10, paragraph 8(e))**

Table 11.16-1 of the Revised Application predicted the residual effects on Chapter 10 paragraph 8e valued components. For all the Chapter 10 paragraph 8e Valued Components, no significant adverse residual effects were identified by the Proponent after mitigations as detailed in [Appendix A](#) to the Revised Application.

#### **17.1.5. Summary of Cumulative Effects on Nisga'a Treaty Rights and Interests(Chapter 10, paragraph 8(e))**

The Revised Application summarized cumulative effects on Nisga'a Treaty rights and interests in Table 11.19-1 which the Proponents viewed as conservatively overestimated with consideration for the interconnectedness of the effect pathways that informed Nisga'a Treaty rights and interests, and which can be adequately mitigated.

Cumulative effects from Ksi Lisims LNG may also be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses along the MSR. Some relevant government-led initiatives include: Land Use Plan for Nisga'a Lands, Pacific North Coast Integrated Management Area, North Coast Land and Resource Management Plan, Canada-British Columbia Marine Protected Area Network Strategy, Oceans Protection Plan, and the Cumulative Effects of Marine Shipping Northern Shelf Bioregion Pilot Area. These initiatives are described further in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

#### **17.1.6. Summary of Predicted Residual Effects on Residents of Nisga'a Lands, Nisga'a Lands, and Nisga'a interests (Chapter 10, paragraph 8(f))**

The Revised Application predicted the residual effects on Chapter 10 (8f) valued components as shown in [Table 11.24-1](#). For all the Chapter 10 (8f) Valued Components, no significant adverse residual effects were identified by the Proponent after mitigations as detailed in [Appendix A](#) to the Revised Application.

#### **17.1.7. Summary of Cumulative Effects on Residents of Nisga'a Lands, Nisga'a Lands, and Nisga'a interests (Chapter 10, paragraph 8(f))**

The Revised Application identified cumulative effects on Nisga'a Treaty rights and interests under paragraph 8(f) of Chapter 10 as shown in [Table 11.27-1](#). The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for adverse cumulative effects on Nisga'a citizens receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources.

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on existing and future cultural well-being of Nisga'a citizens due to a greater number of people accessing the land base in the region.

The potential cumulative effects resulting from Ksi Lisims LNG on existing and future cultural well-being of Nisga'a citizens include those related to marine navigation due to interaction with vessels and increasing shipping traffic.

#### **17.1.8. Summary of Predicted Positive Effects on Residents of Nisga'a Lands, Nisga'a Lands, and Nisga'a interests (Chapter 10, paragraphs 8(e) and 8(f))**

Direct positive effects on Nisga'a paragraph 8(e) interests are largely not predicted compared to existing conditions. There may be some temporary positive effects for some botanical and cultural forest product plant species (e.g., *Vaccinium* spp.) that are more shade-intolerant and may colonize new edges. The potential addition of aids to navigation near the Site would have a positive effect on marine navigation. The installation of aids to navigation would not only mark dangers and obstructions related to the Project but assist marine users in determining their position and course, warn marine users of other dangers or obstructions, and advise marine users of the location of the best or preferred route.

Direct positive effects on Nisga'a paragraph 8(f) interests may be expected compared to existing conditions. The Project is expected to create future economic opportunities for Nisga'a citizens through contracting, employment, job training, and career development. These opportunities could also positively influence the potential for future business opportunities. Nisga'a businesses stand to gain net benefits through increased earnings, capacity, capabilities, and experience. These benefits may position Nisga'a businesses more competitively to secure contracts in the future with proponents of other projects and activities in the region.

Positive interactions between Nisga'a and non-Nisga'a individuals have the potential to foster cultural awareness and mutual understanding. Through project activities, non-Nisga'a individuals working in the area can gain insight into both historical and contemporary Nisga'a cultural practices. These engagements also provide newcomers to the Nass Valley with opportunities to learn about the Nisga'a Nation's contributions to contemporary Canadian society, particularly through their leadership in large-scale economic development projects. The revenue generated from such projects supports environmental stewardship, while Nisga'a Nation ownership in the Project ensures that development activities prioritize respect for land-based and marine-based stewardship, benefiting present and future generations.

#### **17.1.9. Proposed Provincial and Federal Conditions to Mitigate Effects to Nisga'a Chapter 10 paragraphs 8(e) and 8(f) Treaty Rights and Interests**

NLG, the EAO and IAAC collaborated on:

- (a) the development of the proposed Environmental Assessment Certificate Schedule B Table of Conditions for the Project;
- (b) the key mitigation measures recommended by the EAO to IAAC to address the predicted Project effects falling within areas of federal jurisdiction; and
- (c) IAAC's proposed conditions under section 64 of the Impact Assessment Act.

The Table of Conditions set out in the draft Environmental Assessment Certificate Schedule B, including in particular Condition 9.3 which commits the Proponent to implementing the mitigation measures set out in Table A.1 – Mitigation and Enhancement Measures of Appendix A – Summary of Mitigation Measures of the Application, the key mitigation measures (Appendix 2) recommended by the EAO to IAAC and IAAC's proposed draft potential conditions under section 64 of the Impact Assessment Act sufficiently capture the mitigation measures required to address the potential effects on Nisga'a Treaty interests and in particular impacts to Freshwater Fish and Fish Habitat, Marine Fish and Fish Habitat,

Wildlife and Migratory Birds, Botanical Forest Products, Lands and Access to Crown Lands, and the existing and future Economic, Social and Cultural well-being of Nisga'a citizens. These conditions collectively support the conclusions set out in the summary of predicted effects set out in sections [17.1.4](#) – [17.1.8](#).

#### **17.1.10. Government Initiatives Relevant to Addressing Potential Cumulative Effects**

In addition to the mitigations proposed by the Proponent, EAO Conditions, and Federal Conditions that would be placed on the Project, any cumulative effects from the Project may be addressed by government-led initiatives that are relevant to terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route. These initiatives are described further in Section 3.4.2 of the Assessment Report and Section 7.11.2 of the Revised Application.

#### **17.1.11. Ongoing Engagement, Information Sharing, Notification, and Reporting**

If the project is issued a provincial Environmental Assessment Certificate and a federal Decision Statement that allow the project to proceed, the EAO, IAAC and NLG will continue to engage throughout the life of the Project in accordance with the Nisga'a Treaty, Nisga'a Legislation, provincial conditions as set out in Schedule B of the Environmental Assessment Certificate, and federal conditions and follow-up programs as set out in the Decision Statement.

#### **17.1.12. Conclusions of NLG**

In consideration of project design, mitigation as committed to by the Proponent, offsetting, environmental management, and Conditions that would be proposed for the Project by the EAO and IAAC, as well as ongoing engagement between the proponent and NLG for the life of the Project, NLG considers the Ksi Lisims LNG Project to have met the requirements of the Nisga'a Treaty, the BC *Environmental Assessment Act*, and the *Impact Assessment Act* and will not unduly adversely impact residents of Nisga'a Lands, Nisga'a Lands or Nisga'a Interests. In accordance with paragraph 8(h) of Chapter 10, it is the view of NLG that the project should proceed.



Assessment of Effects on Gitga'at First Nation and its Rights and Interests for  
the Ksi Lisims LNG Project

DRAFT

## Executive Summary

**Introduction:** This report provides an assessment of effects of the Ksi Lisims LNG project on the rights and interests of Gitga'at First Nation. This information is presented as chapter provided for inclusion in the Environmental Assessment (EA) for the Ksi Lisims LNG Project. This chapter is required to ensure potential risks and impacts on Gitga'at First Nation's rights and interests are articulated, identified, avoided, and when necessary, associated mitigations are implemented.

**Community Profile:** The Gitga'at First Nation is one of the coastal Tsimshian Tribes whose origins lie in ancient migrations and meldings of interior and coastal Indigenous groups. Comprised of *waaps* (aristocratic houses) and three clans – *Ganhada* (Raven), *Gispudwada* (Blackfish) and *Laxsgiik* (Eagle) – the identity and culture of the people – the “Gitga'at'a” – is rooted in responsibilities and rights that flow from their *Adaawx* (oral histories) and *Ayaawx* (Indigenous laws). These are the cultural and legal foundations which are passed down through the generations via *Gugwixya'ansk*, feasting and other customs and practices.

In historical times, before contact with Europeans and colonialism, the Gitga'at'a travelled, occupied permanent and seasonal villages, carried out their responsibilities and exercised their rights throughout their territory, an area that encompasses the lands and waters around *Txalgiuw* (Hartley Bay) and other villages and occupancy sites in the south, and that extends in the north to include travel routes, occupancy sites and resource stewardship and use areas in the lower Skeena River, Prince Rupert Harbour, Chatham Sound, Portland Inlet and Nass Bay.

In present day, having survived the diseases, disturbances, displacements and disenfranchisements of colonial times, most Gitga'at'a now live in Hartley Bay and Prince Rupert where there are business and work opportunities, social connections and cultural events, and access to education, health and social services. But the health and well-being of the Gitga'at'a is still rooted in their continuation of their Indigenous customs and practices. Through strong engagement in reconciliation processes, the Gitga'at'a are now working to restore their independence, to ensure the protection and stewardship of their territory, and to rebuild the cultural, social and economic well-being of their community.

**Gitga'at First Nation Involvement in Consultation Process:** Ksi Lisims LNG and Gitga'at First Nation began consultations in November 2021. Ksi Lisims LNG has made efforts to support and consider Indigenous-led studies to better understand-potential effects. These included the Traditional Use and Occupation Study (TUOS), and this Assessment Report on Gitga'at First Nation's Rights and Interests. Throughout the consultation process Gitga'at has raised concerns regarding the Proponent's use of outdated data to describe Gitga'at First Nation and their territory. Thus far, the Proponent's application has failed to fully recognize Gitga'at's rights in the Project area as required under the *Impact Assessment Act*.

**Assessment of project impacts related to the KL LNG project specific to Gitga'at First Nation's rights and interests:** This report identifies that the proposed Ksi Lisims project presents a number of significant specific and cumulative risks and impacts to Gitga'at's inherent right of self-government and self-determination, Indigenous community health and well-being, and the ongoing exercise of

their Indigenous responsibilities and rights to travel, occupy and carry out stewardship and harvesting activity in their territory.

The relationship between the impacts and risks associated with the proposed Ksi Lisims project related impacts and the interests and rights of Gitga’at First Nation are summarized in the below table and outlined in more detail in the body of this report.

Gitga’at Rights and Interests	Identified Project-Related Impacts
<b>Harvesting Rights and Territorial Stewardship</b>	The impacts of increased shipping traffic on Gitga’at First Nation’s access to TUOS harvesting sites include reduced access to and production from key sites and areas, alienation from sites and areas due to industrial activity and pollution, and diminished quality of traditional harvesting experiences near shipping routes. Risks and impacts include adverse impacts to the food security of Gitga’at people, as well as disrupted trade relationships and economic exchange with neighbouring First Nations. Marine wildlife populations face disturbance, injury, and habitat loss, with potential overharvesting due to increased local population and recreational fishing activities.
<b>Use and Integrity of Sacred and Culturally Important Sites and Land and Marine-Scape Features</b>	Increased shipping traffic poses significant risk to Gitga’at First Nation’s access to and preservation of important sacred and cultural sites. Impacts include reduced access due to increased safety risks, deteriorating quality of experience from noise and pollution, and threats to resources from industrial activity. These sites are important for the sharing of traditional knowledge and connection to culture – which are fundamental determinants of Gitga’at health and wellbeing.
<b>Indigenous Governance, Self-Determination, and Territorial Stewardship</b>	Increase in LNG carrier and tug traffic poses risks to vessel passage and safety and as result will impact Gitga’at decision-making regarding the use and stewardship of their marine territory. Further, Gitga’at will need to dedicate additional resources to environmental stewardship to address pollution issues and monitor the marine environment. Additionally, changes in commercially traded resources from Gitga’at fisheries will impact self-governance and critical parts of the local economy.
<b>Indigenous Health and Wellbeing</b>	Population influxes associated with the project workforce poses risks several community health and safety areas for Gitga’at members including the availability and affordability of housing, access to health services, drugs and alcohol, and crime. Further, shipping traffic and vessel collision risks hinder access to territory and cultural sites, impacting cultural practices and food security.

**Recommendations:** This work has outlined a number of critical strategies and measures that need to be advanced to mitigate and compensate for the impacts to Gitga’at First Nation’s Indigenous rights and interest that are identified in this report. Gitga’at’s proposed mitigation and compensation measures are described in great detail in the body of this report.

1. ***Ensure Gitga’at members have free and safe access to their marine environment.***
  - a. ***KL LNG to utilize the proposed Northern Route for Marine Shipping which will reduce the number of Gitga’at TUOS sites that shipping traffic passes through. This***

*will reduce the maritime safety risks to the Gitga'at community and improve the experience of traditional harvesting in those sites.*

- b. ***KL LNG engage and work with Gitga'at First Nation to develop a seasonal understanding of Gitga'at harvesting activities at TUOS sites, and where possible, reschedule or divert shipping traffic movements to leave specific harvesting sites clear at certain times of year/maximise Gitga'at access to these locations.***
  - c. ***KL LNG to engage and work with Gitga'at First Nation to develop and implement a Marine Safety and Shipping Management Plan and Marine Incident Preparedness, Response and Recovery Plan.***
2. ***Assist Gitga'at in their territorial stewardship by providing ongoing and up to date data on the environmental health of the project's marine use areas, and any changes to it as a result of facility construction and operations including the project-related LNG carrier and other shipping traffic.***
  3. ***Financially contribute to Gitga'at First Nation's health and safety monitoring programs: Gitga'at First Nation has established a socio-ecological monitoring program, called We Monitor by Living Here (WMBLH), Gitga'at Guardian program and is also established a Gitga'at health and wellbeing monitoring program. The proposed KL LNG Project may result in both positive and negative impacts for Gitga'at First Nation members. To ensure potential impacts are effectively monitored and assessed, Gitga'at recommends the KL LNG project provide financial contributions to all three monitoring programs.***
  4. ***Ensure Gitga'at members have equal opportunities and benefits from training and employment opportunities, including:***
    - a. *The inclusion of Gitga'at-specific measures and targets in the project's Local and Indigenous Employment and Procurement Plan;*
    - b. *Internships, scholarships, job training, and apprenticeship opportunities for Gitga'at members;*
    - c. *Engage directly with Gitga'at to provide information sessions and/or community training and job fairs to inform community members about opportunities and actively recruit for programs and jobs.*
  5. ***Safeguard Gitga'at member's health and wellbeing in the context of four intersecting community health and safety crises. Detailed mitigation measures and appropriate investments to address project-related impacts on Gitga'at member's access to affordable housing, access to health and emergency services, mental health and substance use risks, and critical safety risks regarding sexual exploitation and human trafficking are included in Section 1.5.4 of this report.***

## Table of Contents

<b><i>Gitga’at First Nation</i></b> .....	<b>3</b>
<b>1.1 Community Profile</b> .....	<b>3</b>
<b>1.2 Gitga’at First Nation’s Involvement in the Consultation Processes</b> .....	<b>9</b>
<b>1.3 Assessment Spatial Boundary</b> .....	<b>11</b>
<b>1.4 Regional Context</b> .....	<b>16</b>
<b>1.5 Assessment of Project Impacts to Gitga’at Interests</b> .....	<b>40</b>
1.5.1 Harvesting Rights.....	40
1.5.2 Use and Integrity of Sacred and Culturally Important Sites and Land and Marine-Scape Features.....	59
1.5.3 Indigenous Governance, Self-Determination and Territorial Stewardship .....	70
1.5.4 Indigenous Health and Wellbeing.....	84
1.5.5 Positive Effects of Ksi Lisims LNG.....	120
<b>1.6 Conclusion</b> .....	<b>121</b>
<b>Annex: Residual Effects Characterization Definitions for Effects on Gitga’at Indigenous Interests</b> .....	<b>123</b>

## List of Tables

Table 1 Current and Proposed Projects in the Region. ....	16
Table 2. Condensed summary of 2019 AIS traffic in central Gitga’at waters for 10 different vessels from Keen et al., “Ship-strike forecast and mitigation for whales in Gitga’at Territory”. ....	19
Table 3. Indicators describing access to and enjoyment of traditional foods for Gitga’at households represented by the CHWS (N=146) and households in Hartley Bay (N=47). ....	40
Table 4. Gitga’at Mitigations Harvesting Rights .....	47
Table 5. Summary of residual effects for Harvesting Rights in the marine environment .....	54
Table 6 Gitga’at Mitigations Use and Integrity of Sacred and Culturally Important Sites and Land and Marine-Scape Features.....	62
Table 7. Summary of residual effects for use and integrity of sacred and culturally important sites and land and marinescape features .....	66
Table 8 Gitga’at’s Mitigations Indigenous Governance, Self-Determination, and Territorial Stewardship .....	74
Table 9. Summary of Residual Effects for Indigenous Governance, Self-Determination, and Territorial Stewardship .....	79
Table 10. Indicators describing the general health and wellbeing of Gitga’at households (N=146) and households in Hartley Bay (N=47) based on data collected during the 2023 CHWS. ....	89
Table 11. Hartley Bay CHWS participants’ perspectives on local health services (2023) .....	91
Table 12. Prince Rupert CHWS participant’s perspectives on local health services (2023) .....	92
Table 13. Select indicators of substance use in Prince Rupert LHA, Kitimat LHA, and BC. ....	94
Table 14. Illicit toxicity death rate reported by the Northern Health Authority and BC. ....	95
Table 15. Gitga’at’s Mitigations Indigenous Health and Wellbeing.....	101
Table 16 Summary of residual effects for Indigenous health and well-being .....	114

## List of Figures

Figure 1: Map of the Ksi Lisims LNG project location and surrounding Gitga’at TUOS sites. ....	5
Figure 2. Select 2023 CHWS data relating to Gitga’at First Nation Housing indicators for Hartley Bay.....	6
Figure 3. Select 2023 CHWS data relating to Gitga’at First Nation Housing indicators for Prince Rupert .....	8
Figure 4. Assessment Boundaries for Gitga’at First Nation Territory Key Map, Ksi Lisims LNG Gitga’at Nation Assessment, Fig. 17.3-2 .....	12
Figure 5. Map displaying the location of the Ksi Lisims LNG facility, the proposed shipping routes, and Gitga’at First Nation’s TUOS/settlement and culture sites as identified in Inglis Consulting (2022). ....	13
Figure 6. Average monthly marine traffic (all vessels) around the Ksi Lisims LNG project footprint and Gitga’at TUOS sites from 2011. ....	21
Figure 7. Average monthly marine traffic (all vessels) around the Ksi Lisims LNG project footprint and Gitga’at TUOS sites from 2023. ....	21
Figure 8. Average monthly marine traffic (tankers and cargo ships only) around the Ksi Lisims LNG project footprint and Gitga’at TUOS sites from 2011. ....	22
Figure 9. Average monthly marine traffic (tankers and cargo ships only) around the Ksi Lisims LNG project footprint and Gitga’at TUOS sites from 2023. ....	22
Figure 10. Average monthly marine traffic from 2023 overlaid with KL LNG shipping routes and Gitga’at TUOS sites.....	23
Figure 11. Average Vessel Density (all vessel types) in Gitga’at TUOS sites from 2011-2023.....	24
Figure 12. Daily arrivals to the Port of Prince Rupert by vessel type, from November 14 <sup>th</sup> to 27 <sup>th</sup> , 2023 .....	25
Figure 13. Daily number of cargo ships (containers and tankers) in Gitga’at Territory and TUOS sites from November 14 <sup>th</sup> to 27 <sup>th</sup> , 2023. ....	26
Figure 14. BC Cetacean Sightings Network - Baleen Whale Sightings (2017-2022), Ksi Lisims LNG Gitga’at Nation Assessment, Fig. 7.9-17 .....	72
Figure 15. Recent housing statistics for Gitga’at members living in Prince Rupert.....	86
Figure 16. Recent housing statistics for Gitga’at members living in Hartley Bay .....	88

# Gitga'at First Nation

## 1.1 Community Profile

### Overview

The Gitga'at First Nation is one of the coastal Tsimshian Tribes whose origins lie in the ancient migrations and meldings of interior and coastal Indigenous groups. Comprised of three clans – *Ganhada* (Raven), *Gispudwada* (Blackfish) and *Laxsgiik* (Eagle) – and several ancient *waaps* (aristocratic houses), the culture and identity of the people, the “Gitga'at'a”, is rooted in responsibilities and rights that flow from their *Adaawx* (oral histories) and *Ayaawx* (Indigenous laws). These are the cultural and legal cornerstones of the tribe which are passed down through the generations via *Gugwixya'ansk*, feasting and other customs and practices.

In historical times, before contact and colonialism, the Gitga'at'a travelled, occupied permanent and seasonal villages, carried out their responsibilities and exercised their rights throughout their territory, an area that encompasses extensive lands and waters around *Txalgiuw* (Hartley Bay) and other village and occupancy sites in the south, and extends north to include travel routes, occupancy sites and resource stewardship and use areas in the lower Skeena River, Prince Rupert Harbour, Chatham Sound, Portland Inlet and Nass Bay.

Although the health and well-being of the *Gitga'at'a* remains firmly anchored in the continuation of their Indigenous customs and practices, the nation is advancing new customs and practices including adoption of new governance institutions and development of new administration capacities and management arrangements. Through collaboration with other First Nations and strong engagement with Canada and British Columbia in reconciliation and related processes, the *Gitga'at'a* are now working to restore the independence of their government, to ensure the protection and stewardship of their territory, and to rebuild the cultural, social and economic well-being of their community.

In present day, having survived the diseases, disruptions, displacements and disenfranchisements of colonial times, most Gitga'at'a now live in Hartley Bay and Prince Rupert – both locations of historical Gitga'at'a occupation and use – where there are business and work opportunities, social connection and cultural events, and access to education, health and social services.

### Current Status

As of 2022, the registered population of Gitga'at First Nation was 814 members, most of whom live in Prince Rupert (approximately two third of the population and Hartley Bay (approximately 145 members).<sup>1,2</sup> Other Gitga'at members reside in Terrace, Kitimat, Vancouver Island, Vancouver and elsewhere across Canada and the United States.

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<sup>1</sup> Indigenous and Northern Affairs Canada (2021). *Gitga'at First Nation*. Retrieved from: [https://fnpppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNMain.aspx?BAND\\_NUMBER=675&lang=eng](https://fnpppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNMain.aspx?BAND_NUMBER=675&lang=eng)

<sup>2</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: Gitga'at First Nation Traditional Use and Occupancy Study for the Ksi Lisims LNG Project. p.56

Gitga'ata traditional knowledge holders and historic records from early European settlers to the region convey that the Gitga'ata travelled seasonally, using the Metlakatla and Prince Rupert Harbour areas as winter bases, and travelling to and living at the mouth of the Skeena River and Nass Bay areas during fishing seasons.<sup>3</sup> A large proportion of Gitga'at First Nation's population currently lives in Prince Rupert, which was an important settlement and harvesting area for the Nation prior to the arrival of Europeans. Gitga'at had settlements in the Port of Prince Rupert area at Casey Point, Moresby Creek, Hays Creek on Kaien Island, and Wolf Creek in Port Edward.<sup>4</sup> Today, cultural ties between dispersed Gitga'at communities remain strong, and members report regular travel between Prince Rupert and Hartley Bay for employment, social connections, cultural events and to access health and social services.<sup>5</sup> A number of members have houses in Hartley Bay and Prince Rupert and movement between the two communities is frequent by twice a weekly ferry service, float plane, individually owned boats, or Gitga'at First Nation Guardian marine vessels.<sup>6</sup> Gitga'at members reported travelling long distances (for example, from Prince Rupert to 'Clamstown' in the southern part of the Gitga'at Territory) for harvesting and cultural events.<sup>7</sup>

Note: Image Redacted to Protect Confidential Information



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<sup>3</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at First Nation Traditional Use and Occupancy Study for the Ksi Lisims LNG Project.*

<sup>4</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project.* p.29

<sup>5</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project.* p.52

<sup>6</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project.* p.30

<sup>7</sup> Gitga'at First Nation (2023). *Community Health and Wellness Survey Technical Report.* p.49



Figure 1: Map of the Ksi Lisims LNG project location and surrounding Gitga'at TUOS sites.

TUOS sites and the sites of Gitga'at First Nation's Territory continue to hold deep significance for its people, serving as important cultural and spiritual locations, sources of resource harvesting and gathering, and travel routes. A large part of the Gitga'at identity is expressed through their connection to their territory and TUOS sites, both through connections to their cultural past, and through present and future aspirations to practice their own cultural way of life and preserve this for future generations to come.

### Community Demographics and Housing: Hartley Bay

The following data summarizes the housing situation and current challenges in Hartley Bay including housing availability, conditions, affordability, and income. This information was sourced from Gitga'at First Nation's 2023 Community Health and Wellness Survey (CHWS) Technical Report.<sup>8</sup> Figure 2 below provides select 2023 CHWS housing data indicators for Gitga'at households located in Hartley Bay.

The 2023 CHWS identified 49 Gitga'at households in Hartley Bay representing a response rate of over 90% of eligible households (households comprising of Gitga'at member(s) who are 18 years of age or older). From this data it can be estimated that approximately 145 Gitga'at members live in the community. Children and youth (17 years of age or younger) make up nearly a third of Hartley Bay's population (31%). Gitga'at households in Hartley Bay secure income from wages and salaries – 90% of households report that at least one member of their home works full-time, part-time, seasonally or is self-employed. Nearly half of survey participants (45%) reported that one or more member(s) of their household was currently unemployed and looking for work. The data collected from the 2023 Gitga'at Housing Needs Assessment survey indicated that the housing situation is inadequate for the community living at Hartley Bay. Over half (53%) of households live in owned/purchased homes, while 41% live in band housing, and 6% live in non-band rental units.<sup>9</sup> The supply of homes in Hartley Bay is extremely limited. Approximately half of all households (51%) reported being on a waitlist with the Band prior to moving into their current home. At the time of the 2023 CHWS report, the housing waitlist in the community was 12 households, with only one home vacant. Further, one third (33%) of households surveyed reported not having enough space in their home to feel comfortable, and 29% of households are shared by multiple roommates and/or families. Many of the houses are also in need of repair and maintenance. Over half of all households reported the need for some form of repairs (63%), with 20% requiring major repairs to address residents' health and safety concerns. Mould is a prevalent health hazard as it visibly appears in 46% of homes.

Along with the need to address housing issues, 20% of the respondents reported that their current household income is not enough to meet their basic needs, which includes paying for bills, groceries, clothing and utilities. Nearly a third of households (30%) reported that there was inadequate access

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<sup>8</sup> Gitga'at First Nation (2023). *Community Health and Wellness Survey Technical Report*.

<sup>9</sup> Gitga'at First Nation (2023). *Housing Needs Assessment*.

to safe and secure housing in the community, and 21% reported that a member had experienced homelessness at some point in their lives.

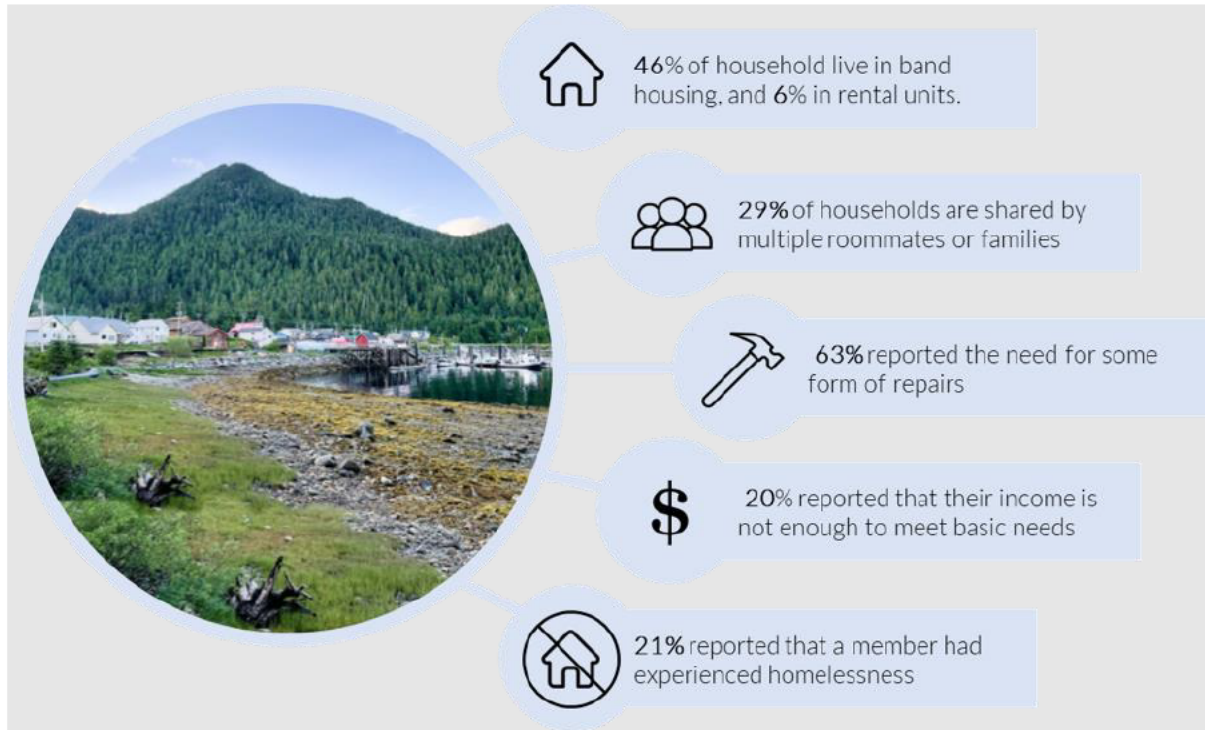


Figure 2. Select 2023 CHWS data relating to Gitga’at First Nation Housing indicators for Hartley Bay

### Community Demographics and Housing: Prince Rupert

The following data summarizes the housing situation and current issues in Prince Rupert and was sourced from Gitga’at First Nation’s 2023 household CHWS Technical Report.<sup>10</sup> Figure 3 below provides select 2023 CHWS housing data indicators for households located in Gitga’at First Nation Prince Rupert.

The 2023 CHWS identified and collected data from 54 Gitga’at households in Prince Rupert, representing 193 people, representing roughly one third of the total Gitga’at population in the city. Gitga’at First Nation’s internal sources estimate around 100 Gitga’at households in the city. As of 2021, the population of Prince Rupert is 12,300, and has an average age of 40.4 years old.<sup>11</sup> Plans for significant development and population growth have been proposed for the next five years.

<sup>10</sup> Gitga’at First Nation (2023). *Community Health and Wellness Survey Technical Report*.

<sup>11</sup> Statistics Canada (2021). *Focus on Geography Series, 2021 Census of Population – Prince Rupert, City*. Retrieved from: <https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?topic=2&lang=E&dguid=2021A00055947012>

Similarly, the Port of Prince Rupert is expected to undergo large expansion work in the coming years to accommodate the increasing levels of industrial traffic coming through the region.<sup>12</sup>

The majority of surveyed Gitga'at households in Prince Rupert live in rental properties (63%), while the rest (37%) live in owned/purchased houses. Of the Gitga'at households located in Prince Rupert that participated in the study, the majority (78%) reported that they receive income from wages and salaries, with 89% of households reporting that at least one member of their home was working full-time, part-time, seasonally, or through self-employment. Half (50%) of surveyed households reported that one or more member(s) in their home was currently unemployed and looking for work.

Similar to Hartley Bay, a notable issue is the lack of available and affordable secure housing. Nearly a third of households (32%) report that their homes are shared with multiple roommates and/or families. Over half of participants (57%) reported that their homes are in ok/poor condition and are in need of some repairs. Nearly 40% of households in Prince Rupert report that their homes do not get warm enough to feel comfortable in the wintertime (39%). A lack of proper heating and dampness may contribute to household health risks including mould, with over a third of households reporting visible mould in their homes (37%).

Nearly a third of households also report that their current income is not enough to meet their basic needs (30%). In addition, 9% of households reported that a member of their home had experienced homelessness in the past, however this is likely an underrepresentation of homelessness affecting Gitga'at members who live in the city, since the dataset represents Gitga'at members who are currently part of a household. Previous work has estimated that 87% of Prince Rupert's homeless population identifies as Indigenous, and further studies are needed to identify the accurate number of Gitga'at members who identify as homeless or precariously housed in the city.<sup>13</sup>

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<sup>12</sup> Prince Rupert Port Authority (2023). *2022 Annual Report from the Board of Directors* Retrieved from: <https://2022.rupertport.com/>

<sup>13</sup> Homelessness Services Association of BC. (2021, December). *2020/21 Report on Homeless Counts in B.C.* Retrieved from <https://www.bchousing.org/publications/2020-21-BC-Homeless-Counts.pdf>

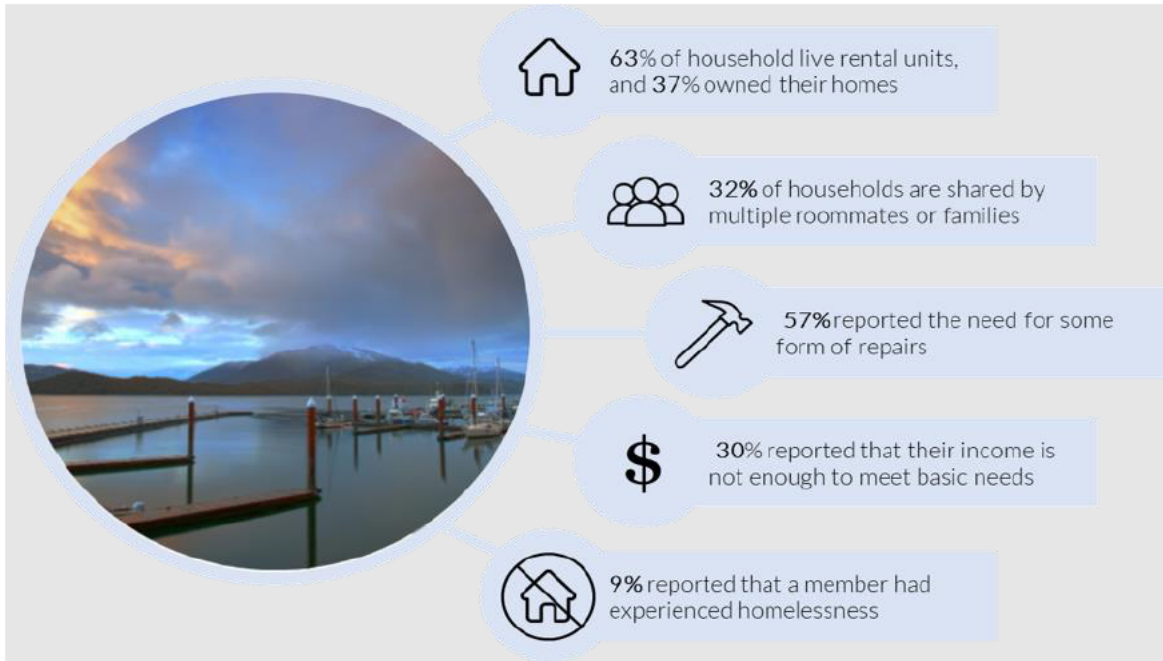


Figure 3. Select 2023 CHWS data relating to Gitga'at First Nation Housing indicators for Prince Rupert

## 1.2 Gitga’at First Nation’s Involvement in the Consultation Processes

### Gitga’at and the Proponents (Ksi Lisims)

Ksi Lisims LNG’s efforts to share information and discuss the Project Nation, starting in November 2021, have so far consisted of the following:

- Providing notification of the Project at an in-person meeting in April 2021;
- Introducing the Project and the Proponents. (Done at a technical level, with Gitga’at GOLD doing briefings to leadership. A leadership meeting between Nisga’a and Gitga’at was held about the project);
- Providing notification of Project steps and processes;
- Providing a copy of the draft Application Information Requirements (dAIR), the Detailed Project Description (DPD), the VC selection document, a draft Mitigation Measures Table, and other Project materials for review and comment, which the Nation responded to with a list of requested edits;
- Providing a copy of the preliminary list of potential effects and preliminary list of information sources for review and comment;
- Signing an EA and Regulatory Process Funding Agreement that provides funding for Gitga’at First Nation to undertake studies to understand Project-related effects to their interests and to participate in the EA process;
- Providing preliminary versions of several draft sections of Environmental Assessment documents and Technical Data Reports (TDRS) s for review in advance of submission to the BC EAO, which the Nation responded to with requests for edits, additions and revisions; and
- Providing updates regarding Project design and evolving timelines.

Ksi Lisims LNG made efforts to support and consider Indigenous-led studies to better understand potential effects. These included the Traditional Use and Occupation Study (TUOS), and the Assessment Report on Gitga’at First Nation’s Rights and Interests.

Gitga’at’s efforts to share information and discuss the Project with Ksi Lisims has so far consisted of:

- Gitga’at Oceans and Lands Department (GOLD) senior management and staff meeting bi-weekly with representatives of Ksi Lisims to receive updates related to and discuss topics regarding the Project design, the EA process, and associated timelines;
- Providing Ksi Lisims with a Traditional Use and Occupancy Study (TUOS) commissioned for the Project;
- Providing Ksi Lisims with a “Potential Adverse Effects, Rationale and Measurable Perimeters” Table developed to inform the Proponent of potential impacts on Gitga’at as a result of the Project;
- GOLD senior management, staff and consultants participating in information sessions and workshops hosted by Ksi Lisims;

- Reviewing and providing feedback on the draft Application Information Requirements (dAIR), the Detailed Project Description (DPD), the VC selection document, a draft Mitigation Measures Table, and other Project materials for review and comment; and
- Reviewing and providing feedback directly to Ksi Lisims on several draft sections of Environmental Assessment documents and Technical Data Reports prior to the submission to the EAO

Gitga'at has made efforts during the preliminary engagement, process planning, and application review phases of the EA Process to provide the Proponent and the BCEAO with the information they need to reasonably assess the impacts the Project will have on the Gitga'at First Nation. However, Gitga'at remains concerned that the information and recommendations Gitga'at's senior staff have provided has been met with a lack of receptiveness and lack of response.

For example, Gitga'at has provided the Proponent and the BCEAO important new evidenced-based information and data related to Gitga'at occupancy and use which has not been incorporated into key assessments including importantly those related to marine safety, access to TUOS sites and areas, and community health and well-being.

In addition, Gitga'at representatives have repeatedly informed the Proponent that the Nation collects data that is specific to Gitga'at that should be used to address gaps in key sections of reports (for example, Gitga'at has implemented a comprehensive community health monitoring program that provides important data for nearly all Gitga'at households in the region).

In addition, the Proponent's application has systematically failed to recognize the full geographic scope and strength of Gitga'at's inherent and aboriginal rights in the Project area. The *Impact Assessment Act* requires the Proponent to take into account "any study or plan" conducted by an Indigenous governing body "that is in respect of a region related to the designated project and that has been provided with respect to the project". But in the key reports to fulfil this requirement, instead of referring to the 2022 Gitga'at Traditional Use and Occupancy Study prepared by Gitga'at expressly for this Project, the Proponent continues to reference dated land and marine use plans and other sources of information that were prepared many years ago in different circumstances and for very different purposes. Gitga'at has asked the Proponent to remove these irrelevant, misleading, and harmful references.

## 1.3 Assessment Spatial Boundary

The Ksi Lisims proponents conducted assessments on the project VCs in the following assessment area categories (see Figure 4 for maps of the assessment areas):

### Acoustic

- Acoustic/Human Health Local Assessment Area
- Acoustic Regional Assessment Area

### Air Quality

- Air Quality Facility Local Assessment Area
- Air Quality Shipping Local Assessment Area

### Community Health and Wellness/Employment and Economy

- Community Health and Wellness/Employment and Economy Local Assessment Area
- Community Health and Wellness/Employment and Economy Regional Assessment Area

### Human Health

- Human Health Local/Regional Assessment Area for Air Quality
- Effects Human Health Regional Assessment Area for Noise Effects

### Infrastructure and Services

- Infrastructure and Services Local Assessment Area
- Infrastructure and Services Regional Assessment Area

### Marine Resources

- Marine Resources Shipping Local Assessment Area
- Marine Resources Shipping Regional Assessment Area

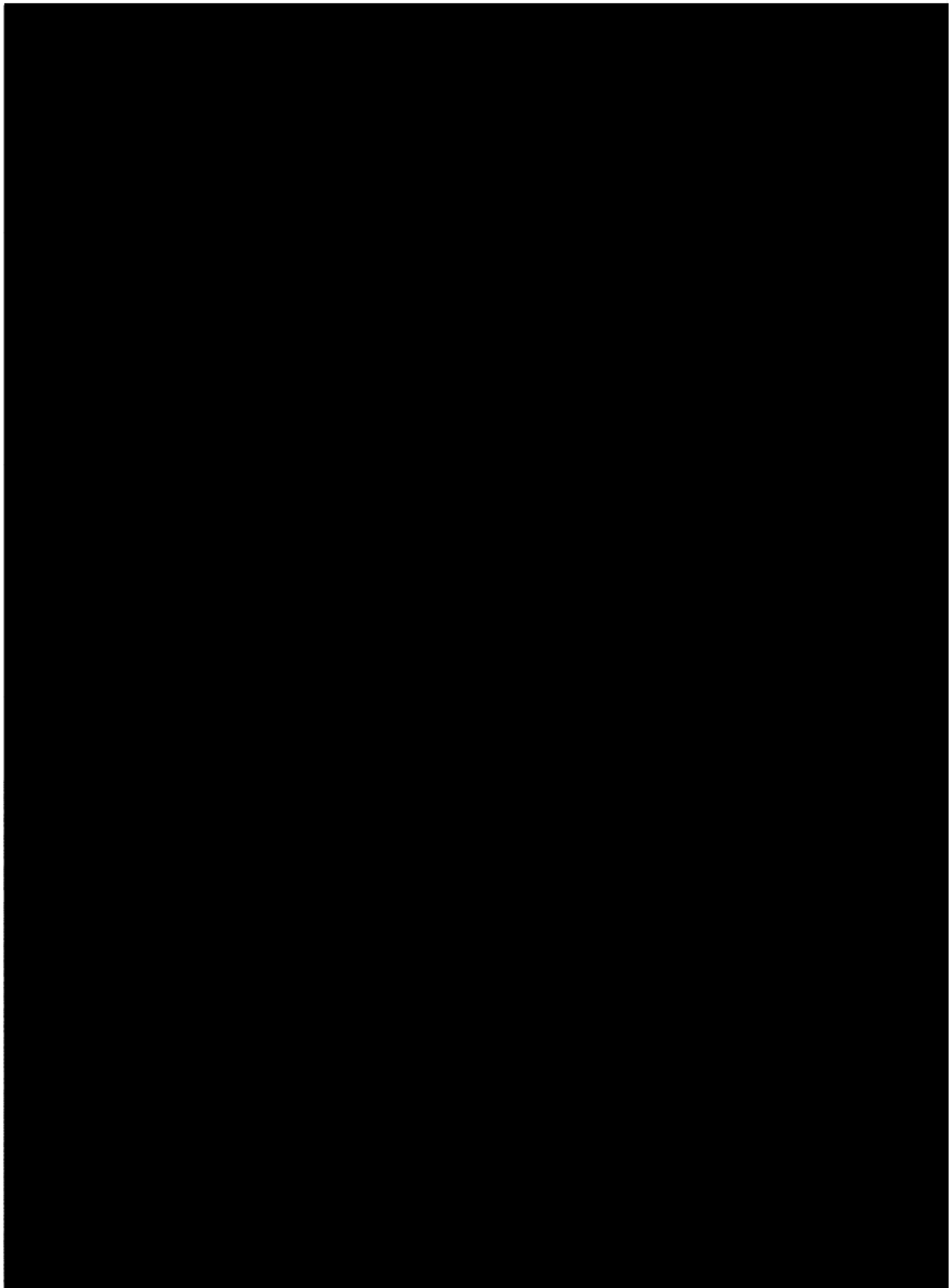
### Marine Use

- Marine Use Local Assessment Area
- Marine Use Regional Assessment Area

### Wildlife – Marine Shipping

- Marine Shipping Local Assessment Area
- Marine Shipping Regional Assessment Area

Note: Image Redacted to Protect Confidential Information



*Figure 4. Assessment Boundaries for Gitga'at First Nation Territory Key Map, Ksi Lisims LNG Gitga'at Nation Assessment, Fig. 17.3-2*



The proponent judged the relevance of the Assessment Areas to Gitga’at First Nation by comparing those areas to the GIS shapefile that can be found in the Province’s “Consultative Areas Database” (CAD). However, the CAD is intended to provide guidance as to where consultation with First Nations should be initiated, not to define the scope and depth and consultation that will be pursued. By relying on and focusing attention primarily on the information in the CAD, the proponent has failed to give due consideration to the substantive body of information that has been provided in the Gitga’at TUOS report. That report identifies many occupancy and use areas and sites that lie to the west and north of the current CAD boundary, all of which continue to hold great significance, use, cultural and spiritual history to the Gitga’at Nation.<sup>15</sup>

Note: Image Redacted to Protect Confidential Information

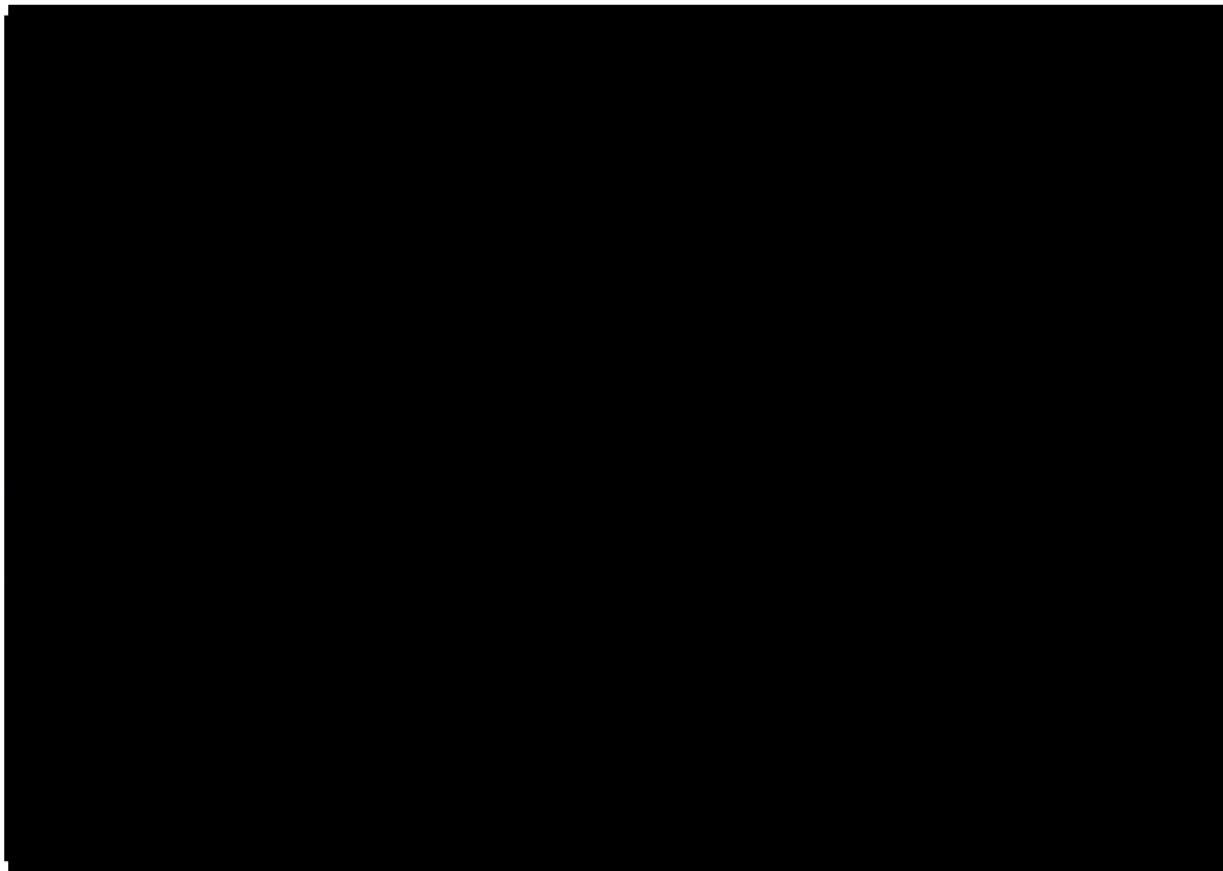


Figure 5. Map displaying the location of the Ksi Lisims LNG facility, the proposed shipping routes, and Gitga’at First Nation’s TUOS/settlement and culture sites as identified in Inglis Consulting (2022).

Many historical areas of Gitga’at permanent and seasonal occupancy, and the information about them, were lost over 100 years ago as a result of colonial impacts and programs. However, although the number of settlement sites occupied and used by the Gitga’at has declined, there are many travel routes and harvesting and cultural areas and sites that continue to be used, and remain important to community members in Prince Rupert and Hartley Bay, who regularly travel to and use TUOS sites and areas in their territory. These areas and activities remain fundamental to Gitga’at’s identity, political organization and community well-being. Gitga’ata *Adaawx* and current use clearly demonstrate the Gitga’at First Nation have long-standing territorial and harvesting rights at the mouth of the Nass River, Chatham Sound, on the lower Skeena River and in the Prince Rupert

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<sup>15</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). *Final Report: Gitga’at First Nation TUOS for the Ksi Lisims LNG Project, Pearse Island, Portland Inlet and Chatham Sound.*

Harbour regions that pre-date the arrival of Europeans.<sup>16</sup> These claims are well supported by documents and reports of early colonial settlers and traders in the region that indicate the seasonal movements of the Gitga'ata, recording some of their movements and resource harvesting activities.<sup>17</sup> During the Ditchburn-Clark inquiry into reserve allotments, it was noted that the Tsimshian Nations, which included Gitga'at, were cut off from areas around the mouth of the Nass River (Adjacent to the North East of Pearse Island, the site of the Ksi Lisims LNG facility) despite having long standing harvesting traditions in common there:

“Strong claims were made on behalf of all the Tsimpseans that the oolichan fishing ground at the mouth of the Nass River be made a common Reserve for all the people who go there to fish. We strongly recommend that this matter be looked into and settled as the claiming of Nishga people of exclusive ownership seems to be causing considerable ill-feeling. All the Tsimpseans go there to fish and it should be the common property of all those who are dependent upon the fishing for part of their main food supply.”<sup>18</sup>

The research conducted for the TUOS report identified 796 Gitga'at traditional use and occupancy terrestrial, cultural, settlement, and travel route sites within the Project Study area.<sup>19</sup> Of these TUOS sites, 570 (72%) are areas for aquatic resource harvesting.<sup>20</sup> As shown by Figure 5, the proposed facility and shipping lanes for the Project overlaps substantially with numerous Gitga'at use and occupancy sites, travel routes, and settlement and culture sites. The facility, the resulting changes to settlements nearby, and the increased presence of marine traffic (stemming from this development), have the potential to affect Gitga'at Territory and TUOS sites in a variety of ways. The Proponent's Application outlines 14 distinct Valued Components (VCs) associated with the rights and interests of the Nation:<sup>21</sup>

1. Air Quality
2. Acoustic
3. Surface Water
4. Groundwater
5. Vegetation and Wetlands
6. Wildlife and Wildlife Habitat
7. Freshwater Fish and Fish Habitat
8. Marine Resources
9. Employment and Economy
10. Marine Use

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<sup>16</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at First Nation TUOS for the Ksi Lisims LNG Project, Pearse Island, Portland Inlet and Chatham Sound*, pp. 56-57.

<sup>17</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.5-33

<sup>18</sup> Peter Kelly to W.E. Ditchburn, Chief Inspector, 16 October 1922. Library and Archives Canada, RG 10, volume 11028, file SRR-3, cited in Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*, p. 26.

<sup>19</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.39

<sup>20</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.39

<sup>21</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7

11. Infrastructure and Services
12. Community Health and Wellness
13. Human Health
14. Archaeological and Heritage Resources

Gitga'at First Nation outlined the following VCs (determinants of health) in their own 5-year Health Plan,<sup>22</sup> that are critical the health and wellbeing of Gitga'at members:

- Families and children;
- Colonization;
- Self governance and cohesion;
- Health of the territory;
- Health of the lived environment;
- Demographics;
- Access to Gitga'at Territory;
- Traditional food security;
- Living your culture;
- Tourism/recreational users;
- Climate change;
- Health services;
- Housing;
- Emergency preparedness and response;
- Livelihood and income;
- Employment opportunities and working conditions;
- Education and training (including cultural opportunities);
- Industrial development; and
- Health behaviours and outcomes.

Similarly, Gitga'at First Nation's 2022 Mental Health and Wellness Framework identified the following guiding principles for positive mental health:<sup>23</sup>

- Living our culture;
- Recovering from effects of COVID;
- Supporting mental wellness in workplace
- Community engagement;
- Improve mental health outcomes for those who access mental health services in Hartley Bay;
- Supporting mental awareness, education, and literacy;
- Addressing abuse in Hartley Bay;
- Supporting Gitga'at children, youth, and families; and
- Increasing accessibility to mental health services in Hartley Bay.

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<sup>22</sup> Gitga'at First Nation (2021), Gitga'at First Nation 5 Year Health Plan 2021-2026

<sup>23</sup> Gitga'at First Nation (2022), Gitga'at First Nation Mental Health and Wellness Framework

## 1.4 Regional Context

### Industrialization and Shipping Traffic

#### Other projects

Alongside vast changes to the region that have occurred as a result of colonial government policies and practices like the reserve system, the residential school system and legislated alienation of First Nation aboriginal rights, Northwestern BC has been a central location for large scale industrial development over the past 20 years.

Multiple projects, including other LNG facilities, have already had an adverse impact on the rights and interests of Gitga'at First Nation, who have expressed concerns about the individual and cumulative effects of Crown decisions to industrialize and significantly increase the development and export of raw and processed natural resources from areas in and around their territory.

Industrial development has occurred in several different sectors, including oil and gas, logging, commercial fishing, tourism, and mining, which have similarly coincided with significant urban development. In terms of the marine environment, Table 1 below lists a summary of the current and proposed large-scale resource export projects for the region, and which of them involve significant marine activity.<sup>24</sup>

*Table 1 Current and Proposed Projects in the Region.*

	Project proponent	Type of Project/Activity	Marine based
<b>Current</b>			
1	Shell Canada Energy, Petronas, PetroChina, Mitsubishi Corp., and Kogas Canada LNG	LNG Canada Facility	YES
2	Cedar LNG Partners LP	Cedar LNG Export Project	YES
3	AltgaGas and Vopak Canada	Ridely Island Energy Export Facility (REEF)	YES
4	Prince Rupert Port Authority	Ridley Island Export Logistics Project (RIELP)	YES
5	Rio Tinto BC Works	Aluminum Smelter and Wharf	YES
6	BC Ferries	Prince Rupert Ferry Terminal upgrades	YES
7	DP World	Fairview Container Terminal Expansion – Phase 2B Stage 1A	YES

<sup>24</sup> Environmental Assessment Office (2023) Application Information Requirements for the Ksi Lisims LNG – Natural Gas liquification and marine terminal. Table 6.7.

	Project proponent	Type of Project/Activity	Marine based
8	Pacific Northern Gas Ltd	Pacific Northern Gas Pipeline	NO
9	Prince Rupert Port Authority/ Global Ports Holding	Northland Cruise Terminal	YES
10	Prince Rupert Grain Ltd.	Prince Rupert Grain Terminal	YES
11	Wolverine Terminals	Prince Rupert Marine Fuels Service Project	YES
12	AltaGas Ltd.	Ridley Island Propane Export Terminal	YES
13	CN	Railway activity	NO
14	Pembina Pipeline Corp.	Watson Island Propane Export Terminal	YES
15	Coastal Gaslink Pipeline Ltd.	Coastal GasLink Pipeline Project	NO
16	Drax Group PLC	Westview Wood Pellet Terminal	YES
17	Ascot Resources Ltd.	Swamp Point Sand and Gravel	YES
18	Stewart Bulk Terminals Ltd.	Stewart Bulk Terminals	YES
19	Stewart World Port	Stewart World Port	YES
20	Avanti Kitsault Mine Ltd.	Kitsault Mine	NO
21	Tru-Grit Abrasives Inc.	Anyox site slag recycling	YES
22	All West Trading Ltd.	Log dump	NO
23	Various	Ongoing forestry activities	NO
24	Various	Ongoing fishing and aquaculture activities	YES
25	Various	Ongoing marine shipping activities	YES
	<b>Proposed</b>		
26	Enbridge Inc.	Pacific Trail Pipelines	NO
27	Pacific Northern Gas Ltd	Pacific Northern Gas Pipeline Looping Project	NO
28	Pacific Future Energy Corp.	Pacific Future Energy Refinery	NO
29	Pacific Traverse Energy	Kitimat LNG Export Project	YES
30	Nisga'a Nation, Rockies LNG Limited Partnership, and Western LNG LLC	Ksi Lisims LNG Export Project	YES
31	Global Bio-Coal Energy Inc.	Biocoal Production Plant – Watson Island	NO
32	Enbridge Inc.	Westcoast Connector Gas	NO

	Project proponent	Type of Project/Activity	Marine based
		Transmission Project	
33	Kinskuch Lake Hydro LP	Kinskuch Hydro Project	NO
34	Top Speed Energy	Skeena LNG Export Project	YES
35	Port Edward LNG	Port Edward LNG Export Project	YES
36	Prince Rupert Port Authority	Ridley Island Export Logistics Project (RIELP)	YES
37	Kitimat Clean Ltd.	Kitimat Clean Refinery Project	YES
38	Progressive Ventures	NSD Inland Port	NO
39	Prince Rupert Port Authority/ DP World	Fairview Container Terminal Northward Expansion – Phase 1B	YES
40	Ridley Terminals Inc.	Berth expansion project	YES
41	TransCanada Corp.	Prince Rupert gas Transmission Project	NO
42	Trigon Pacific Terminals	Trigon Area A Project	YES
43	Trigon Pacific Terminals	Trigon LPG Project	YES
44	DP World	South Kaien Island Terminal (SKIT)	YES

If all projects listed above are approved, the Proponent’s Application estimates approximately 2,920 cargo vessels could intersect or transit the Marine Shipping Regional Assessment area for the project, or transit past the Triple Island Pilot Boarding Station Annually.<sup>25</sup> The applications for other LNG facilities in the region similarly display large increases in shipping traffic in close proximity to areas of Gitga’at residence. For example, the 2022 Environmental Assessment Office’s Cedar LNG Assessment Report stated that the completion of all proposed projects for the region would result in an additional 515 ships travelling directly past Hartley Bay enroute to Kitimat each year.<sup>26</sup> In terms of overall transit numbers, figures representing numbers of vessels visiting a given site should be doubled, to display both the journey in and out of port. For Kitimat, for example, the estimations of 515 ships visiting Kitimat would result in an addition of 1030 journeys through the Douglas Channel, and the heart of Gitga’at Territory every year. This comes to just under 3 (2.82) voyages of large cargo ships travelling through this narrow channel and directly past Hartley Bay per day. These figures do not include the various tugs, passenger ships, supply vessels, and additional traffic that accompany large cargo vessels making port. Compared to shipping data from 2019, where under 100 cargo ship (>180m long) transits occurred through central Gitga’at waters near Hartley Bay (Table 2), the predicted boost in scale of shipping traffic is estimated to be over ten times higher.

<sup>25</sup> Ksi Lisims LNG, (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7.9-198-199

<sup>26</sup> Environmental Assessment Office (2022). *Assessment Report for Cedar LNG (Project)*. 2.2.4, p.46

Table 2. Condensed summary of 2019 AIS traffic in central Gitga’at waters for 10 different vessels from Keen et al., “Ship-strike forecast and mitigation for whales in Gitga’at Territory”.

Vessel type	Transits		Average Speed (knots)	Average Length (m)
	Annual number	Per day		
Cargo>180m	94	0.26	13.1	193
Fishing<60m	822	2.25	8.4	20
Other<40m	565	1.55	11.5	23
Other>100m	378	1.04	16.0	142
Other 40-100m	340	0.93	9.5	57
Passenger>180m	73	0.20	17.4	259
Pleasure craft<40m	1123	3.08	8.1	16
Sailing<40m	426	1.17	6.0	14
Towing<50m	738	2.02	8.0	29
Tug<50m	835	2.29	7.3	22

### AIS Shipping Data

Average shipping traffic across the entire region can be better visualized using Automatic Identification System (AIS) shipping data. AIS is an automatic tracking system that uses transponders on ships to provide live data on ship locations and is used by vessel traffic services. AIS has been made compulsory for international commercial ships with a gross weight of 300 or more tonnes.<sup>27</sup> Historical AIS data from GlobalMarineTraffic.org<sup>28</sup> was used to create density maps of average monthly shipping traffic for all vessels in the region around the Project footprint and Gitga’at TUOS sites for the years 2011-2023 (Figures 6 and 7) and for large cargo ships and tankers only (Figures 8 and 9), as displayed below.

### Methodology

These maps display “shipping traffic density” across the region in units of “shipping hours per square km per month.” The dataset includes all ships passing through the region that carried AIS

<sup>27</sup> UN Statistics Division (2020). *AIS Handbook*, Retrieved from: <https://unstats.un.org/wiki/display/AIS/Overview+of+AIS+dataset>

<sup>28</sup> GlobalMarineTraffic (2023). Retrieved from: <https://globalmaritimetraffic.org/index.html>

transponders. The average vessel density was calculated using the European Marine Observation and Data Network (EMODnet) method for shipping density.<sup>29</sup> The units of density for these maps are the total ship time in hours spent in a cell (1 km<sup>2</sup>) over the course of one month. Hence, shipping traffic density should be interpreted as “how many vessels one expects to find within the area of reference during a given time period.” This method accounts for the amount of time spent by individual vessels in each square kilometre of the map, and also accounts for the speed of vessels as well as their travel routes and travel frequency.<sup>30</sup> To calculate the average monthly shipping traffic density for each year, the annual data recordings for the year were summed up and divided by the total number of months recorded (12 months for 2011, and 9 months for 2023). Further detail on the methodology of calculating shipping density can be found from the “EU Vessel density map detailed method document”, produced by the EMODnet.<sup>31</sup>

- The monthly traffic data was downloaded from the site Global Marine Traffic.<sup>32</sup>
- Raster images were downloaded for each month from January 2011 to September 2023 for 1) all vessels, 2) Cargo ships only and 3) Tankers only
- The value of each pixel represents the density of marine traffic calculated from the methodology detailed in European Marine Observation and Data Network (EMODnet):<sup>33</sup>
  - ArcGIS was used to define the area of interest and create a grid of 1km<sup>2</sup> units across it.
  - From the transponder data of each vessel (which has a unique identifier), it is possible to know the distance between two positions, and the time between each position.
  - From there the time each vessel has spent in each cell of the grid (in each square kilometre) can be calculated.
  - Adding those values for all vessels, in each grid cell (square kilometre) during a month displays the total density of vessels per square kilometre per month.
  - AIS data was acquired and cleaned using Linux, and imported into a database using PostgreSQL. Points, maps, and vessel density calculations were then created using ArcGIS, GDAL, PostGIS, and QGIS.
- For the maps displaying data for a whole year, a monthly average was calculated by adding the cumulative monthly data, and dividing by the number of months recorded for that year for 2011 (12 months) and 2023 (9 months). This was done using a raster calculation in GIS.
- For the graph indicating the monthly trends in TUOS areas, only pixels within the TUOS were extracted. In this case, the monthly average was calculated by making the sum of the pixel values divided by the number of pixels.

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<sup>29</sup> The European Marine Observation and Data Network (2019). EU Vessel density map Detailed method

<sup>30</sup> The European Marine Observation and Data Network (2019). EU Vessel density map Detailed method

<sup>31</sup> The European Marine Observation and Data Network (2019). EU Vessel density map Detailed method

<sup>32</sup> Global Marine Traffic, Retrieved at:

[https://globalmaritimetraffic.org/gmtds.html?\\$root.map.zoom=3&\\$root.map.center={%22lat%22:0,%22lng%22:0}&\\$root.projectionSelect=%22EPSG:3857%22](https://globalmaritimetraffic.org/gmtds.html?$root.map.zoom=3&$root.map.center={%22lat%22:0,%22lng%22:0}&$root.projectionSelect=%22EPSG:3857%22)

<sup>33</sup> EMODnet (2019), EU Vessel density map Detailed method, v.1.5: Retrieved at: [https://www.emodnet-humanactivities.eu/documents/Vessel%20density%20maps\\_method\\_v1.5.pdf](https://www.emodnet-humanactivities.eu/documents/Vessel%20density%20maps_method_v1.5.pdf)



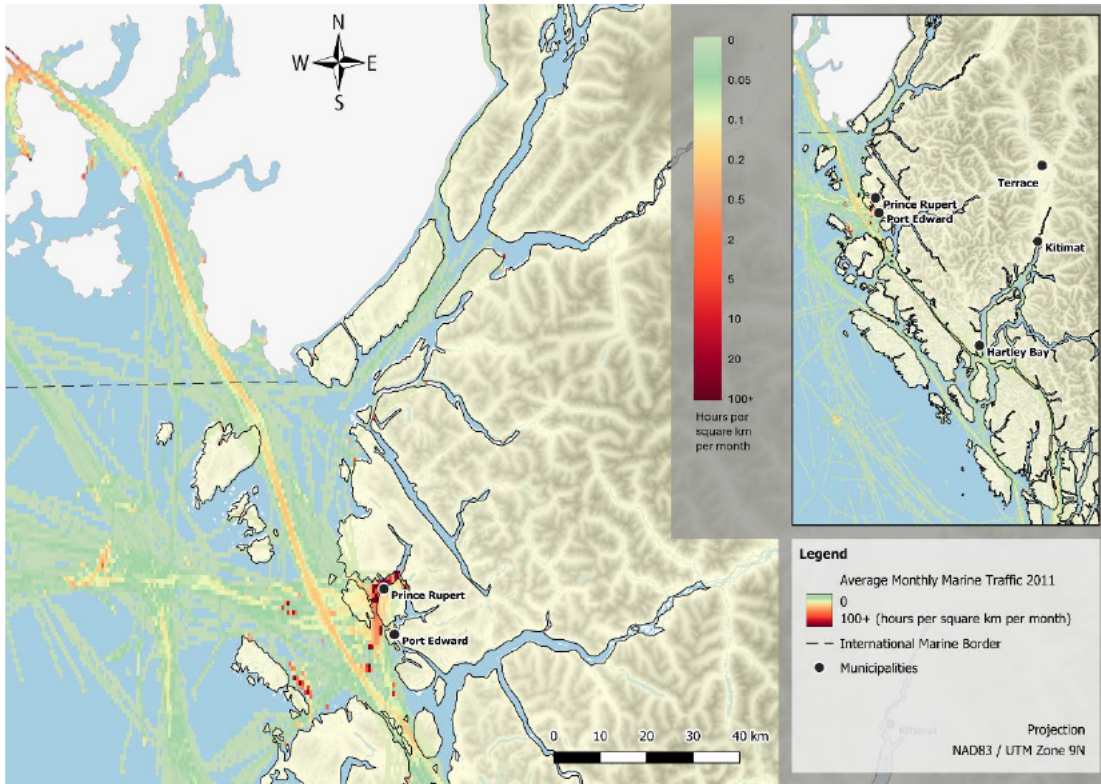
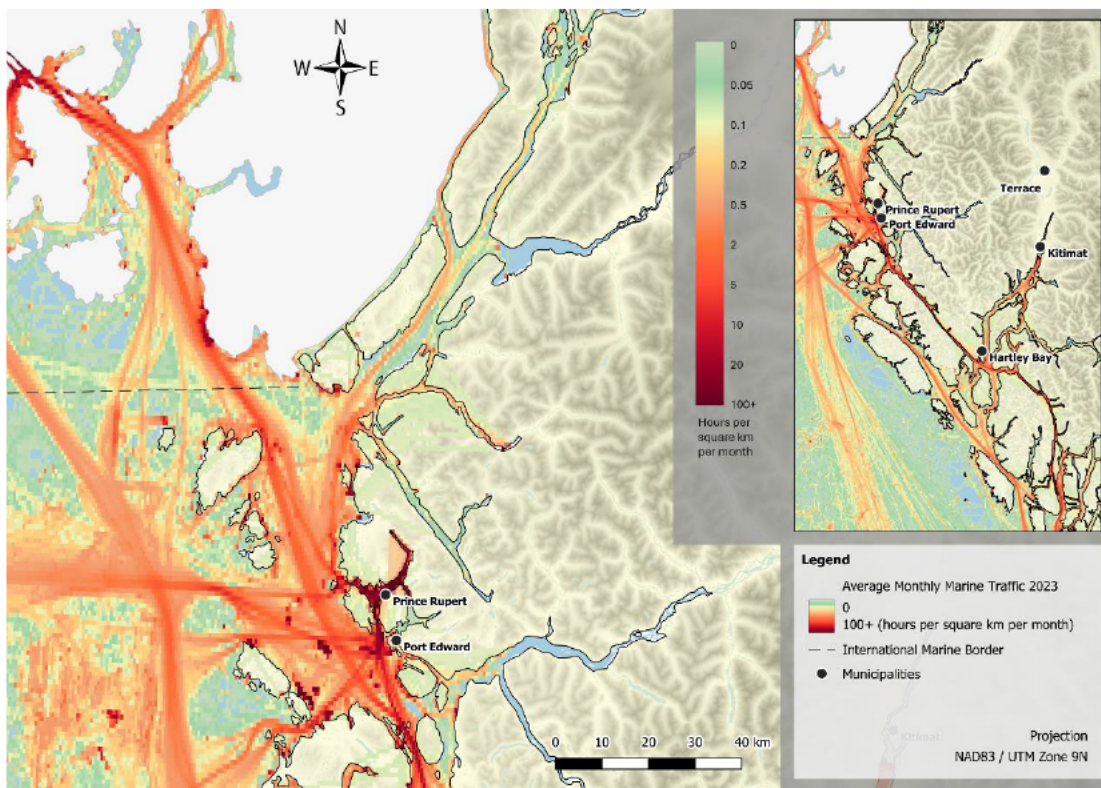


Figure 6. Average monthly marine traffic (all vessels) around the Ksi Lisims LNG project footprint and Gitga'at TUOS sites



from 2011.

Figure 7. Average monthly marine traffic (all vessels) around the Ksi Lisims LNG project footprint and Gitga'at TUOS sites from 2023.

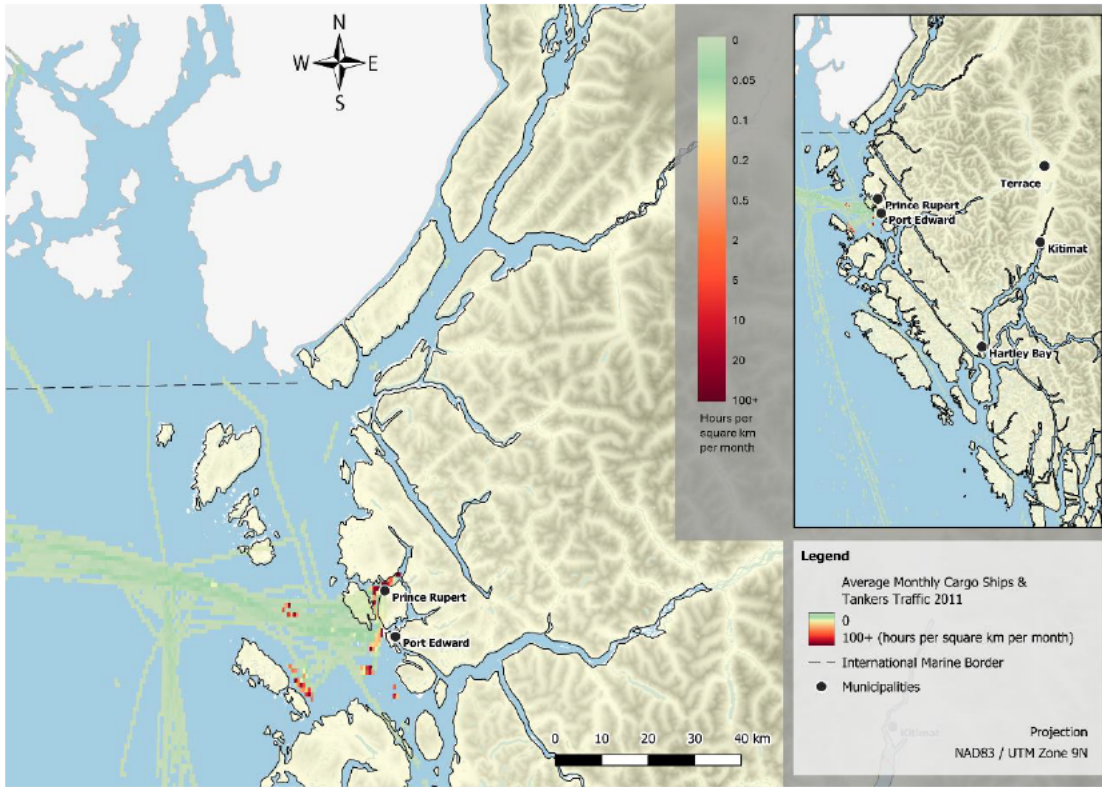
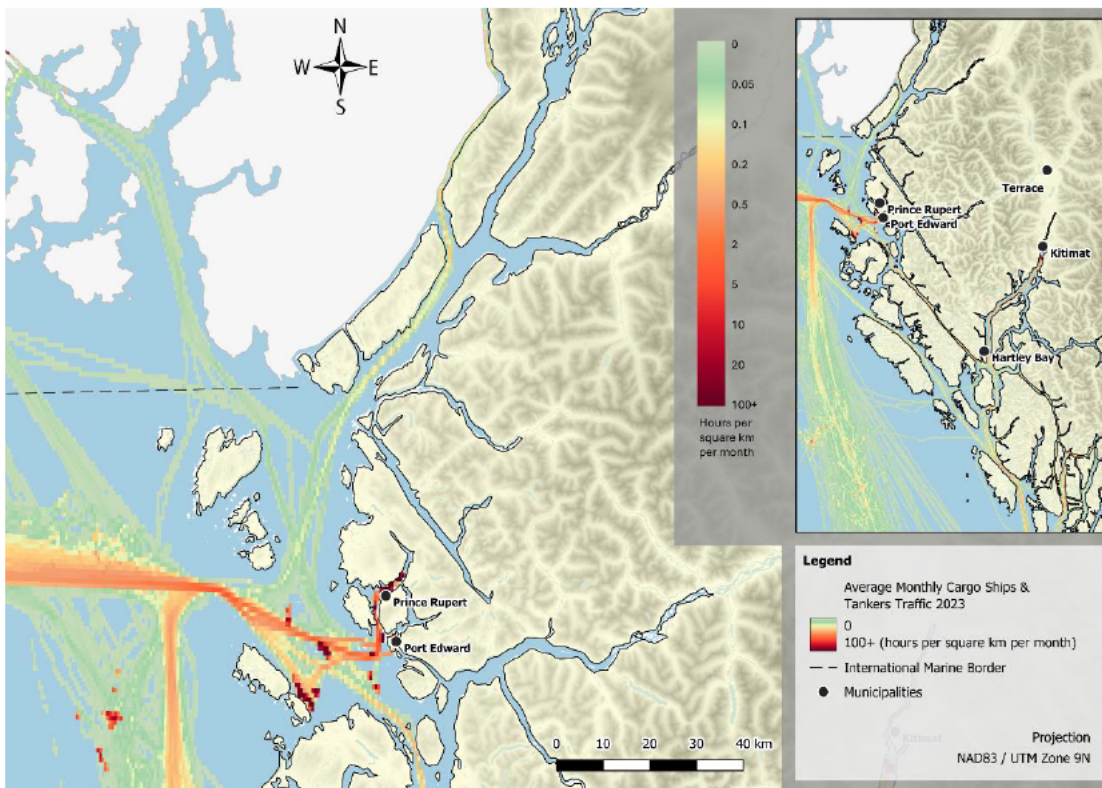


Figure 8. Average monthly marine traffic (tankers and cargo ships only) around the Ksi Lisims LNG project footprint and



Gitga'at TUOS sites from 2011.

Figure 9. Average monthly marine traffic (tankers and cargo ships only) around the Ksi Lisims LNG project footprint and Gitga'at TUOS sites from 2023.

The comparison of these maps indicates a large-scale increase in shipping traffic density that this area has seen over the past 12 years. In 2011, the marine seascape in the region saw relatively little shipping traffic, with just a few hours per km<sup>2</sup> per month, and a few distinct shipping lanes. Currently, in 2023, the entirety of the region is densely populated with high intensity shipping traffic. Overlaying the current conditions in 2023 with the Project proposed shipping routes and Gitga’at TUOS sites (see Figure 10), it is evident that prevalence of shipping traffic within Gitga’at TUOS sites greatly increased over the last 12 years, and that the proposed shipping routes of the Project, as well as existing operations, will further effect Gitga’at First Nation’s marine environment.

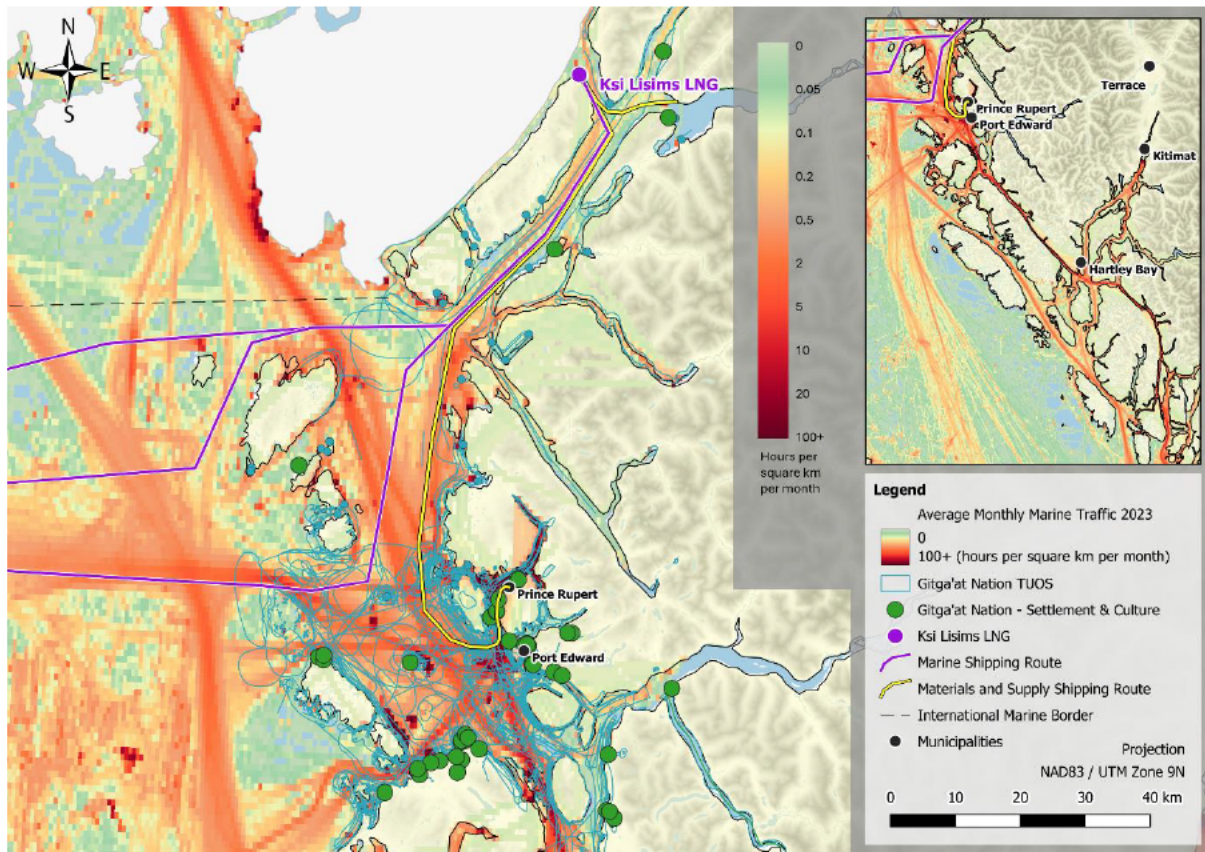


Figure 10. Average monthly marine traffic from 2023 overlaid with KL LNG shipping routes and Gitga’at TUOS sites.

Taking monthly average vessel density (for all vessel types) from January 2011 to September 2023 specifically within the Gitga’at use areas identified in the 2023 TUOS survey, there is a clear linear trend of increasing shipping traffic (Figure 11). In 2011, the average ship time in a given square kilometre of a Gitga’at TUOS site was approximately 2.5 hours per month. By 2023, shipping density was roughly 11 times greater, with approximately 27.5 hours per km<sup>2</sup>.

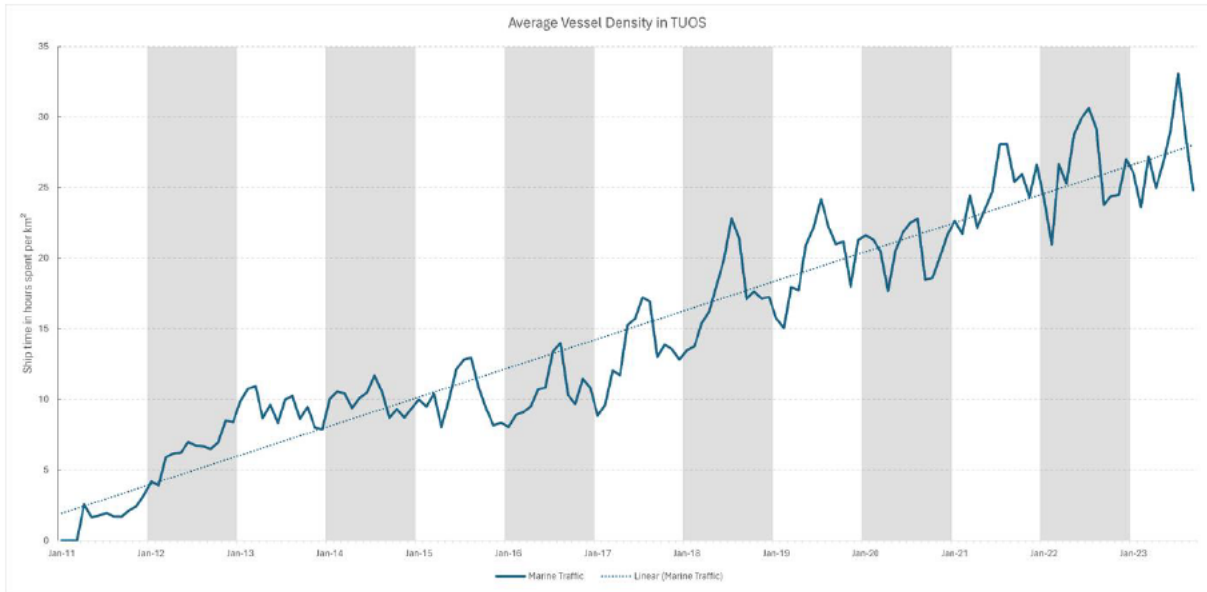


Figure 11. Average Vessel Density (all vessel types) in Gitga’at TUOS sites from 2011-2023

It is important to note the increase in shipping traffic is only the backdrop to the proposed industrial projects for the region (see Table 1), which have yet to contribute additional traffic to the area. The Proponent’s Application states that it will contribute between 140-160 LNG carriers to the region, and that if the current and proposed projects for the region are all successfully carried out, an additional 2,920 cargo vessels could intersect or transit the Marine Shipping Regional Assessment area for the project, or transit past the Triple Island Pilot Boarding Station annually.<sup>34</sup> This equates to approximately 243 cargo ships per month intersecting the KL LNG project Materials and Supply Shipping Route (MSSR) area/Triple Island Pilot Boarding Station alone.

To contextualize this increase against the current shipping environment, AIS data collected from MarineTraffic.com<sup>35</sup> indicates that the Port of Prince Rupert (the port of call for most large container ships and tankers passing through the region) saw 18 arrivals of large shipping vessels (containers, dry breakbulk, dry bulk, LNG/LPG carriers, and wet bulk) over the two week period from November 14<sup>th</sup> to 27<sup>th</sup>, 2023 (Figure 12). This equates to roughly 36 a month.

<sup>34</sup> Ksi Lisims LNG, (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7.9-198-199

<sup>35</sup> MarineTraffic - Global Ship Tracking Intelligence (2023). Retrieved from <https://www.marinetraffic.com/>

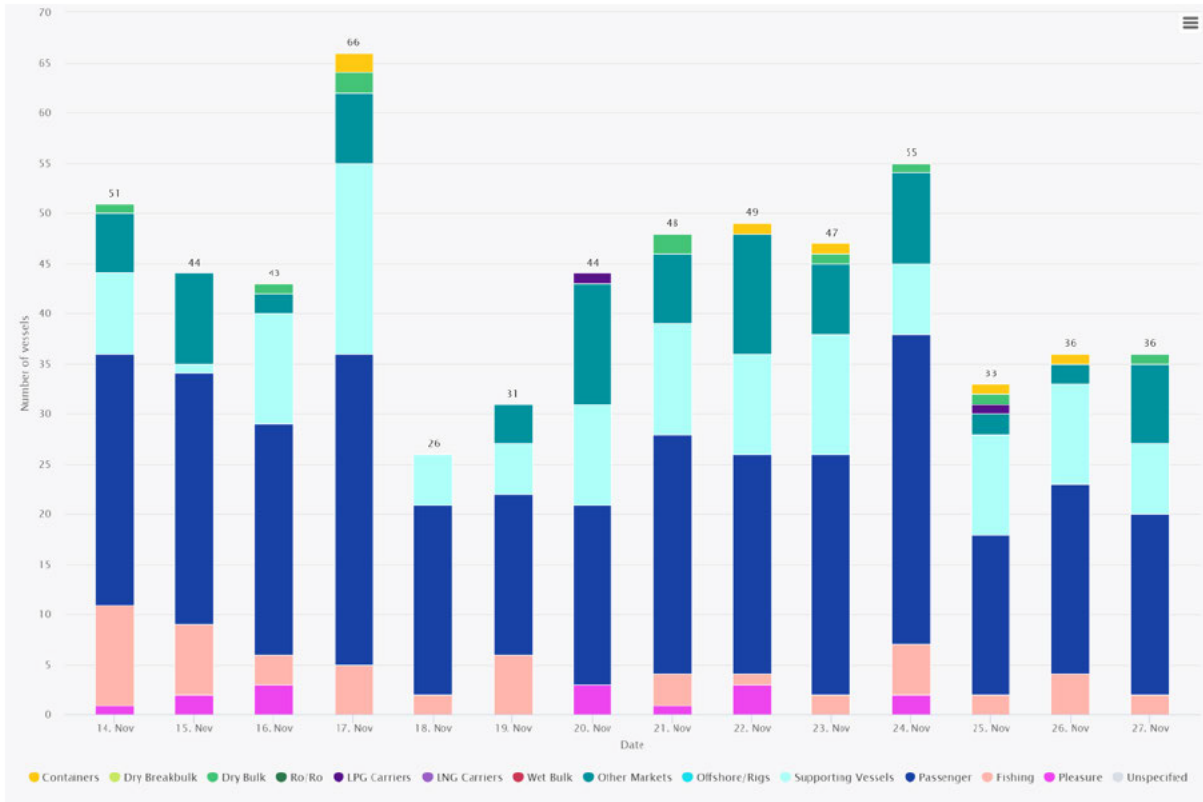


Figure 12. Daily arrivals to the Port of Prince Rupert by vessel type, from November 14<sup>th</sup> to 27<sup>th</sup>, 2023

In addition to this, AIS data was collected from MarineTraffic.com<sup>36</sup> to gain a better sense of the current level of cargo ship presence in Gitga’at Territory and the Gitga’at TUOS study area. Data was collected daily over the same two-week period (November 14<sup>th</sup> to 27<sup>th</sup>, 2023), counting the number of large tankers and container ships moving through or anchored in Gitga’at Territory and TUOS sites. The results (Figure 13) indicate that on average there were 11.4 cargo vessels present within Gitga’at Territory and TUOS sites on a given day (it should be noted that shipping traffic is typically lighter during the winter months<sup>37</sup>). This method counted how many ships were present (anchored or under motor), rather than the number of arrivals/departures, as ships could be anchored in the same location for several days. Ships under engine were located throughout the study area. Ships under anchor were consistently located in the port of Prince Rupert, off the east coast of Prescott Island awaiting transit into Prince Rupert, or at the end of the Douglas channel at industrial sites near Kitimat.

<sup>36</sup> MarineTraffic - Global Ship Tracking Intelligence (2023). Retrieved from <https://www.marinetraffic.com/>

<sup>37</sup> GlobalMarineTraffic (2023). Retrieved from: <https://globalmaritimetraffic.org/index.html>

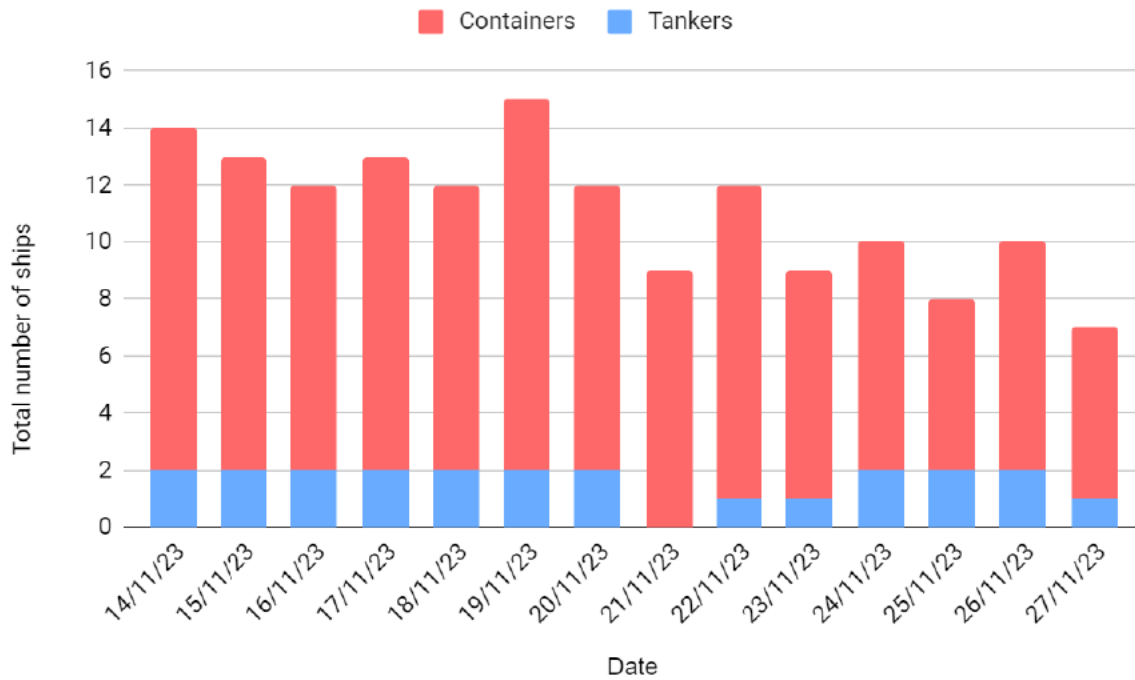


Figure 13. Daily number of cargo ships (containers and tankers) in Gitga'at Territory and TUOS sites from November 14<sup>th</sup> to 27<sup>th</sup>, 2023.

It is not possible to accurately predict the future levels of shipping traffic density in the region with certainty, as other types of marine vessels (fishing, recreational, tugs, passenger ships, etc.) will increase at unpredictable rates as the region industrializes. However, given the number of cargo ships that currently transit and make port in this region, and the stated number of additional ships that will be contributed by all current and proposed industrial projects, this already densely trafficked region is set to see another increase in shipping traffic.

### Port Infrastructure

In response to this industrial activity, the Port of Prince Rupert is emerging as an increasingly vital and busy maritime hub, with numerous facilities appearing in the region, leading to increased shipping demands. The port currently ranks as the second-largest on the west coast of Canada, attributed in part to its location and capacity to accommodate large-scale cargo ships and tankers. It holds the distinction of being the deepest ice-free natural harbour in North America.<sup>38</sup> Current projects include the expansion of the Fairview Container and Northland Cruise terminals, and additional proposals already exist for further expansion of the Fairview Container terminal, and the construction of a new port on Ridley Island.<sup>39</sup> The latest annual report from the Prince Rupert Port Authorities (2022) expressed the board of directors was pursuing opportunities for up to \$2 billion in

<sup>38</sup> Prince Rupert Port Authority (2023). *2022 Annual Report from the Board of Directors* Retrieved from: <https://2022.rupertport.com/>

<sup>39</sup> Environmental Assessment Office (2023) Application Information Requirements for the Ksi Lisims LNG – Natural Gas liquification and marine terminal. Table 6.7

new project investment,<sup>40</sup> indicating the scale of the potential for industrial expansion. These systematic and large-scale developments affect Gitga'at First Nation's ability to exercise their autonomy and authority over their territory, and their inherent Aboriginal rights. These effects are felt most notably through projects like Ksi Lisims LNG, where land and resource tenures and permits are granted to third parties.

Gitga'at First Nation have lived in, occupied, and been stewards of this region for thousands of years. They have exercised self-determination, grown their Nation, and governed and enriched the future of their members through ongoing connection, use and access to the waters and lands of their traditional use and occupancy sites. For the Gitga'ata, their well-being is intricately connected to the health of the lands, waters, and resources in their territory, and the Nation actively works to protect and sustain the richness of these areas. Because of this strong cultural connection with their TUOS sites, a large part of Gitga'at First Nation's identity is expressed through the ability to access, use, and live on lands and waterways that they have interacted with in this way since time immemorial. The processes of colonization and the drawing up of 'reserve' land has already restricted Gitga'at First Nation's ability to exercise self-determination and practice their cultural way of life. Most of Gitga'at First Nation's settlement, burial, harvesting, and culture history sites have been alienated from them by industrial development and colonial settlement over 100 years ago.<sup>41</sup> Gitga'at members are deeply concerned that the continued industrialization of their territory will further erode their Indigenous Interests in areas that are still fulfilling traditional roles for the Nation today. Industrialization in the region is an aspect of continued colonial practices, whereby the abilities for Indigenous communities to interact with their territories are impeded and altered. Traditional ways of living can be delicate, and changes to a community's interaction with the land and sea can erode cultural ways of living. Gitga'at First Nation's uniquely strong reliance on traditionally harvested marine resources demonstrates this point well. With a large part of the community's subsistence needs being filled through traditional harvesting activities, disruption to marine access will undoubtedly result in effects being experienced at the community level. For instance, cultural identity, food security and the resulting economic necessities for resource procurement may all be substantially affected.

## **Critical Community Health and Wellness Priorities in Prince Rupert and the Surrounding Area**

An assessment was conducted by consultants retained by Gitga'at to establish critical health and wellness priorities for the Nation and the region as a whole. The methodology approach employed a multifaceted strategy to establish the contextual setting and identify potential effects (risks) of the proposed Ksi Lisims Liquid Natural Gas (KL LNG) facility with a focus on Prince Rupert. This approach included a review of pre-existing information, conducting a survey for Gitga'at members living in/with family in Prince Rupert, and conducting Key Informant Interviews (KIIs) with health and social service providers in the region. These activities identified critical contextual information regarding

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<sup>40</sup> Prince Rupert Port Authority (2023). *2022 Annual Report from the Board of Directors* Retrieved from: <https://2022.rupertport.com/>

<sup>41</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.34-53

community health and safety for this region, and what effects from the KL LNG facility might be anticipated, both for Gitga'at First Nation, and for the LHA as a whole.

This assessment found that British Columbia is currently undergoing major crises in healthcare, housing, opioid use, and human trafficking. All four of these are prominent issues in the Prince Rupert Lower Health Area. In analyzing the regional health priorities in Prince Rupert and its surrounding areas, it has been identified the healthcare system within the Prince Rupert LHA faces substantial challenges, and currently struggles to serve the needs of the population. In addition to this, the city of Prince Rupert is confronted with an ongoing housing crisis, placing considerable strain on current residents and potential newcomers alike as the number of residences is outpaced by the size of the population, and rent prices continue to increase. Alongside this, the prevalence of the opioid use and associated overdoses places Prince Rupert well above the provincial average for substance use-related deaths, and as a port town human trafficking, and sexual violence in the city present critical public health concerns for vulnerable demographic groups. Indigenous people are consistently disproportionately affected by these crises in the province, and make up roughly 40% of the population of the city of Prince Rupert. The development of the Ksi Lisims LNG facility has the potential to heighten demand for healthcare and housing services through the influx of its workforce, exacerbating existing pressures. Additionally, research indicates a demonstrable correlation between industrial development and increased instances of substance abuse, human trafficking, and sexual violence, demonstrating further cause for concern with the development of this project given the existing regional conditions. Negative changes to these fragile environments have the potential to greatly impact the Gitga'at population, both directly through Gitga'at members living in the city of Prince Rupert, and for those living in Hartley Bay, who frequently rely on the city for infrastructure, services, and familial/social connections.

### The Healthcare and Emergency Services Crisis

A primary concern for Gitga'at is the status and availability of healthcare and emergency services in the region, especially due to the well-established link between industrial projects, and increased strain on local health and social services, including medical facilities.<sup>42</sup> Prince Rupert Regional Hospital is the largest medical care facility in the LHA and is the main provider of specialist services in Northwest BC. This serves the majority of the health needs of the Gitga'at population living in Prince Rupert. Due to the remoteness of Hartley Bay, residents also need to travel to Prince Rupert to access primary care services (See section 1.5.4, Healthcare and Emergency Services: Hartley Bay). The healthcare facilities in Prince Rupert are inadequate for serving the needs of its population, and currently exist in a critically fragile state. During the critical community health and wellness assessment, Key Informant Interviews conducted by consultants retained by Gitga'at indicated that currently, British Columbia is experiencing a severe shortage of healthcare staff, limiting hospital capacity for treatment across the province. Over the last year, departmental or emergency room diversions, where patients must be sent away to other treatment centres due to overwhelmed

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<sup>42</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority. - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health.



facilities, have become increasingly common.<sup>43</sup> The leading reason for this trend is staffing shortages. Currently, 1 in 3 positions in the Northern Health Region are vacant, with a notable shortage of public health and primary care nurses, and emergency room physicians across the region.<sup>44</sup> As of 2016, Northern Health shifted to an 'interprofessional teams model', resulting in the loss of the bulk of their public health staff. This mostly cut primary care nurses and specialist physicians from hospitals in the region, adding to the pressures faced by those currently working in medical care facilities. This shortage places an increased burden on existing healthcare staff, resulting in more people leaving their positions from being overworked.<sup>45</sup>

As it stands, the Prince Rupert Regional Hospital is critically understaffed to provide service to the population living within the region. During Key Informant Interviews, it was indicated that there are approximately 4,155 unattached people (people **not** attached to a primary care provider such as a family doctor or nurse practitioner) in the Prince Rupert LHA. This equates to almost 1/3 of the population of the LHA. Moreover, while the population of the city of Prince Rupert is officially 12,000 people, this number fluctuates widely, depending on the time of year, and the groups coming in from more remote areas for medical care. With the revival of tourism and cruise ship traffic post-Covid 19, the summertime population of the city is far higher than its yearly base due to the influx of tourists. In 2023, two cruise ships arrived at the port of Prince Rupert simultaneously, which increased the population in the city to 18,000-20,000 people.<sup>46</sup> Cruise ship passengers often require urgent medical treatment, due to the delays in health service access while aboard the moving vessel. The Prince Rupert Regional Hospital is also responsible for providing health services for coastal First Nations in the region, including Gitga'at First Nation, who travel from their home community.

In the Prince Rupert LHA, a Mobile Primary Care Unit catered to many of the rural communities surrounding the city, including Hartley Bay. As of September 2023, this service has been suspended due to staffing shortages, increasing the likelihood that the estimated 700 people that it served must now rely on other options, namely services in Prince Rupert itself.<sup>47</sup>

One example that illustrates the current strain of healthcare services in the area includes maternity care access and upcoming diversion of emergency room services. Key Informant Interviews recounted that in 2023, Prince Rupert Regional Hospital needed to divert maternity ward patients to Terrace for treatment.<sup>48</sup> Northern Health Employees report the Prince Rupert Regional Hospital will likely be placed on diversion within the next few months.<sup>49</sup> Currently, the emergency room only has one physician on staff at a given moment, meaning that the protocol for the ER services being overwhelmed and diversions needed (called "Code Orange") can currently be triggered by just 2 critical condition patients being present simultaneously. As few as 5 non-critical patients would

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<sup>43</sup> Zeidler, M. (2023), Hundreds rally in Surrey, B.C., as health minister under fire for continued ER closures across province. CBC News. Retrieved from: <https://www.cbc.ca/news/canada/british-columbia/b-c-emergency-room-closures-1.6959807>

<sup>44</sup> Key Informant Interview 5 (virtual interview, February 2024)

<sup>45</sup> Key Informant Interview 5 (virtual interview, February 2024)

<sup>46</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>47</sup> Key Informant Interview 2 (virtual interview, February 2024)

<sup>48</sup> Forward, S. (2023) Staffing issues close maternity ward at Prince Rupert Regional Hospital. The Northern View. Retrieved from: <https://www.thenorthernview.com/news/staffing-issues-close-maternity-ward-at-prince-rupert-regional-hospital-6005281>

<sup>49</sup> Key Informant Interview 6 (virtual interview, February 2024)

similarly trigger this protocol.<sup>50</sup> With these figures being so low, one serious industrial/shipping/road accident has the capacity to overwhelm Prince Rupert's ER and require diversions of additional patients. As a province-wide issue, diversions do little to solve the problem as a whole, as many hospitals are already experiencing strained workforces.<sup>51</sup> Key Informant Interviews also indicated that transport to Prince Rupert Hospital can present a major challenge. People living in more remote regions require helicopter airlift to reach Prince Rupert Hospital quickly (for example, the residents of Haida Gwaii use helicopter travel to access emergency medical facilities in Prince Rupert). Ground transport along the highway to the city is sometimes impossible due to flooded road conditions. In these situations, airlifting is also required to reach the hospital. Airlifting services are limited, and so this displays another bottleneck on medical treatment that could be overwhelmed by increased industrial activity in the region.<sup>52</sup>

Mental health services in the city are similarly under pressure. In terms of primary response, Prince Rupert has an Intensive Case Management Team (ICMT) that works with people on the street in need of immediate crisis and intervention support.<sup>53</sup> There are free counselling services available in the city, but these are understaffed, and require long wait times. The estimated wait time for mental health counselling in Prince Rupert is currently around 3 months.<sup>54</sup> Key Informant Interviews identified that a lack of private counselling bodies was a large part of the reason for this strain. The overloaded system and backlog of patients on waiting lists contributes to professional burn-out in the field, leading to problems with hiring and retention in an already understaffed industry. In Prince Rupert, family doctors are the first point of call for mental health services for members, however the shortage of family doctors, high un-attachment rate in the city, and issues with access to culturally appropriate health services, including mental health and addiction support, make this option ineffective for many members.<sup>55</sup> The virtual Doctor of the Day program from the First Nation's Health Authority presents a good alternative for Indigenous people seeking culturally competent online appointments, however this resource is very popular, and has wait lists of up to a month due to high volumes of scheduled meetings.<sup>56</sup>

### The Housing Crisis

A key health priority in Northern BC, especially in Prince Rupert, is access to safe and affordable housing. Housing environments have a profound effect on an individual's health and wellbeing. Poor housing conditions (such as overcrowding, mould, etc.) increases the risk of injury, disease, and some mental disorders,<sup>57</sup> and may increase the frequency with which a person needs to seek

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<sup>50</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>51</sup> Zeidler, M. (2023), Hundreds rally in Surrey, B.C., as health minister under fire for continued ER closures across province. CBC News. Retrieved from: <https://www.cbc.ca/news/canada/british-columbia/b-c-emergency-room-closures-1.6959807>

<sup>52</sup> Key Informant Interview 7 (virtual interview, February 2024)

<sup>53</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>54</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>55</sup> Key Informant Interview 5 (virtual interview, February 2024)

<sup>56</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>57</sup> Juan Palacios, Piet Eichholtz, Nils Kok, Erdal Aydin (2020). The effect of housing conditions on health outcomes, *Real Estate Economics*, 10.1111/1540- 6229.12317

medical care.<sup>58</sup> Affordable and safe housing is crucial to a person's mental wellbeing, due to the high stress associated with financial strain, and the risks of being housed in unstable or unsafe physical and social environments.

The housing crisis in Prince Rupert is making access to safe and affordable housing increasingly difficult. People living in the city are subject to rapidly increasing costs associated with housing (e.g., rents and mortgages). A brief scan of available rental units posted from April 2023 to June 2023 on Kijiji, Facebook Marketplace, and Craigslist retrieved 28 listings, with an average price per month of \$1,953.<sup>59</sup> A brief scan of the same sites in January of 2024 retrieved 27 listings, with an average price per month of \$2061. Alongside this, Prince Rupert has seen a sharp rise in homelessness and subsequent reopening of the homelessness shelter in 2017,<sup>60, 61</sup> with Indigenous people being disproportionately affected. An estimated 87% of Prince Rupert's homeless population identifies as Indigenous.<sup>62</sup> The North Coast Transitional Society provides a variety of services for women and their families in need of a safe place in Prince Rupert, including a 55 bed transition house, 82 units of supportive housing, and a 28 bed homeless shelter, along with several counselling programs. An estimated 90% of the people using these facilities identify as Indigenous.<sup>63</sup>

Key Informant Interviews described issues with hiring and retention in Prince Rupert's medical care facilities as a key reason for the current strain on local healthcare services. One of the primary reasons for this issue is the current housing crisis in the city, where a shortage of available housing, and rising rental costs are making it increasingly difficult for healthcare staff to find a place to live in the city. Last year, Northern Health lost 18 employees from Prince Rupert due to inability to find or afford housing.<sup>64</sup> In addition to this, a lack of availability of daycare facilities for staff with young children has contributed to medical staff in Prince Rupert needing to switch to part time positions.<sup>65</sup>

Lack of available housing for healthcare professionals is similarly an issue in more remote areas of the province. In Hartley Bay, there is currently only one house that is available and not scheduled for demolition.<sup>66</sup> This is a major barrier in housing travelling healthcare professionals, and also presents difficulties for Gitga'at members living outside of Hartley Bay who wish to visit, but have nowhere to stay.<sup>67</sup>

## Substance Use and the Opioid Crisis

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<sup>58</sup> Juan Palacios, Piet Eichholtz, Nils Kok, Erdal Aydin (2020). The effect of housing conditions on health outcomes, *Real Estate Economics*, 10.1111/1540- 6229.12317

<sup>59</sup> Gitga'at First Nation (2023). Housing Needs Assessment. p.21

<sup>60</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>61</sup> Kurjata, A. and Baker, G. (2017) 'A lot of them have been sleeping in garbage bins': new homeless camp shows negative side of economic growth. CBC News. Retrieved from: <https://www.cbc.ca/news/canada/british-columbia/a-lot-of-them-have-been-sleeping-in-garbage-bins-new-homeless-camp-shows-negative-side-of-economic-growth-1.4398300>

<sup>62</sup> Homelessness Services Association of BC. (2021, December). 2020/21 Report on Homeless Counts in B.C. Retrieved from <https://www.bchousing.org/publications/2020-21-BC-Homeless-Counts.pdf>

<sup>63</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>64</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>65</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>66</sup> Gitga'at First Nation (2023). Gitga'at First Nation Housing Needs Assessment, p.12

<sup>67</sup> Key Informant Interview 2 (virtual interview, February 2024)

Best practice guidance and academic literature clearly outline the association between resource development projects and increased mental health concerns and problematic substance use.<sup>68</sup> Increases in mental health concerns and problematic substance use in communities impacted by resource development projects have been attributed to stress from long working hours, sudden increases in income, cultural dislocation, and environmental dispossession.<sup>69</sup> Findings from a study of Campbell River identified key drivers of substance use in the community including the town's geography of a port city, times of economic prosperity related to industrial development (i.e., "booms") and the reliance on industry for jobs/employment.<sup>70</sup> These are characteristics that are shared by a number of communities in BC, including Prince Rupert and Terrace. Unintentional drug overdoses have become a critical public health crisis in BC. The reduced access to safe supply by drug users, coupled with the availability of highly potent synthetic opioids like fentanyl, has contributed to a drastic rise in overdose deaths. The overdose death rate in Prince Rupert is one of the highest in the province.

In the Prince Rupert LHA, 2022 saw a rate of 61.3 deaths per 100,000. The Kitimat LHA had a rate of 72.8 for the same year. Both are higher than the average of the Northern BC health region (59 per 100,000), which in turn is above the BC average (43 per 100,000). The latest data (from 2023) shows a decline in the Prince Rupert LHA (40.6 per 100,000) and an increase in the Kitimat LHA (77.4 per 100,000). In 2023, fentanyl was detected in 83% of unregulated drug related deaths.<sup>71</sup>

Addiction services are available in the Northern Health area, but they are limited, and often far away from Prince Rupert. For residents of the city, the closest detox beds are in the city of Prince George, which is over an 8 hour drive from Prince Rupert. The closest overnight, in-patient treatment centre is near Terrace.<sup>72</sup> Prince Rupert itself does offer recovery facilities (Trinity House) to provide extended stay in-housing and support, however this service is only available to men over 19, and is limited in its capacity.<sup>73</sup> Key informant Interviews identified effective services such as 'wellbriety' clinics, but cited issues with long wait times, limited vacancy, staff shortages, and long distance travel required to reach centres from Prince Rupert, which render these services largely inaccessible for residents of Prince Rupert and the surrounding area.<sup>74</sup>

## Crime rates

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<sup>68</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. (2018). Northern Health Authority, & BC Centre for Disease Control.

<sup>69</sup> Ninomiya, Melody E Morton et al. (2023). Indigenous communities and the mental health impacts of land dispossession related to industrial resource development: a systematic review. *The Lancet Planetary Health*, Volume 7, Issue 6, e501 - e517

<sup>70</sup> Campbell River Community Action Team (2019). Community Report: Community identified contributors to substance abuse. Retrieved from: <chrome-extension://efaidnbnmnnibpcajpcglclefindmkaj/https://static1.squarespace.com/static/5f6e4f6063b9153f52ef07ed/t/5f726e75c972b8529ecda8a7/1601334901996/CATCommunity+Report2019.pdf>.

<sup>71</sup> BC Coroners Service (2023). Unregulated Drug Deaths in BC – 2023 Summary. Retrieved from: <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports>

<sup>72</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>73</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>74</sup> Key Informant Interview 1 (virtual interview, January 2024)

Resource development projects directly linked to increased risks related to crime and community safety has been well-documented in communities in Canada and around the world.<sup>75</sup> Specifically, the influx of workforces and money into communities can fuel organized crime, including the demand for sex trade work and illegal substances.<sup>76</sup> In particular, oil and gas projects have been shown to have adverse impacts on the rates violent crime in communities including instances of gender based violence (e.g., sexual assault).<sup>77</sup><sup>78</sup> Crime rates per capita in Prince Rupert are notoriously high. On average, the Prince Rupert Police department receives around 5000 emergency calls per year.<sup>79</sup> Crime Severity Index (CSI) measures the overall crime rate in a region, incorporating both the quantity of reported incidents, and scoring them based on their severity. As of 2022 Prince Rupert reported 2,314 incidents<sup>80</sup>, and had a CSI of 189.05, compared to a BC average of 100.37.<sup>81</sup> This places Prince Rupert as having the 16<sup>th</sup> highest CSI in the province, compared to the roughly 180 BC police jurisdictions.<sup>82</sup>

Over the five year period from 2018-2022, Prince Rupert's average CSI of 175.8 is well over double the Canadian average of 78.1, and around 75% higher than BC's five year average of 100.4.<sup>83</sup> This leaves the city of Prince Rupert in a precarious position with regard to the potential influx of large industrial workforces. There is a quantifiable link between the influx of money and project workers into a region and an increase in local crime rates.<sup>84</sup> Project staff may need to live in Prince Rupert to be close to the facility, and off-site staff are likely to visit Prince Rupert when they are not on shift, increasingly the likelihood of prevalent risk behaviours in the city.

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<sup>75</sup> Asia Pacific Foundation for Climate and Health (2023). Mitigation and Enhancement Measure for Health, Social and Economic Effects.

<sup>76</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. (2018). Northern Health Authority, & BC Centre for Disease Control.

<sup>77</sup> Stretesky, P. B., Long, M. A., McKie, R. E., & Aryee, F. A. (2018). Does oil and gas development increase crime within UK local authorities? *The Extractive Industries and Society*, 5(3), 356-365.

<https://doi.org/10.1016/j.exis.2018.03.006>

<sup>78</sup> Kimberly Martin et al., (2019). Violent Victimization Known to Law Enforcement in the Bakken Oil-Producing Region of Montana and North Dakota, 2006 – 2012, *Natl. Crime Stats*. Retrieved from:

<https://www.ojp.gov/ncjrs/virtual-library/abstracts/violent-victimization-known-law-enforcement-bakken-oil-producing>

<sup>79</sup> City of Prince Rupert (2024). Services: 911 Dispatch Centre. Retrieved at:

<https://www.princerupert.ca/services/public-safety/911-dispatch-center#:~:text=On%20average%20the%20Prince%20Rupert,get%20the%20help%20they%20need>

<sup>80</sup> Statistics Canada.(2024)Table 35-10-0184-01 Incident-based crime statistics, by detailed violations, police services in British Columbia, Retrieved at: <https://doi.org/10.25318/3510018401-eng>

<sup>81</sup> StatisticsCanada (2024); Table 35-10-0026-01: Crime severity index and weighted clearance rates, Canada, provinces, territories and Census Metropolitan Areas. Retrieved at: <https://doi.org/10.25318/3510002601-eng>

<sup>82</sup> Barker, T. (2023), Prince Rupert crime severity remains fairly steady for 2022, the Northern View. Retrieved at: <https://www.thenorthernview.com/news/prince-rupert-crime-severity-remains-fairly-steady-for-2022-6004120>

<sup>83</sup> Barker, T. (2023), Prince Rupert crime severity remains fairly steady for 2022, the Northern View. Retrieved at: <https://www.thenorthernview.com/news/prince-rupert-crime-severity-remains-fairly-steady-for-2022-6004120>

<sup>84</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority. - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health. p 24.

## The Human Trafficking Crisis

Resource development activities have been shown to coincide with rises in instances of gender-based violence, including sex trafficking of Indigenous women and girls.<sup>85,86</sup> Established human trafficking corridors in Canada are intrinsically linked to industrial development. For example, driven by the demand for commercial sex services and populations of men with money, resource towns such as Fort McMurray are among top destinations for women and girls being sex trafficked.<sup>87</sup> Human trafficking has become an increasingly prevalent crisis in Canada over the last decade. In 2010, there were under 50 total police-reported instances of human trafficking. This number has risen sharply to over 500 cases in 2020.<sup>88</sup> In the wake of increased large scale industrial projects around the Prince Rupert area, a critical issue is the impact this will have on the prevalence of human trafficking, sexual abuse, and violence. Indigenous women and youth are sexually assaulted three times more often than their non-Indigenous counterparts,<sup>89</sup> and most of the women and children trafficked in Canada are Indigenous.<sup>90,91</sup> According to a study conducted by Amnesty International in 2016, reasons for the high prevalence of Indigenous women and children in the sex trade are complicated and varied; however, underlying factors such as, poverty, past history of abuse, dysfunctional family systems, and low self-esteem have been shown to increase the likelihood of women and youth engaging in sex trade work. As an illegal and unregulated activity, sex trade work poses serious risks to human health, such as exposure to violence, HIV/AIDS, unplanned pregnancy, substance use, and suicide.<sup>92</sup> As a town with an industrial port and many transient visitors, the human trafficking crisis, sex work, and sexual violence are prevalent aspects of Prince Rupert which impact vulnerable population groups. Prince Rupert's RCMP are currently aware of Indigenous minors involved in past and ongoing sexual exploitation.<sup>93</sup>

## Vulnerable Population Groups

Key Informant Interviews consistently cited Indigenous people are a vulnerable population group with regard to these health priorities in the region. Around 90% of the people using the North Coast Transitional Society facilities identify as Indigenous,<sup>94</sup> and studies have shown that Indigenous

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<sup>85</sup> Kathleen Finn, Erica Gajda, Thomas Perin, and Carla Fredericks (2017). Responsible Resource Development and Prevention of Sex Trafficking: Safeguarding Native Women and Children on the Fort Berthold Reservation, 40 Harv. J.L. & Gender. Retrieved from: <https://scholar.law.colorado.edu/faculty-articles/629/>

<sup>86</sup> Amnesty International (2016). Out of Sight, Out of Mind: Gender, Indigenous Rights, and Energy Development in Northeast British Columbia, Canada, AMR 20/4872/2016, [www.amnesty.ca/outofsight](http://www.amnesty.ca/outofsight)

<sup>87</sup> Olson-Pitawanakwat, B., & Baskin, C. (2021). In Between the Missing and Murdered: The Need for Indigenous-Led Responses to Trafficking. *Affilia*, 36(1), 10-26. <https://doi.org/10.1177/0886109920944526>

<sup>88</sup> StatisticsCanada (2022). *Trafficking in persons in Canada, 2020*. Retrieved at: <https://www150.statcan.gc.ca/n1/pub/85-002-x/2022001/article/00010-eng.htm>

<sup>89</sup> Conroy S. and Cotter, A. (2014). Self-reported Sexual Assault in Canada

<sup>90</sup> Government of Canada (2019). Public Safety Canada, National Action Plan to Combat Human Trafficking. Retrieved from: <https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/2019-ntnl-strtg-hmnn-trffc/index-en.aspx>

<sup>91</sup> Buller, M. et al. (2019). Reclaiming Power and Place. The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls. V.1 Privy Council Office.

<sup>92</sup> Amnesty International (2016). Out of Sight, Out of Mind: Gender, Indigenous Rights, and Energy Development in Northeast British Columbia, Canada (London, UK: Amnesty International)

<sup>93</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>94</sup> Key Informant Interview 1 (virtual interview, January 2024)

people disproportionately experience homelessness in the city of Prince Rupert.<sup>95</sup> It has been reported that Indigenous people in the city sometimes struggle to find culturally sensitive/competent healthcare services, with some reporting that they feel brushed off by family doctors, and experience a higher likelihood of being turned away from the emergency room when seeking crisis support.<sup>96</sup>

Within this demographic, a key concern is the wellbeing and safety of women and youth groups. Indigenous youth are a particularly vulnerable population in Prince Rupert. Access to housing, shelter, health and counselling services are often unavailable to underage community members. This demographic is disproportionately impacted by issues of human trafficking, abuse, and often struggle with feelings of cultural disconnection.<sup>97</sup> Key Informant Interviews indicated that the last 6 months has seen an alarming rise in the number of suicide attempts amongst Indigenous youth in the city.<sup>98</sup>

Indigenous Elders similarly represent a vulnerable demographic. Many need ready access to healthcare facilities, deal with mental health issues of cultural disconnection, and carry the weight of providing leadership and decisions for their communities. With housing becoming an increasing crisis in the city of Prince Rupert, “renovictions”, whereby tenants are evicted so landlords can conduct repairs or renovation to units, have become increasingly common.<sup>99</sup> In February 2023, over 30 tenants, some of whom were First Nation Elders with accessibility needs, were evicted from two apartment buildings.<sup>100</sup> A notable majority (approximately 70%) of the people using the North Coast Transitional Society facilities are aged 50 and above. Currently there is a prominent presence of older Gitga’at members using the homeless shelter.<sup>101</sup> With the housing and healthcare systems coming under increasing strain in the Prince Rupert LHA, Elders are a particularly sensitive population demographic to changes in the community.

The influx of workers into rural and remote communities has been shown to have complex, interrelated negative impacts on each of the above identified health priorities due to the “4 M’s” (labour influx of men, surge in disposable money, movement due to new transport routes, and mixing of affected community members with the workforce).<sup>102</sup> The fragility of the healthcare, housing, and existing public health situations in Prince Rupert mean that the arrival of KL LNG facility construction workers and project staff could cause major disruptions in the local population’s access to treatment, affordable accommodation, and safe living environments. The proponent’s application

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<sup>95</sup> Homelessness Services Association of BC. (2021, December). 2020/21 Report on Homeless Counts in B.C. Retrieved from <https://www.bchousing.org/publications/2020-21-BC-Homeless-Counts.pdf>

<sup>96</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>97</sup> Key Informant Interview 4 (virtual interview, February 2024)

<sup>98</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>99</sup> The Northern View (2023). Renovictions through the roof in Prince Rupert. Retrieved from: <https://www.google.com/search?q=increased+renovictions+in+prince+rupert&oq=increased+renovictions+in+prince+rupert&aqs=chrome..69i57j33i160.5574j1j7&sourceid=chrome&ie=UTF-8>

<sup>100</sup> Wilson, L. (2023). More than 30 tenants in Prince Rupert face evictions during a housing crisis. Retrieved from: <https://www.aptnnews.ca/national-news/more-than-30-tenants-in-prince-rupert-face-evictions-during-a-housing-crisis/>

<sup>101</sup> Key Informant Interview 1 (virtual interview, January 2024)

<sup>102</sup> International Finance Corporation (2007). Environmental, Health and Safety Guidelines for Mining. Retrieved from: <https://www.ifc.org/wps/wcm/connect/595149ed-8bef-4241-8d7c-50e91d8e459d/Final%2B-%2BMining.pdf?MOD=AJPERES&CVID=nPthex1&id=1323153264157>

stated that KL LNG will contribute at least 800 additional people to the region during the construction phase, and at least 150-200 people during the operation phases of the project (excluding additional family members).<sup>103</sup> Key Informant Interviews indicated that this is a likely a highly conservative estimate, referencing the peak numbers of around 5,800 workers involved in the construction of the LNG Canada facility in the same region, which began in 2019.<sup>104</sup> The LNG Canada project was predicted to be producing 14 million tonnes of LNG annually, compared to the KL LNG, which predicts 12 million tonnes. Underestimations of this scale in the size of the workforce indicate that it is highly unlikely that KL LNG will be able to provide adequate health and housing facilities for its own staff for the duration of the project, meaning that the facilities in Prince Rupert will be required to take the additional strain, and vulnerable populations in the city will experience negative consequences.

## Effects of Existing Industrialization

Existing industrial development in and around Gitga'at Territory has already had effects on the biophysical environment, the social environment, and economic conditions. Regional industrial facilities and associated marine traffic have caused changes to levels of pollution, put increased strain on existing infrastructure, and have further alienated the Gitga'ata from their traditional lands and waters. Gitga'at First Nation has experienced exclusionary tenure policies by various levels of government and have witnessed the commercial exploitation of resources in their territory. For example, several Knowledge Holders interviewed noted that recent fishing regulations introduced by the federal Department of Fisheries and Oceans (DFO) have prevented people from visiting certain sites, or from fishing at night time.<sup>105</sup> Gitga'at has experienced increased marine vessel traffic throughout their territorial waters that interfere with their harvesting plans and travel vessels, resulting in disruptions to their ability to exercise their rights throughout their territory. The increase in marine traffic has required drastic changes in Gitga'at's seasonal marine resource gathering cycles, as well as the time and resources that Gitga'at members require to participate in them.<sup>106</sup> The busier waters also raise concerns for the marine ecosystem, with previous growth in shipping traffic frequency showing marked increases in the number of marine mammal collisions and underwater acoustic levels. This additional traffic will increase the risks of these environmental threats.<sup>107,108</sup>

The increase in industrial activity in the region has caused a rise in the local populations, and as a result, has seen increased intensity in commercial and recreational fishing, resulting in significant competition and strain on Gitga'at First Nation's resource harvesting activities.<sup>109</sup> Gitga'at First Nation has been affected by the increase in recreationally harvested fish resources and the continuous declines in several major coastal commercial fisheries, resulting in the decline of key

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<sup>103</sup> Ksi Lisims LNG (2023) Natural Gas Liquefaction and Marine Terminal Project. 7.12-60

<sup>104</sup> Key Informant Interview 6 (virtual interview, February 2024)

<sup>105</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.39

<sup>106</sup> Cedar LNG Partners LP. (2022). *Section 12 Gitga'at First Nation. Environmental Assessment Application*.

<sup>107</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga'at territory*

<sup>108</sup> Ksi Lisims LNG, (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7.09

<sup>109</sup> Cedar LNG Partners LP. (2022). *Section 12 Gitga'at First Nation. Environmental Assessment Application*. Section 12.2.2, p.24-25



resources that were historically abundant. A notable example is the lack of availability of abalone and sea cucumber due to industrial over-harvesting.<sup>110</sup>

In addition to placing strain on the local marine resources, the influx of people into the region to service the growing industrial projects places more pressure on infrastructure within settlements. Housing, medical care, and emergency facilities are already shown to be stretched thin in both Prince Rupert and Hartley Bay.<sup>111</sup> Gitga'at First Nation is concerned that an influx of more people will place increased stress on the cost and quality of living, and the health and well-being of their Nation members. Gitga'at First Nation has additionally expressed concerns about potential negative social effects that are directly associated with project induced worker influx including increased use and availability of drugs and alcohol, the potential for increased levels of sex work, and the safety and security of vulnerable members in their communities.<sup>112,113,114</sup>

Another major concern for Gitga'at First Nation is the threat posed by shipping accidents, both in terms of collision risk, and the environmental hazards of pollution from spills. Past incidents, such as the Zalinski shipwreck and the sinking of the Queen of the North, have resulted in long-term effects on the region, and have restricted Gitga'at members from accessing important harvesting sites. The Zalinski shipwreck, in particular, showcases the potential for chronic pollution events, since the wreck has been leaking oil since it sank in 1946.<sup>115</sup> Similarly, Gitga'at First Nation has reported that pollution from urban and industrial developments have ruined many areas for harvesting and habitation on Kaien Island, Ridley Island and Port Edward.<sup>116</sup> Gitga'at First Nation is currently building a Marine Emergency Response and Research Facility in Hartley Bay to reduce the risk and effects from an accident or malfunction from shipping.<sup>117</sup> Accidents or polluting facilities can effect both the measurable pollution levels of the water, and the perception of the quality of the resources coming from it. Perception strongly influences an individual's decisions and behaviour, and so the perception of reduced marine resource quality has the potential to damage Gitga'at First Nation member's traditional ways of life.

## The Ksi Lisims LNG Project

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<sup>110</sup> Thompson, K. (2018) *"We monitor by living here": actualization of a social-ecological monitoring program grounded in Gitga'at harvesters' observations and knowledge*. Master's Thesis. p.76

<sup>111</sup> Gitga'at First Nation. (2023). *Gitga'at First Nation Housing Needs Assessment 2023*

<sup>112</sup> Gitga'at First Nation (2023). *CHWS Technical Report*. p.25

<sup>113</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority*. - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health. p 24.

<sup>114</sup> Lavalley, Jennifer, MSW, Kastor, Shelda, PhD, Valleriani, Jenna, PhD, & McNeil, Ryan, PhD. (2018). 'Reconciliation and Canada's overdose crisis: Responding to the needs of Indigenous Peoples'. *Canadian Medical Association Journal (CMAJ)*, 190(50), E1466-E1467.

<sup>115</sup> Bailey, K. (2022) *Coast Guard identifies oil spill south of Prince Rupert*. The Northern View, <https://www.thenorthernview.com/news/coast-guard-identifies-oil-spill-south-of-prince-rupert/>

<sup>116</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.60

<sup>117</sup> Gitga'at First Nation (n.d.). *Current Projects*. Retrieved from: <https://www.gitgaatnation.ca/oceans-lands>

The Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project (referred to as the Ksi Lisims LNG and “the Project”) is a floating liquefied natural gas (FLNG) project proposed by the Nisga’a Nation, Rockies LNG, and Western LNG. Ksi Lisims means “from the Nass River” in the Nisga’a language. Ksi Lisims LNG Project is operated by three project proponents, the Nisga’a Lisims Government, Rockies LNG Partners, and Western LNG. The Project is regulated under the 2018 BC Environmental Assessment Act and 2019 federal Impact Assessment Act. The Project proponents will also conduct an assessment in accordance with Chapter 10 (Environmental Assessment and Protection) of the Nisga’a Final Agreement, which will be incorporated into the BC and federal assessment processes.

The Project site is located on Category A Treaty Land as defined in the Nisga’a Treaty at Wil Milit on the northern tip of Pearse Island near the Nisga’a village of Gingolx, adjacent to the Canadian American border. Use of the site is governed by the Nisga’a Lisims Government (NLG) under the Nisga’a Treaty and the Nisga’a Lands Land Use Plan.<sup>118</sup> The closest Canadian urban centres are the cities of Prince Rupert (about 80 km to the south) and Terrace (about 120 km to the southeast). The proposed FLNG Project consists of two individual FLNG facilities at the Project site with a combined production of up to 12 million tons of LNG per year over an estimated 30-year operating lifetime.<sup>119</sup> Project ancillary facilities are required for operation which include the upgrade of the BC Hydro transmission line and the construction of associated subsea cables. Supplies and workers for both construction and operation will be moved over water to the site either from the Nisga’a village of Gingolx or from the port of Prince Rupert. Floating onsite accommodations (a “floatel”) will be assembled for construction workers.

The present estimate of LNG shipments to and from the facility is between 140-160 and 8 to 12 NGL product vessels travelling at speeds of 12 to 19 knots/hour will transit the Marine Shipping Route (MSR). An LNG carrier will therefore transit the MSSR approximately every 1.2 days (with two journeys per vessel, accounting for both inbound and outbound transit) during the operation phase (30 years) annually.<sup>120</sup> In terms of overall traffic, this amounts to an increase of annual shipping traffic by 296-348 voyages<sup>121</sup>, excluding additional traffic such as tug boats, and carriers for materials and personnel along the MSR from the facility to Prince Rupert. LNG carriers are anticipated to have a capacity to transport up to 216,000 m<sup>3</sup> resources and will be operated by third parties. The Project includes shipping of liquefied LNG along the proposed marine shipping (transit) route between the terminal and the BC Coast Pilots Ltd. boarding location at or near Triple Island and Canada’s 12 nautical mile territorial sea limit.<sup>122</sup>

In the Application, the Proponent identified 14 different VCs to define areas of potential project effects and mitigation strategies. These VCs are as follows:<sup>123</sup>

## 1. Air Quality

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<sup>118</sup> Ksi Lisims LNG Project (2023). *Natural Gas Liquefaction and Marine Terminal Project*. 1-1

<sup>119</sup> Ksi Lisims LNG Project (2023). *Natural Gas Liquefaction and Marine Terminal Project*. 1-2

<sup>120</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-5

<sup>121</sup> Taking into account LNG vessels, NGL vessels, and the fact that one vessel amounts to two journeys; both coming into port, and leaving.

<sup>122</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 1-1

<sup>123</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7

2. Acoustic
3. Surface Water
4. Groundwater
5. Vegetation and Wetlands
6. Wildlife and Wildlife Habitat
7. Freshwater Fish and Fish Habitat
8. Marine Resources
9. Employment and Economy
10. Marine Use
11. Infrastructure and Services
12. Community Health and Wellness
13. Human Health
14. Archaeological and Heritage Resources

## **Cumulative Effects**

The effects of colonization on the Gitga'at'a and other First Nations in the region have been diverse and cumulative, and the scope and enduring adverse effects of the damage done are still not fully documented or understood.

The cumulative effects of industrial projects that have been advanced in the North Coast in recent years have had and will have additional cumulative adverse effects, including that they will result in Gitga'at members being systematically further alienated from significant parts of their territory and TUOS sites, infringing on their inherent and aboriginal rights and way of life. Changes in marine traffic, environmental health, marine safety, and local populations and rapid influxes of new wealth will cumulatively affect the health and well-being of Gitga'at members, regardless of their place of residence.

The construction and operation of the KL LNG project will further contribute and exacerbate these effects. In addition to any unforeseen effects stemming from continued development in the region, it is critical to consider these effects collectively as a whole. Cumulative effects have the potential to affect all aspects of life for those affected, and amount to a very different lived experience for people in local settlements. One challenge, in particular, is the lack of data on the cumulative effects of past industrial projects. Developments and proposals for additional projects have come in quick succession in this region and there has been little opportunity to view the smaller scale effects of individual industrial facilities. The region has not yet witnessed the long-term effects of approved projects such as LNG Canada, Vopak, and Cedar LNG. This raises the likelihood that several large-scale industrial facilities will be operating concurrently before a comprehensive understanding of the effects of even one is established. As a result, compounding adverse effects experienced in the region becomes unavoidable. Gitga'at members, in particular, will experience these cumulative effects disproportionately when compared with the wider population, based on Gitga'at First Nation's current economic and social situation, strong cultural linkages to the region, and dependence on marine resources.

## 1.5 Assessment of Project Impacts to Gitga’at Interests

### 1.5.1 Harvesting Rights

#### Background

Harvesting rights represent one of the most pertinent and immediately tangible issues facing Gitga’at First Nation in the context of the Project. Their inherent and Aboriginal rights to harvest from the region are a uniquely strong aspect of Gitga’at First Nation’s cultural expression. Considering the community’s heavy reliance on traditional food sources, especially those harvested from marine environments The exercise of these rights is particularly susceptible and sensitive to disturbance with significant negative effect.,.

#### Existing Conditions

Indigenous resource harvesting, including food, social and ceremonial harvesting, remains a central aspect of the economic and social fabric of Gitga’at First Nation. Seasonal hunting, fishing, and harvesting provides resources that are used to meet the Nation’s subsistence needs, support food security and trading activities, and foster community gatherings. According to Gitga’at First Nation’s 2023 annual household CHWS, nearly all (95%) Gitga’at households eat traditional foods, with the majority (45%) reporting that they eat traditional foods at least a few times per month as indicated in Table 3 below. Data from all households surveyed, and those just in Hartley Bay are displayed. Traditional food consumption is lower outside of Hartley Bay (i.e., in Prince Rupert) due to heavy industrial development, reducing access to harvesting.

Table 3. Indicators describing access to and enjoyment of traditional foods for Gitga’at households represented by the CHWS (N=146) and households in Hartley Bay (N=47).<sup>124</sup>

Traditional food indicators	Proportion of Households (%)	Proportion of Households (%)
	ALL HOUSEHOLDS	HARTLEY BAY
<b>Household eats traditional foods</b>		
Yes	95%	98%
No	<5%	0%
No response	<5%	<5%
<b>Frequency of traditional foods consumption</b>		

<sup>124</sup> Gitga’at First Nation (2023). *Community Health and Wellness Survey Technical Report*. p.17

Traditional food indicators	Proportion of Households (%) ALL HOUSEHOLDS	Proportion of Households (%) HARTLEY BAY
Once a week or more	47%	74%
A few times each month	45%	23%
Never	<5%	0%
No response	5%	<5%

Residents of Hartley Bay rely heavily on traditional foods to meet their dietary needs and help offset the relatively high cost of store-bought food in northern BC.<sup>125</sup> Currently, there is no grocery store in the community and the harvesting of traditional food is an economic necessity that directly supports community health and wellness.<sup>126</sup> Marine resources are a central part of their traditional diet, and are a key component to Gitga’at First Nation’s cultural identity. As a coastal Indigenous tribe, Gitga’at First Nation have had a historically unique reliance on marine food resources, which remains a significant aspect of their culture and Indigenous economic today. Of the 796 Gitga’at TUOS sites identified in the KL LNG study area, 570 of them are sites for aquatic resource harvesting, many of which are essential locations to Gitga’at food security and economic stability. One interviewee who participated in the 2022 TUOS stated:

“And our resources are right there, our bread and butter. Our bread and butter is right there... we’ve been fishing there for years and years... You get your livelihood there.”<sup>127</sup>

Interviewees also noted that specific areas at times provide a more bountiful yield than others due to changes in tides, weather, and other factors. Knowledge of key harvesting areas, acquired over generations, continues to be passed down in Gitga’at families today. Another interviewee spoke to the importance of access to specific sites, and accessing them at specific times of year:

“I didn’t just by chance go and try [those places], they were taught to me. They were shown to me, I looked at tide tables, I looked at landmarks, I looked at waterways, I looked at the time of the year, the time of the month, the time of the day, and I etched it into my head.”<sup>128</sup>

Aquatic resource harvesting methods used within the Study Area include fishing (gillnet, trolling, setline, seine nets, trap setting), shoreline gathering, and hunting. Fishing resources that fall within the Study Area for the Project include salmon (sockeye, coho, pink, chum, spring), halibut, steelhead,

<sup>125</sup> Food Secure Canada. (2016). *Paying for food in the North*. Retrieved from [https://foodsecurecanada.org/sites/foodsecurecanada.org/files/201609\\_paying\\_for\\_nutrition\\_fsc\\_report\\_final.pdf](https://foodsecurecanada.org/sites/foodsecurecanada.org/files/201609_paying_for_nutrition_fsc_report_final.pdf)

<sup>126</sup> Arrowsmith Gold Inc. (2021). *Establishing a Health and Well-being Monitoring Framework for Gitga’at First Nation: Scoping Phase Report*. p.15-16

<sup>127</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. Interview HB-35, September 2016.

<sup>128</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. Interview HB-036, September 2016.

red snapper, lingcod, black cod, rock cod, yelloweye rockfish, quillback rockfish, kelp greenling, trout, and herring. Gitga’at members also harvest octopus and skate in several areas. Species harvested by trap setting or pots include crabs (Dungeness crab and snow crab), shrimp, and prawns.

Aquatic hunting resources within the Study Area include seals, sea lions, waterfowl (ducks, geese, and murrelets), as well as deer hunted along the shoreline.<sup>129</sup> Species harvested by intertidal seafood gathering include abalone, mussels (California mussels and others), chitons, gooseneck barnacles, clams (butter clams and others), cockles, sea urchins, rock scallops, sea cucumbers, sea anemones, seaweed/kelp, and herring eggs.<sup>130</sup> Gitga’at members often harvest these resources when travelling by boat from their homes in Prince Rupert or Hartley Bay, and reported that a large proportion of the community continue to seasonally occupy and harvest at various camps across their territory and TUOS sites. Many camps are associated with fixed resources, like shellfish or berries, and have been associated with, owned by, and maintained (e.g., removal of predator species or other competing species) by specific families for generations.<sup>131</sup>

Most resources are consumed within the community. Some are consumed fresh, and some are processed (drying, smoking, canning, freezing) for later use. Resources are also distributed to extended family members (primarily in Hartley Bay and Prince Rupert), used for community and ceremonial gatherings, and traded for commercial exchange, including trade to neighbouring First Nations (notably halibut, salmon, seaweed, and cockles).<sup>132</sup> In this way, traditional food harvesting activities support food security for Gitga’at members, their economic system, and relationships to each other and with other Nations. Harvesting activities also provide resources for traditional medicines used by Gitga’at members. One interviewee, who participated in the 2022 TUOS, spoke about the importance of these medicines, and significance of the traditional sites from which they are gathered:

“Traditional plants and medicines continue to be regularly used and relied upon today. My grandfather still uses a recipe that has been passed down from his ancestors. He relies on this medicine every day to stay in good health, and has been giving it out to the elders who are sick and need a cleanse after the winter months. He expects to be able to continue to harvest in the sites he has relied upon for years, and has passed this information down to me, and I continue to rely on those sites and the medicines that reside there.”<sup>133</sup>

Industrialization in the region has affected Gitga’at First Nation’s access to resource harvesting throughout their territory, but more acutely in the Prince Rupert area. Despite these impacts,

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<sup>129</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. p.38

<sup>130</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. p.38

<sup>131</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*.

<sup>132</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. p.30

<sup>133</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. Personal communication 2014

Gitga'at use and consumption of traditional resources remains high demonstrating the vital importance of traditional resources and harvesting to Gitga'at culture and well-being. However, the differences in harvesting between Prince Rupert and Hartley Bay also demonstrate how those uses are vulnerable to continued erosion resulting from further industrial development. Gitga'at First Nation has reported that industrial facilities and increased shipping traffic have restricted their access to traditional harvesting sites, and caused concerns over pollution levels and marine safety in the area.<sup>134</sup> Similarly, the increase in large-scale shipping traffic has affected the customary travel routes used by Nation members to access harvesting sites, and members have reported having to make substantial diversions in travel routes to avoid cargo ship routes.<sup>135</sup>

Gitga'at members have experienced further restriction from their TUOS harvesting sites through exclusionary government policy, which has blocked or inhibited their abilities to harvest. For example, several Knowledge Holders noted during interviews conducted as part of the TUOS, that recent fishing regulations introduced by the federal Department of Fisheries and Oceans have prevented people from fishing at night time. As a result, this restriction has forced resource users to plan around changes in weather and tides so that they maintain access to secure anchorages while waiting overnight for fishing openings. Doing so greatly increases the financial burden and time of harvesting expeditions for Gitga'at members<sup>136</sup>

The increase in population in the region related to on-going industrial development has led to a higher competition for resources due to increased fishing and harvesting by non-Indigenous recreational users. Many of Gitga'at First Nation's preferred sites are now heavily occupied and used by commercial/recreational fishers. Gitga'at members have also reported the depletion of certain traditional resources due to industrial over-harvesting.<sup>137</sup>

Gitga'at members have also reported increased concerns over safety following the increase of cargo ships and escort tugs in the region, both through the increased potential for a vessel collision, and through the large wake waves created by LNG carriers travelling at speed. One interviewee who participated in the 2022 TUOS recounted their experience on the water with a large wake from a pilot boat, stating:

“There was a smaller boat in front of me, I was ready to go and rescue those guys – they were just flopping – their boat was just about right over!”<sup>138</sup>

The proposed MSR and MSSR for the KL LNG project overlap with a significant number of key Gitga'at First Nation travel routes and harvesting areas, and Nation members are concerned that

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<sup>134</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.60

<sup>135</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.61

<sup>136</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.39

<sup>137</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.61

<sup>138</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. Interview HB-076, August 2022.

additional shipping traffic will further restrict access to culturally significant sites. Several Gitga'at harvesting and anchorage points overlap or lie close to the proposed shipping lanes. Interviewees for the Gitga'at TUOS report listed sites including the past settlement/important trading areas that were at Casey Point, Hays Creek, and Wolf Creek in the Prince Rupert Harbour area; and the Qlawdzeet Anchorage on Stephens Island at Squaderee.<sup>139</sup> A key concern for Gitga'at members is the impact that increased marine traffic will have on salmon populations, and Gitga'at's access to harvesting them. Salmon is a crucial resource to the Gitga'at community, and Gitga'at fish for all species of Pacific salmon (Coho, Pink, Chum, Sockeye, and Chinook) extensively throughout the TUOS Study Area to use for commercial, trade, personal, or community food purposes. The Chatham Sound is a crucial staging area for salmon, and hence is an important location for Gitga'at harvesting activities.

The Study Area for the TUOS is a region centered on Chatham Sound and Portland Inlet identified by Gitga'at members as a key harvesting area that could be impacted by the Ksi Lisims LNG Project and associated pipeline and marine shipping routes. As such, the majority of these sites fall within the KL LNG Marine Shipping Regional Assessment Area (see Figure 4). In the assessment chapter on Marine Resources, the proponent concluded that for the Nass River salmon migrations via the Portland Inlet, "[salmon] migration will directly overlap with the Marine Shipping RAA".<sup>140</sup> In terms of the effects of construction and marine shipping activities on salmon populations, the Marine Resources Assessment identifies that:

...salmonid species have been shown to display a behavioural avoidance response by leaving the immediate area when construction activities are underway, or marine transport vessels are passing by. For example, Feist et al. (1996) observed nearly twice as many juvenile pink and coho salmon at a pile driving site on days when pile driving was not occurring.<sup>141</sup>

From this conclusion, the proponent predicts a 'moderate magnitude of impact' on salmon populations from construction and marine shipping activity.<sup>142</sup> However, the analysis only focuses on salmon populations near the Nass River in the immediate vicinity of the project facility location. There are no conclusions on the potential overlaps between shipping routes through the Chatham Sound closer to Prince Rupert, and the potential impacts on staging salmon headed towards the Skeena River.

Three potential routes were initially proposed for the MSR: two northern routes (north of Dundas and Zayas Islands, and in between Dundas and Zayas Islands), and a southern route (south of Dundas Island) (see Figure 5 above). The southern route around Dundas Island was chosen as the Project MSR despite this overlapping with substantially more Gitga'at TUOS sites, thus posing increased safety hazards for marine users in the area. The selection process, presented in the Navigational Safety Assessment by WestMar, provided insufficient safety justification for this choice. It neglected

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<sup>139</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project. Interview HB-076, August 2022.

<sup>140</sup> Ksi Lisims LNG (2023) Natural Gas Liquefaction and Marine Terminal Project. 7.9-117

<sup>141</sup> Ksi Lisims LNG (2023) Natural Gas Liquefaction and Marine Terminal Project. 7.9-11

<sup>142</sup> Ksi Lisims LNG (2023) Natural Gas Liquefaction and Marine Terminal Project. 7.9-110



to incorporate any data on Indigenous marine use, thereby increasing safety risks and introducing logistical difficulties for the Gitga'at community.

## Potential Project Effects and Proposed Mitigations

### Potential Project Effects

In section 17.2.3 of the project application, Ksi Lisims LNG identified potential risks to “to Gitga'at First Nation Harvest and Consumption of Marine and Terrestrial Resources and Associated Cultural Practices” for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Wildlife and Wildlife Habitat (Section 7.07)
- Marine Resources (Section 7.09)
- Marine Use (Section 7.11)
- Human Health (Section 7.14)

The application states no further detail on risks that could specifically effect Gitga'at First Nation. While the application dedicates individual sections to assess the potential risks and mitigations for these VCs, the lack of specific consideration for Gitga'at First Nation's unique circumstances (notably their heavier reliance on marine resources than surrounding communities) fails to recognise that the Nation will be disproportionately affected in these (and other) VC areas.

The following list provides a description of potential effects the KL LNG project may have on Gitga'at First Nation's harvesting rights over the lifespan of the Project (construction, operations, and decommissioning). The effects described are based on the residual effects associated the aforementioned VCs detailed in the Application.

- Effects of increased shipping traffic on Gitga'at First Nation's access to Traditional Use of Ocean Space (TUOS) harvesting sites. Gitga'at members may experience reduced access to these sites due to a number of factors, including: increased safety risks (e.g., risk of collision) as a result of a large increase of LNG carrier and tug traffic; alienation from harvesting sites through the real and perceived reduction in quality of resources due to industrial activity/pollution; or reduced quality of experience of traditional harvesting activities near marine shipping routes due to adverse effects on air quality, acoustic environments, and the aesthetic/experiential effects of the presence of LNG carriers. The extent of this effect is dependent on which MSR (North or South route around Dundas Island) is chosen as the final selection (See Figure 5);
- Increased safety hazards to small boats, fishers, and shoreline harvesters from wake waves generated by LNG carriers and escort tugs;
- Potential loss of containment of LNG or other hazardous substance from an LNG carrier accident or malfunction, resulting in potentially severe long-term effects to the pollution

levels of the surrounding region, effecting air quality, wildlife, marine resources, marine use, and community health and wellness;

- Potential instability for the food security of Gitga’at members who rely heavily on marine resources through reduced access to TUOS, and reduced availability and/or quality of the resources that have historically been harvested there;
- Potential disruption of commercial exchange, and trade relationships with other neighbouring First Nations through disruptions to harvesting activities and resource procurement;
- Effects on marine wildlife populations and behaviours through the increased presence of shipping traffic, increased pollution levels, and sensory disturbances (e.g., acoustic environment, air quality, habitat effectiveness, etc.);
- Injury or mortality of marine organisms through vessel strikes;
- Loss or alteration of marine bird habitat due to pollution, industrial traffic, and sensory disturbance that has the potential to reduce habitat effectiveness; and
- Increased competition for, and potential overharvesting of, marine resources due to the increased local population, and resulting increase in recreational fishing activities in Gitga’at First Nation’s TUOS sites.

These potential risks are intricately connected to one another, as Gitga’at First Nation’s traditional harvesting activities are affected by a variety of factors, including the health of the environment and marine species and wildlife in the region, access to harvesting sites, the experience of harvesting, and the availability/quality of the targeted resources. The outcomes of these effects, in turn, affect the health and well-being of Gitga’at members, whose cultural expression is intricately tied to their aquatic harvesting activities. All of these components are affected by multiple aspects of the KL LNG project from its proposed construction through to the decommissioning phase.

## **Mitigation Measures**

### Mitigations in the KL LNG Project Application

With regard to project effects on Gitga’at First Nation’s Harvesting Rights, the KL LNG project application references mitigation chapters for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Wildlife and Wildlife Habitat (Section 7.07)
- Marine Resources (Section 7.09)
- Marine Use (Section 7.11)
- Human Health (Section 7.14)

The mitigations suggested for each VC apply to the project as a whole, and not specific to Gitga’at First Nation. Individual mitigation measures for each of these VCs can be found in the project application (Table 1.A, Appendix A – Summary of Mitigation Measures).

### Gitga’at’s Mitigations

Gitga’at First Nation has identified and is proposing the following mitigation measures that would mitigate potential effects to Gitga’at First Nation’s harvesting rights:

Table 4. Gitga'at Mitigations Harvesting Rights

Potential Effect	Mitigation	Timing	Duration	KPIs
<b>Marine Use</b>				
Proposed shipping route intersects larger levels of marine traffic and Gitga’at TUOS sites, increasing risk of collision, and further interfere with Gitga’at harvesting/traditional use of the areas	Requirement for KL LNG to utilize the proposed Northern Route for Marine Shipping. The northern sailing route is shorter, safer, and less limited in dimensions and traffic compared to Browns Passage and Chatham Sound supporting the need to reconsider route. Using this alternative route will reduce the number of Gitga’at TUOS sites that shipping traffic passes through. This will reduce the maritime safety risks to the Gitga’at community and improve the experience of traditional harvesting in those sites.	Pre-Construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist;
The chosen Marine Route includes navigation close to very shallow areas with limited width and a 90 degree turn of the LNG vessels through the most used navigational area of all kinds of vessels.	Requirement for KL to engage and work with Gitga’at First Nation on the development and implementation of a comprehensive <b>Marine Safety and Shipping Management Plan</b> . Including: (1) Engage Gitga’at First Nation to assess the impact of marine traffic and an exclusion zone on their traditional fishing activities. The Marine Safety and Shipping Management plan should include protocols/procedures for ongoing engagement with Gitga’at on this area (i.e., throughout project operations); (2) Development of collaborative safety measures for marine users. Requirement that KL LNG ensures that Gitga’at have free and safe access to their marine environment. Including specific guidance, mechanisms/pathways for ongoing disclosure of all marine activities over the life span of the project and creating an LNG	Pre-Construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist;
Increase in shipping traffic from the project increases risk of interference or collision with Gitga’at marine users				
Increase in shipping traffic on proposed shipping route increases risk of collision and loss of containment				

Potential Effect	Mitigation	Timing	Duration	KPIs
	shipping carrier schedule and notification process to inform and alert the Gitga'at First Nation about expected shipping traffic. This should notify Gitga'at based on movements not just through Gitga'at traditional territory, but for TUOS sites identified in the Gitga'at First Nation 2022 TUOS Report; (3) Marine communication procedures as well as a safety zone around the marine terminal; work with the Pacific Pilotage Authority and British Columbia Coast Pilots to determine guidance on safe vessel speed for LNG carriers visiting KL LNG facilities; and upon request conduct safe shipping workshops for Gitga'at.			
Increase in shipping traffic on proposed shipping route increases risk of collision and loss of containment	Recommend adding a monitoring team in areas with higher risk of interference.	Pre-Construction	Construction; Operations	TBD

Potential Effect	Mitigation	Timing	Duration	KPIs
Risk that the cumulative and long term effects of increased shipping traffic are as of yet unknown, and mitigations may be initially ineffective. Wake waves in particular, and their effects to other craft and the coastline are unknown.	<p>Requirement that KL LNG fund and establish it's own, individual, monitoring of effects program.</p> <p>In addition, recommend that KL LNG, upon approval by relevant intergovernmental groups, participate on an ongoing basis in relevant intergovernmental initiatives related to effects of marine shipping in the region throughout the construction, operation, and decommissioning of the project.</p> <p>Establish a Follow-up Program on marine use under the IAA (Impact Assessment Act) including:</p> <ul style="list-style-type: none"> <li>• Work with Gitga'at to establish Indigenous Nation-specific plans for monitoring marine shipping effects on Indigenous marine use, and harvesting, and access to important sites;</li> <li>• Work with Gitga'at to determine LNG carrier wake effects and mitigation methods;</li> <li>• Monitor changes to marine vegetation and wildlife populations along the shipping route.</li> </ul>	Pre-Construction	Construction; Operations	TBD
<b>Marine Use/Marine Resources/Archaeological and Heritage Resources</b>				
Increase in non-local use of Gitga'at TUOS sites, impacting the overall experience of these locations, the robustness of Gitga'at culture, and Gitga'at food security	<p>Establish a workplace Code of Conduct that requires all employees to: uphold cultural and environmental values in the project area and surrounding communities. This includes being aware of restricted and/or culturally sensitive areas and their role in protecting them while both on and off duty.</p> <p>The SEEMP will restrict non-local contractor personnel from accessing Gitga'at TUOS of sacred cultural importance.</p>	Pre-construction	Construction; Operations	<p># of Codes of Conduct signed;</p> <p># of disciplinary actions taken due to Code of Conduct violations;</p>
Increase in shipping traffic from the project could decrease Gitga'at access to	Work with the Gitga'at Nation to develop a seasonal understanding of Gitga'at harvesting activities at TUOS	Pre-Construction	Construction; Operations	Relevant Management Plans and Policies

Potential Effect	Mitigation	Timing	Duration	KPIs
TUOS sites, disrupting cultural practice, food security, and community wellness	sites, and where possible, reschedule or divert shipping traffic movements to leave specific harvesting sites clear at certain times of year/maximise Gitga'at access to these locations.			reviewed by independent 3rd party specialist;
Increase in shipping traffic on proposed shipping route increases risk of collision and loss of containment of hazardous materials	Requirement for KL LNG to engage and work with Gitga'at First Nation on the development and implementation of a comprehensive <b>Marine Safety and Shipping Management Plan</b>	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist; # of collision and/or loss of containment incidents;
Increase in shipping traffic on proposed shipping route will cause high densities of ships in single areas at one time, increasing risk of collision	Requirement for KL to engage/work with Gitga'at First Nation to develop and implement a comprehensive <b>Marine Incident Preparedness, Response and Recovery Plan.</b>			
Increase in shipping traffic on proposed shipping route increases risk of collision with species of cultural importance (whales)	Follow guidelines on avoiding fatal marine mammal strikes with a 10 knot speed ceiling for large ships in waters/seasons where marine mammal activity is known to be high;	Start of construction	Construction; Operations	# of whale sightings along shipping route; # of collisions with whales
<b>Malfunction and Accidents</b>				
Expected environmental degradation from construction, operation, and decommissioning	In consultation with Gitga'at, implement environmental rehabilitation programs on the affected areas during the commencement of all phases of constructions.	Start of Construction	Periodically during Construction; Operations	\$ contributed to rehabilitation programs; Specific indicators TBD
Risk of vessel collision or spills of hazardous materials	Requirement for KL to engage/work with Gitga'at First Nation to develop and implement a comprehensive <b>Marine Incident Preparedness, Response and Recovery Plan</b> and Emergency Management and Response mechanism to ensure readiness in the event of emergency including the following key components and topics areas:	Pre-construction	Construction; Operations	# of review and practice sessions  # of tabletop exercises; \$ contributed to tabletop exercises  Relevant Management Plans and Policies reviewed by independent 3rd party specialist
Accidents and malfunction causing human or environmental harm Risk of fire; damage to human and environmental health, from project work	<ul style="list-style-type: none"> <li>Risk management procedures for spills of hazardous materials, fires, vessel collision, etc. (including offshore activities)</li> <li>Accidents and malfunctions</li> </ul>			

Potential Effect	Mitigation	Timing	Duration	KPIs
	<p>- Ensure hierarchy of safety controls is incorporated into health and safety systems (elimination, substitution, engineering control, administrative control, PPE) into planning.</p> <ul style="list-style-type: none"> <li>• Recommend establishing a repair and maintenance program, as well as manuals. Recommend integrating into the design during feed the automatic alarm system prior of the emergency shutdown.</li> </ul> <p>Support emergency preparedness and response in communities by participating in and providing financial support for cross-agency tabletop emergency response drills. These drills are being piloted by Northern Health. They are designed to bring regional emergency response agencies, health providers, and industrial partners together to simulate emergency scenarios. The goal is to improve emergency preparedness and response practice by understanding roles and responsibilities, coordinating responses, streamlining communications, and making necessary adjustments to emergency response plans.</p>			
<b>Air Quality</b>				
Reduction in air quality from emissions from project work and transport	<p>Incorporate best management practices such as:</p> <ul style="list-style-type: none"> <li>• All vehicles and equipment are maintained and in good condition by implementing the manufacturer maintenance program.</li> <li>• All Drivers / operators of heavy equipment shall maintain national speed limits on public roads and comply with speed limit imposed to Project Site.</li> <li>• Proper road maintenance (e.g., compacting road surfaces to prevent uneven running surfaces, which</li> </ul>	Start of construction	Construction; Operations	Ongoing air quality monitoring that includes "outside the fence" monitoring stations; Specific indicators TBD

Potential Effect	Mitigation	Timing	Duration	KPIs
	<p>create both noise and dust.</p> <ul style="list-style-type: none"> <li>All fuel containers have lids or seal to reduce VOC's emission.</li> </ul>			
<b>Vegetation and Wetlands</b>				
Expected environmental degradation from project construction, operation, and decommissioning	Recommend the periodical environmental monitoring to measure the results from pre-construction survey and during the project execution.	Start of construction	Construction; Operations	TBD
<b>Wildlife and Habitat</b>				
Expected environmental degradation from project construction, operation, and decommissioning	Recommend conducting baseline survey and the periodical monitoring to measure the impact during the project execution, operation, and decommissioning.	Start of construction	Construction; Operations	TBD
Project related waste	<p>Reduce project related waste by implementing the following:</p> <ul style="list-style-type: none"> <li>Proper planning and ordering of what is needed for the project, not in excess, to reduce wastage.</li> <li>Order materials in bulk to reduce packaging waste and the frequency of possible spillage.</li> <li>Use of recyclable materials when packing orders to increase recycling opportunities.</li> <li>Order chemicals in returnable drums.</li> <li>Seek "buy-back" arrangements with chemical suppliers for return of surplus chemicals.</li> <li>Procure non-hazardous products where possible.</li> <li>Optimize changing of filter systems through regular cleaning and maintenance.</li> <li>Avoid ordering and using disposable materials such as batteries, plastic cups, etc. Instead, use recyclable paper cups, rechargeable batteries, etc.</li> <li>Conserve paper by making double-sided copies, sharing of information via</li> </ul>	Start of construction	Construction; Operations	kg of waste diverted from landfill;



Potential Effect	Mitigation	Timing	Duration	KPIs
	e-mail, and avoidance of unnecessary printouts.			

## Gitga’at’s Analysis and Conclusions

After the consideration of the Potential Effects and Mitigation Measures, described above, Gitga’at First Nation identified the following residual effects:

### Accessibility:

- Negative effects on the ability of Gitga’at First Nation to exercise their inherent and Aboriginal rights to access marine and coastal zone TUOS sites, and carry out marine cultural and resource harvesting activities using their preferred routes, times, and methods;

### Safety:

- Increased safety hazards when travelling in marine environments/harvesting from them as a result of increased shipping traffic and subsequent wake waves.

### Experience:

- Negative effects on overall experience of harvesting activities through effects to the air quality, acoustics, aesthetics, and population of the region, and subsequent negative effects on the ability of Gitga’at members to live their culture.

### Food security and livelihood:

- Negative effects on the ability of Gitga’at members to maintain and carry out their Indigenous economic activities and practices, and disruptions to traditional food security.

In the application, the proponent has successfully identified the majority of potential effects of the KL LNG on harvesting rights. However, the suggested mitigations to combat these potential effects are high-level, incomplete, and non-specific to the needs of Gitga’at First Nation. These mitigations fail to address specific issues with shipping traffic in relation to specific Gitga’at First Nation’s TUOS sites, and how these overlaps can be avoided and/or minimized. The lack of proposed potential effects (or subsequent mitigation strategies) to Gitga’at First Nation’s community health and wellbeing displays a limited understanding of the multiple consequences of restricted access to traditional resources has to Gitga’at community members. Similarly, the mitigations neglect to acknowledge the high significance of harvesting traditional marine resources for Gitga’at First Nation, both in terms of food security and cultural expression. Instead, they propose mitigation measures that are applicable to the project as a whole, rather than specifically addressing the concerns of Gitga’at First Nation. The lack of any mitigations that explicitly address harvesting rights in relation to Gitga’at First Nation demonstrates major shortcomings in the proponent’s attempt address Gitga’at First Nation’s concerns seriously.

Additionally, the conclusions listed by Ksi Lisims on the severity and duration of the potential effects of the Project to the VCs generally minimize the level of adverse effects, offering little justification for the rationale behind their categorizations of severity/duration. For example, the Proponent states that for the Marine Resources VC, to “develop and implement spill prevention and response measures” renders the effect of a spill of hazardous material as “low risk”, with the mitigation

measure having a “high likelihood of success”.<sup>143</sup> This however does not at all reflect the level of concern of Gitga’at First Nation, and the long term effects that spills of hazardous material can have on the real and perceived quality of marine resources, or the subsequent effects to their harvesting activities, and ability to maintain a lifestyle that includes practicing their culture and engaging in traditional activities.<sup>144</sup>

These mitigation measures, and the decisions on their effectiveness by the Proponent are inappropriate to apply to Gitga’at First Nation, as they neither reflect the reality of the situation, nor is KL LNG in a position to conclude on the seriousness of effect to Indigenous interest under the Effects Assessment Policy of the EAO.<sup>145</sup>

A major shortfall of the Proponent’s assessment was the lack of Indigenous marine use data incorporated into the navigational safety assessment by WestMar, resulting in the selection of the southern Marine Shipping Route option (south of Dundas Island). This route poses the highest safety risks for Gitga’at First Nation and restricts access to traditional harvesting activities, as it intersects with a significantly larger number of Gitga’at TUOS sites compared to the northern routes.

Table 4 below provides a summary of residual effects for Indigenous governance, self-determination and territorial stewardship that reflect the views of Gitga’at First Nation. Specifically, this table provides information pertaining to the criteria, assessment rating and rationale for determining the severity of each outlined residual effect.

*Table 5. Summary of residual effects for Harvesting Rights in the marine environment*

Criteria	Assessment Rating	Rationale
Context	Low resilience	Gitga’at First Nation’s access to traditional harvesting activities will be negatively affected, resulting in a high degree of effect to their cultural practices and ways of life. There is potential for Gitga’at First Nation to adapt to the residual effects on marine travel and harvesting, but at potentially significant cost to their culture and ways of life.
Magnitude	Moderate/High	<b>Accessibility:</b> The Project will have a high residual adverse effect through reduced access to traditional sites and travel routes due to shipping traffic. This will affect access to certain sites, the time and routes used to access sites, and alienate Gitga’at members from traditional harvesting activities to an unprecedented scale that exceeds historical norms.

<sup>143</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Appendix A-17

<sup>144</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). Final Report: *Gitga’at FN TUOS for the Ksi Lisims LNG Project*. p.60

<sup>145</sup> EAO (2020), *Effects Assessment Policy*, p.49

Criteria	Assessment Rating	Rationale
		<p><b>Safety:</b> The Project will have moderate residual adverse effects on the safety of the marine environment for Gitga'at members on the water due to increased volumes of shipping traffic.</p> <p><b>Experience:</b> The Project will result in a high incremental adverse effect on Gitga'at First Nation's cultural experience based on presence of additional LNG carrier traffic, the perceived and real effects on the quality of the environment and the resources from it, and the increased presence of non-local recreational fishers and tourists.</p> <p><b>Food security and livelihood:</b> Due to Gitga'at First Nation's heavy reliance on traditional marine resources for consumption and trade, the Project will result in a moderate adverse effect on Gitga'at First Nation's food security, Indigenous and commercial livelihoods, and trade through reduced access to resources, reduced perceived and real quality of resources, and increased competition for them.</p>
Extent	Regional	The residual effects to travel and harvesting within the marine environment would apply throughout the Marine Terminal Area, Marine Shipping Route, Material and Supply Shipping Route, and unspecified areas in the region from non-local recreational fishing activities.
Duration	Long-term	The residual adverse effects to Gitga'at First Nation's travel and harvesting rights in the marine environment would persist for the life span of the project (approximately 35 years) which is longer than one generation (i.e., 25 years). Residual effects may become permanent if changes to harvesting behaviour resulting from the Project become entrenched, or the availability of marine resources is permanently affected.
Frequency	Frequent/Regular-Continuous	The potential residual effect related to marine travel and harvesting would occur at regular intervals based on marine traffic during construction and approximately one LNG vessel transiting the MSR and MSSR every 1.2 days during operations (140-160 LNG vessels per year). In addition, it is expected that there will be a continuously elevated presence of non-local recreational fishers in the region as a

Criteria	Assessment Rating	Rationale
		result of the Project (though extent of increase is unknown).
Reversibility	Unknown	Marine wildlife and resources and the quality of the marine environment may or may not recover following decommissioning; however, over the lifespan of the project, changes in shipping traffic may result in permanent harm to Gitga'at First Nation's harvesting accessibility, behaviour, experience, and methods.
Affected Populations	Disproportionate	Reduced access to marine activities will disproportionately affect Gitga'at members, whose culture is uniquely reliant on marine resources for food security, social, ceremonial and economic purposes.
Uncertainty	Moderate	The uncertainty is moderate overall as some factors remain undefined. The extent of the reduction of Gitga'at members' access to and experience of marine travel and harvesting is difficult to quantify, and the changes in recreational fishing activities by non-locals remain unpredictable, hence the effectiveness of proposed mitigation measures are unknown.

*Note: Criteria and assessment ratings are defined in Annex: Residual Effects Characterization Definitions for Effects on Gitga'at Indigenous Interests*

## Cumulative Effects

The Project is one of many industrial projects currently under construction or planning for the region (See Table 1). Several of these projects (e.g., Vopak, Cedar LNG, LNG Canada) are LNG facilities, and share many of the same social, environmental, and economic risks to the region and Gitga'at First Nation. The effects on marine navigation and resource harvesting from the Project's shipping traffic must be considered alongside the wider picture of industrialization. KL LNG is estimated to contribute 140-160 LNG carriers annually to the MSR and MSSR.<sup>146</sup> It is estimated that if all present and future projects and physical activities identified in Table 1 are built and proceed to operation, approximately 2,920 vessels could intersect or transit the Marine Shipping RAA or transit past the Triple Island Pilot Boarding Station annually.<sup>147</sup> Moreover, this only describes the shipping traffic that is predicted to intersect with KL LNG traffic. Separate marine areas in Gitga'at Territory and TUOS areas will experience increases in shipping traffic as well. Hartley Bay alone is predicted to see an

<sup>146</sup> Ksi Lisims LNG (2023.) *Natural Gas Liquefaction and Marine Terminal Project*. 7.9-198-199

<sup>147</sup> Ksi Lisims LNG (2023.) *Natural Gas Liquefaction and Marine Terminal Project*. 7.9-198-199

increase of 515 large ships annually passing through the narrow corridor leading to Kitimat.<sup>148</sup> Each of these projects will similarly cause a potential increase in non-industrial shipping traffic as well, through increased population levels resulting in additional recreational/tourism activities on the water.

With this context, it is clear that the potential adverse effects from KL LNG shipping traffic represent a small part of a much wider picture, effecting a much larger area of Gitga'at First Nation's traditional harvesting sites and travel routes, as shipping traffic becomes more prevalent across the marine environment. These projects will have a cumulative effect on the safety risks for Gitga'at members on the water, the difficulties in accessing traditional harvesting sites, the risk of environmental contamination through spills, the reduced aesthetic experience of being in the territory and TUOS waters, and the competition from non-Indigenous fishers. It is also important to note that the risks associated with shipping traffic do not simply increase linearly with additional ships. The higher the level of shipping traffic, the greater the risk of collision presented by each vessel, and therefore greater risk to human life, marine wildlife, and of hazardous spills.<sup>149</sup> These effects will have a disproportionate effect on Gitga'at community members, whose culture relies heavily on the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

There is a great deal of uncertainty around the severity of the cumulative effects of increased shipping traffic on Gitga'at First Nation, as this level of industrial activity and marine shipping is unprecedented for the region. The change will happen rapidly due to the similar time frames of the proposed and current projects for the region, and so the effectiveness of mitigation measures will not be well understood before a large-scale increase of shipping traffic has occurred. This greatly amplifies the risk of overwhelming Gitga'at First Nation's ability to engage in traditional harvesting activities.

Another important cumulative issue relating to the Project is the lack of standardized methods of communication between industrial projects in the region. To date, there are no strategic management plans or initiatives in place to monitor and manage health, social, and environmental effects of multiple projects at the community or regional level, or to help coordinate mitigation and follow-up efforts. This is a serious shortcoming in understanding and managing effects of the project, including on Gitga'at First Nation member's health.<sup>150</sup> Coordination of efforts in the form of zoning, regional management bodies, or government managed strategic planning would facilitate better assessment and mitigation of potential adverse effects on communities. Ksi Lisims LNG should support Gitga'at First Nation (and others) to advocate for such regional coordination and management. Cumulatively, effective communication between Ksi Lisims LNG, proponents of other industrial projects in the region, and local Indigenous Nations, has the potential to create a large and

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<sup>148</sup> Environmental Assessment Office (2022), *Assessment Report for Cedar LNG (Project)*. p.586

<sup>149</sup> Goerlandt, F., & Kujala, P. (2011). *Traffic simulation based ship collision probability modeling*. Reliability Engineering & System Safety, 96(1), 91-107.

<sup>150</sup> Gitga'at First Nation.(2021), *Gitga'at FN Social Determinant of Health Risk Report Prepared for the Kitimat LNG Terminal Project*. p.58-59

unified voice to lobby for the establishment of such management bodies. Detailed guidance is available for BC officials to initiate such a procedure.<sup>151</sup>

In terms of harvesting activities, cumulative effects associated with Ksi Lisims LNG may be partially mitigated through effective communication between the various proponents of industrial projects involving shipping traffic in the region, to create schedules and shipping route plans that avoid Gitga'at First Nation harvesting sites and avoid creating high densities of shipping traffic in sensitive areas where possible. For this to be effective, proponents will need to engage in close consultation with Gitga'at First Nation and provide continuous data on shipping activities. Proponents must also collect and share data on their effects to the marine environment and wildlife, to fully understand the cumulative environmental effects of increased large shipping traffic.

Processes that incorporate Indigenous interests in the area, (e.g., North Coast Waterway Management Guidelines) should be used to inform the development of KL LNG's own, individual effects monitoring programs and marine safety plans in order to provide guidance on routing, speed, communications and other considerations for large and small vessels. The development of guidelines and plans must be carried out alongside coordinated effort between the Canadian Coast Guard's Marine Communications and Traffic Services, the Pacific Pilotage Authority, BC Coast Pilots, SAAM Towage Canada, the Western Canada Marine Response Corporation, and the Prince Rupert Port Authority. These bodies are responsible for collective oversight and safe passage of vessels in and around the Prince Rupert Harbour area, which will experience some of the greatest increases in traffic volumes.<sup>152</sup>

Due to the uncertainties underlying the available assessment information, and the lack of knowledge about the effectiveness of mitigation measures, the magnitude of residual and cumulative effects on the various elements and aspects of Gitga'at harvesting rights may range from low to severe.

## Conclusion

Taking into account all available information, the EAO's engagement with Gitga'at First Nation, Gitga'at First Nation's engagement with Ksi Lisims LNG, Ksi Lisims LNG's commitments, cumulative effects, EAO's recommended conditions, and current marine safety initiatives, federal mitigation measures, Gitga'at First Nation anticipates that KL LNG will have residual site-specific and regional effects that will combine with the effects of other industrial projects in the region, resulting in long term moderate/high adverse cumulative effects on Gitga'at First Nation's ability to travel in and carry out Indigenous harvesting activities in the marine environment. This holds serious adverse implications for Gitga'at First Nation's cultural way of life, food security, and health and safety.

The proponent's suggested mitigations are high level, non-specific to the Gitga'at Nation, and are inadequate to address and mitigate the potential impacts of the KL LNG project on Gitga'at Harvesting Rights.

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<sup>151</sup> Shandro, J. Peralta, G., Roth, S. A Health Effect Assessment Framework for Special Economic Zones in the Greater Mekong Subregion. Asian Development Bank. 2019. <https://www.adb.org/publications/health-effect-assessment-framework-economic-zones-gms>

<sup>152</sup> Prince Rupert Port Authority (2023). *Marine Operations Safety*. Retrieved from: <https://www.rupertport.com/marine-operations-safety/>

## 1.5.2 Use and Integrity of Sacred and Culturally Important Sites and Land and Marine-Scape Features

### Background

Gitga'at First Nation's *Ayaawx* (Indigenous Laws) state inherent title and rights in their territory, which encompasses approximately 14,000 km<sup>2</sup> of water and coastal land in the region. These laws include the rights to travel in, occupy, and harvest from these areas. The understanding of this physical territory is closely tied up with the historical relationship that the community has with these spaces. Traditional spaces for travel, occupancy, and resource harvesting have been vital spaces for the Gitga'at community members to express their culture, connect with the land and seascapes, and engage in traditional activities for millenia. Access to cultural expression, and the integrity of the land and waters where these expressions take place, are central to the health and well-being of the Gitga'at community members. KL LNG will introduce additional marine traffic within Gitga'at Territory, which has the potential to affect these sacred and culturally important spaces, and how the Gitga'at community members interact with them. Of the 796 sites currently recorded within the Study Area in the Gitga'at TUOS Database, Culture History and Settlement Activity sites represent 10.80 % (86 sites). Important sites in close proximity to the KL LNG project and associated shipping lanes include a Gitga'at village at Red Bluff at the mouth of the Nass River that was used in the past during eulachon season; past settlement/important trading areas that were at Casey Point, Hays Creek, and Wolf Creek in the Prince Rupert Harbour area; the Qlawdzeet Anchorage on Stephens Island at Squaderee; settlement sites at Porcher Island at Humpback Bay, Island Point, and the shore of the Hunt Inlet; and several burial sites on Porcher Island, at the Hunt Inlet, Edey Passage, and at Refuge Bay.<sup>153</sup>

### Existing Conditions

Currently, there are several industrial projects and marine shipping routes running through Gitga'at Territory. Gitga'at First Nation's traditionally significant harvesting locations, sacred and culturally important sites, and landscape features have been affected by greater numbers of recreational users, increasing pollution, and decreasing land/sea accessibility.

For Gitga'at community members, the presence of carrier ships has restricted access to culturally important sites, either by alienating them from these locations by reducing the quality of the experience at them, or by obstructing travel routes to them. Members of the community have reported that they now have to make substantial detours when travelling to carry out cultural and Indigenous harvest activity to accommodate for massive container ships, which largely affects the time, experience, and cost of travel.<sup>154</sup>

Members are also concerned about the safety risk posed by marine traffic in their territory, both in terms of the risk of marine vessel collisions, and environmental risk from a spill of LNG from a carrier, or more general polluting activities from the facilities or the carriers (e.g., air pollution from

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<sup>153</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project. Interview HB-076, August 2022.

<sup>154</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: *Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.61

methane production).<sup>155</sup> Industrial shipping criss-crosses the region, including running into and out of Prince Rupert Harbour and around Digby Island, entering and exiting Port Edward through Porpoise Channel, and accessing various parts of southern Chatham Sound. In particular, interviewees for the 2023 TUOS survey identified the central portion of southern Chatham Sound between the western side of Digby Island, the Rachael Islands, and the Kinahan Islands as the busiest area for travel when accessing outer coastal resource areas. One interviewee noted that with recent increases in shipping traffic he often feels unsafe travelling boats through Chatham Sound.<sup>156</sup> From an experiential perspective, the increase in the number of recreational users of Gitga'at First Nation's traditional harvesting sites further alienates them from carrying out resource gathering activities there.

The physical and mental well-being of Gitga'at First Nation's community members is strongly connected to their ability to practice traditional customs and ways of living in their territory, notably through the harvesting of marine resources. Doubt concerning the quality and quantity of those resources due to increased levels of pollution and recreational fishing therefore effects the well-being of Gitga'at community members. The current estimates for the Ksi Lisims LNG facility predict between 140-160 shipments of LNG per year, excluding the tugs, supply ships, and transportation for workers that will come alongside the project.<sup>157</sup> This needs to be taken alongside the context of the hundreds of additional ships that will be added to the shipping lanes in and around Gitga'at Territory and TUOS sites in the near future, as additional industrial projects like LNG Canada, Vopak, and Cedar LNG all begin operations. The addition of more marine shipping traffic will have a linear effect on the scale of all shipping traffic related effects, along with the more cumulative effect of altering the experience of the region through intensified industrial activity, and further alienating Gitga'at First Nation from their territory and practices.

## **Potential Project Effects and Proposed Mitigations**

### **Potential Project Effects**

In section 17.4.3 the project application, the proponents identified potential risks to "Gitga'at First Nation Sacred Places and Heritage Sites" for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Marine Use (Section 7.11)
- Human Health (Section 7.14)

The application provides no further detail on risks that could specifically affect Gitga'at First Nation.

The following list provides a description of potential effects the Project may have on Gitga'at First Nation's Sacred Spaces and Heritage Sites over the lifespan of the Project (construction, operations,

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<sup>155</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project. p.60

<sup>156</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project. 114 Interview HB-042, January 2020.

<sup>157</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-5



and decommissioning). The effects described are based on the residual effects associated with the aforementioned VCs detailed in the KL LNG application.

- Effects to Gitga’at First Nation’s access to important sacred and cultural sites as a result of increased shipping traffic. Gitga’at members may experience reduced access from these sites through interference with local marine traffic navigation and passage, and increased safety risks on the water (e.g., risk of collision) travelling to and from them caused by the large increase of LNG carrier and tug traffic.
- Effects to the quality of experience of important sacred and cultural sites (and hence increased likelihood of alienation from sites) through elevated noise (from shipping traffic, construction, air horns, etc.), air quality, and aesthetic conditions due to increase in industrial activity.
- Effects to the quality of experience of important sacred and cultural sites through increased presence of recreational fishers/tourists in and around those sites.
- Effects to the real and perceived quality of marine and terrestrial resources from culturally important harvesting sites due to increased industrial pollution.
- Effects of wake waves from by LNG carriers and escort tugs have the potential to effect the use and integrity of sacred and culturally important sites due to the increase in risk to Gitga’at marine users and shoreline harvesters.
- Potential for loss of containment of LNG or other hazardous substances from LNG carrier accident or malfunction, resulting in potentially severe long-term pollution of important sacred and cultural sites.
- Effects to the ability for Gitga’at members to share traditional knowledge at or about important sacred and cultural sites due to decreased access to/increased alienation from these sites.
- Alienation from important cultural and sacred sites, and the resulting loss of ability to share knowledge and cultural values at these sites has the potential to affect the community health and wellness of Gitga’at First Nation, who place great cultural value on these sites and their interactions with them.

## **Mitigation Measures**

### Mitigations in the KL LNG Project Application

With regard to Project effects on Gitga’at First Nation’s “Sacred Places and Heritage Sites”, the KL LNG project application references mitigation chapters for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Marine Use (Section 7.11)
- Human Health (Section 7.14)

The mitigations suggested for each VC apply to the Project as a whole, and not specific to Gitga’at First Nation. Individual mitigation measures for each of these VCs can be found in the Project application (Table 1.A, Appendix A - Summary of Mitigation Measures).

## Gitga'at's Mitigations

Table 6 Gitga'at Mitigations Use and Integrity of Sacred and Culturally Important Sites and Land and Marine-Scape Features

Potential Effect	Mitigation	Timing	Duration	KPIs
<b>Marine Use/Marine Resources/Archaeological and Heritage Resources</b>				
Increase in non-local use of Gitga'at TUOS sites, impacting the overall experience of these locations, the robustness of Gitga'at culture, and Gitga'at food security	Establish a workplace Code of Conduct that requires all employees to: uphold cultural and environmental values in the project area and surrounding communities. This includes being aware of restricted and/or culturally sensitive areas and their role in protecting them while both on and off duty. The SEEMP will restrict non-local contractor personnel from accessing Gitga'at TUOS of sacred cultural importance.	Pre-construction	Construction; Operations	# of Codes of Conduct signed; # of disciplinary actions taken due to Code of Conduct violations;
Increase in shipping traffic from the project could decrease Gitga'at access to TUOS sites, disrupting cultural practice, food security, and community wellness	Work with the Gitga'at Nation to develop a seasonal understanding of Gitga'at harvesting activities at TUOS sites, and where possible, reschedule or divert shipping traffic movements to leave specific harvesting sites clear at certain times of year/maximise Gitga'at access to these locations.	Pre-Construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist;
Increase in shipping traffic on proposed shipping route increases risk of collision and loss of containment of hazardous materials	Requirement for KL LNG to engage and work with Gitga'at First Nation on the development and implementation of a comprehensive <b>Marine Safety and Shipping Management Plan</b>	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist; # of collision and/or loss of containment incidents;
Increase in shipping traffic on proposed shipping route will cause high densities of ships in single areas at one time, increasing risk of collision	Requirement for KL to engage/work with Gitga'at First Nation to develop and implement a comprehensive <b>Marine Incident Preparedness, Response and Recovery Plan</b> .			
Increase in shipping traffic on proposed shipping route increases risk of collision with species of cultural importance (whales)	Follow guidelines on avoiding fatal marine mammal strikes with a 10 knot speed ceiling for large ships in waters/seasons where marine mammal activity is known to be high;	Start of construction	Construction; Operations	# of whale sightings along shipping route; # of collisions with whales
<b>Malfunction and Accidents</b>				

Potential Effect	Mitigation	Timing	Duration	KPIs
Expected environmental degradation from construction, operation, and decommissioning	In consultation with Gitga'at, implement environmental rehabilitation programs on the affected areas during the commencement of all phases of constructions.	Start of Construction	Periodically during Construction; Operations	\$ contributed to rehabilitation programs; Specific indicators TBD
Risk of vessel collision or spills of hazardous materials	Requirement for KL to engage/work with Gitga'at First Nation to develop and implement a comprehensive <b>Marine Incident Preparedness, Response and Recovery Plan</b> and Emergency Management and Response mechanism to ensure readiness in the event of emergency including the following key components and topics areas: <ul style="list-style-type: none"> <li>Risk management procedures for spills of hazardous materials, fires, vessel collision, etc. (including offshore activities)</li> <li>Accidents and malfunctions - Ensure hierarchy of safety controls is incorporated into health and safety systems (elimination, substitution, engineering control, administrative control, PPE) into planning.</li> <li>Recommend establishing a repair and maintenance program, as well as manuals. Recommend integrating into the design during feed the automatic alarm system prior of the emergency shutdown.</li> </ul> Support emergency preparedness and response in communities by participating in and providing financial support for cross-agency tabletop emergency response drills. These drills are being piloted by Northern Health. They are designed to bring regional emergency response agencies, health providers,	Pre-construction	Construction; Operations	# of review and practice sessions  # of tabletop exercises; \$ contributed to tabletop exercises  Relevant Management Plans and Policies reviewed by independent 3rd party specialist
Accidents and malfunction causing human or environmental harm Risk of fire; damage to human and environmental health, from project work				

Potential Effect	Mitigation	Timing	Duration	KPIs
	and industrial partners together to simulate emergency scenarios. The goal is to improve emergency preparedness and response practice by understanding roles and responsibilities, coordinating responses, streamlining communications, and making necessary adjustments to emergency response plans.			
<b>Air Quality</b>				
Reduction in air quality from emissions from project work and transport	Incorporate best management practices such as: <ul style="list-style-type: none"> <li>All vehicles and equipment are maintained and in good condition by implementing the manufacturer maintenance program.</li> <li>All Drivers / operators of heavy equipment shall maintain national speed limits on public roads and comply with speed limit imposed to Project Site.</li> <li>Proper road maintenance (e.g., compacting road surfaces to prevent uneven running surfaces, which create both noise and dust.</li> <li>All fuel containers have lids or seal to reduce VOC's emission.</li> </ul>	Start of construction	Construction; Operations	Ongoing air quality monitoring that includes "outside the fence" monitoring stations; Specific indicators TBD
<b>Vegetation and Wetlands</b>				
Expected environmental degradation from project construction, operation, and decommissioning	Recommend the periodical environmental monitoring to measure the results from pre-construction survey and during the project execution.	Start of construction	Construction; Operations	TBD
<b>Wildlife and Habitat</b>				
Expected environmental degradation from project construction, operation, and decommissioning	Recommend conducting baseline survey and the periodical monitoring to measure the impact during the project execution, operation, and decommissioning.	Start of construction	Construction; Operations	TBD
Project related waste	Reduce project related waste by implementing the following:	Start of construction	Construction; Operations	kg of waste diverted from landfill;

Potential Effect	Mitigation	Timing	Duration	KPIs
	<ul style="list-style-type: none"> <li>• Proper planning and ordering of what is needed for the project, not in excess, to reduce wastage.</li> <li>• Order materials in bulk to reduce packaging waste and the frequency of possible spillage.</li> <li>• Use of recyclable materials when packing orders to increase recycling opportunities.</li> <li>• Order chemicals in returnable drums.</li> <li>• Seek "buy-back" arrangements with chemical suppliers for return of surplus chemicals.</li> <li>• Procure non-hazardous products where possible.</li> <li>• Optimize changing of filter systems through regular cleaning and maintenance.</li> <li>• Avoid ordering and using disposable materials such as batteries, plastic cups, etc. Instead, use recyclable paper cups, rechargeable batteries, etc.</li> <li>• Conserve paper by making double-sided copies, sharing of information via e-mail, and avoidance of unnecessary printouts.</li> </ul>			

### Gitga'at's Analysis and Conclusions

After consideration of the Potential Effects and Mitigation Measures, described above, Gitga'at First Nation identified the following residual effects:

**Accessibility:**

- Negative effects to the safe access and use of sacred and culturally important sites and land and marine scape features.

**Experience:**

- Negative effects to the overall experience and integrity of those sites;

- Negative effects to the use and integrity of those sites to Gitga’at members, and hence negative effects to the ability of the Nation to access and share traditional knowledge and cultural values.

As with effects to harvesting rights, the KL LNG successfully identifies and defines the majority of the potential effects of the Project to the use and integrity of sacred and culturally important sites. However, as aforementioned the suggested mitigations are high-level, incomplete, and non-specific to the needs of Gitga’at First Nation. These mitigations fail to address specific issues with shipping traffic in relation to specific Gitga’at First Nation’s TUOS sites, and how these overlaps might be minimized. Similarly, they fail to account for the strong maritime culture of Gitga’at First Nation, the disproportionate effects that increased shipping traffic will have for Gitga’at First Nation, or any specific sites that the facility and associated shipping traffic will effect. As with Harvesting Rights, KL LNG does not anticipate negative effects to Gitga’at community health and wellbeing as a result of reduced access to their TUOS sites. The Proponent’s suggested mitigations apply to the Project as a whole instead of addressing the specific concerns of Gitga’at First Nation. The lack of any mitigations that explicitly address Gitga’at First Nation’s sacred and culturally important sites demonstrates shortcomings in the KL LNG’s attempt to take Gitga’at First Nation’s needs seriously.

The majority of the potential Project effects and proposed mitigations for Gitga’at First Nation’s harvesting rights are applicable to the use and integrity of sacred and culturally important sites, as both are affected by reduced access and experiential quality due to increased shipping traffic, population, and industrial activity. Therefore, Proponent’s conclusions on the severity and duration of the potential effects to the VCs overlap significantly with those listed for Gitga’at First Nation’s Harvesting Rights (See 1.5.1: *Gitga’at’s Analysis and Conclusions*).

The mitigation measures suggested for this Indigenous interest are not specific to Gitga’at First Nation, and so the decisions on their effectiveness by the proponent are inappropriate to apply to Gitga’at First Nation, as they neither reflect the reality of the situation, nor is the Proponent in a position to conclude on the seriousness of effect to Indigenous interest under the Effects Assessment Policy of the EAO.<sup>158</sup>

Table 7 below provides a summary of residual effects for Indigenous governance, self-determination and territorial stewardship that reflect the views of Gitga’at First Nation. Specifically, this table provides information pertaining to the criteria, assessment rating and rationale for determining the severity of each outlined residual effect.

*Table 7. Summary of residual effects for use and integrity of sacred and culturally important sites and land and marinescape features*

Criteria	Assessment Rating	Rationale
Context	Medium resilience	Gitga’at First Nation’s access to and experience of sacred and culturally important sites will be negatively affected

<sup>158</sup> EAO (2020), Effects Assessment Policy, p.49

Criteria	Assessment Rating	Rationale
		by the Project due to the increase in shipping traffic and non-local presence in the region. This interest is considered moderately sensitive to change, as adaptation in terms of changing the locations of these sites is impossible, but adaptation in terms of working around shipping schedules is feasible.
Magnitude	Moderate/High	<p><b>Accessibility:</b> KL LNG will have high residual adverse effects through reduced access to sacred and culturally important sites due to shipping traffic. This will effect access and safety travelling to certain sites, the time and routes used to access sites, and alienate Gitga'at members from these areas to an unprecedented scale that exceeds historical norms.</p> <p><b>Experience:</b> KL LNG will result in a moderate to high adverse effect on Gitga'at First Nation's experience of sacred and culturally important sites based on presence of additional LNG carrier traffic (and associated sensory changes to the environment), the effects on the integrity of the environment and the resources from it, and the increased presence of non-local recreational users and tourists. The reduction in access and increase in alienation from these sites will negatively effect the transmission of traditional knowledge between generations.</p>
Extent	Regional	The residual effects apply throughout the Marine Terminal Area, MSR, MSSR, and unspecified areas in the region from non-local recreational and tourism activities.
Duration	Long-term	The residual effect would persist for the life of KL LNG project (approximately 35 years) which is longer than one generation (i.e., 25 years) and is therefore anticipated to be long-term. In addition, the integrity of sacred and culturally important sites may be permanently altered by the Project.
Frequency	Frequent/Regular-Continuous	The potential residual effect related to use and integrity of sacred and culturally important sites would occur at regular intervals based on marine traffic during construction and approximately one LNG vessel transiting

Criteria	Assessment Rating	Rationale
		the MSR and MSSR every 1.2 days during operations (140-160 LNG vessels per year). In addition, it is expected that there will be a continuously elevated presence of non-local recreational fishers in the region as a result of the Project (though extent of increase is unknown).
Reversibility	Irreversible	Changes in use and integrity of sacred and culturally important sites and land and marinescape features would be irreversible, as sites may be damaged permanently by the Project, and the transmission of traditional knowledge between generations will be affected over a course of time exceeding one generation (i.e., 25 years).
Affected Populations	Disproportionate	Gitga'at members will be disproportionately affected by changes in access and integrity of marine sites due to the presence of increased shipping activity that will cut through Gitga'at First Nation's TUOS sites and territory, as Gitga'at First Nation relies heavily on marine resources for food, social, ceremonial, and economic purposes.
Uncertainty	Moderate	The uncertainty is moderate as some factors remain undefined, due to the difficulty in quantifying experiential effects to Gitga'at First Nation's sacred and culturally important sites. Reduced access is expected, though effectiveness of the mitigation measures proposed to address this effect is unknown. Changes in recreational and touristic activities by non-local residents remain unpredictable, making the quantification of these effects difficult.

*Note: Criteria and assessment ratings are defined in Annex: Residual Effects Characterization Definitions for Effects on Gitga'at Indigenous Interests*

## Cumulative Effects

Cumulative effects relating to the use and integrity of culturally important sites, land and marinescape are similar to the cumulative effects related to Gitga'at First Nation harvesting rights (described in section 1.5.1). The increase in shipping traffic and non-local uses of the area is the primary barrier to safe and convenient access to sites, and the integrity and experience of them. Taking into account the cumulative shipping traffic from these current and proposed projects (Table 1), Gitga'at members will experience increased safety risks when travelling in and to their territory and TUOS sites, and the sites themselves will be subject to degradation in integrity and quality due



to increased risk of pollution, potential hazardous spills, and increased levels of non-Indigenous recreational users and tourists at them. Due to the scale of the increase in shipping traffic across Gitga'at Territory and TUOS sites, restricted access at certain sites will have multiple consequential effects. As certain areas become inaccessible to Gitga'at members, demand for more accessible areas will increase, in turn effecting the experience and access of those places. This general decline in access and experience when visiting sacred and culturally important locations has the potential to cause irreversible damage to Gitga'at First Nation's cultural way of life, by chronically impeding the transmission of traditional knowledge, and eroding Gitga'at First Nation's cultural identity.

There is a great deal of uncertainty regarding the severity of the cumulative effects of increased shipping traffic on Gitga'at members, as this level of industrial activity and marine shipping is unprecedented for the region. The change will happen rapidly, as the various projects that are situated in the region have similar timelines/start dates, and therefore the effectiveness of mitigation measures will not be well understood before the increase of shipping traffic has occurred. This greatly amplifies the risk of causing permanent damage to Gitga'at First Nation's sacred and culturally important sites, and the loss of traditional knowledge and cultural practices associated with them.

Cumulative effects associated with Gitga'at First Nation's sacred and culturally important sites are largely the same as those aforementioned for harvesting rights. Similarly, the suggested mitigations are also the same, involving effective and continuous communication between industrial project proponents, Gitga'at First Nation and guidelines and bodies responsible for managing marine traffic in the region (see section 1.5.1). Due to the uncertainties underlying the available assessment information, and the lack of knowledge about the effectiveness of mitigation measures, the magnitude of residual and cumulative effects on the various elements and aspects of Gitga'at sacred and culturally important sites may range from low to severe.

## **Conclusion**

Taking into account all available information including the EAO's engagement with Gitga'at First Nation, Gitga'at First Nation's engagement with KL LNG, KL LNG's commitments, cumulative effects, EAO's recommended conditions, and current marine safety initiatives, federal mitigation measures, Gitga'at First Nation anticipates that KL LNG will have residual site-specific and regional effects. These effects will combine with the effects of other industrial projects in the region, resulting in long term moderate/high adverse cumulative effects on the use and integrity of Gitga'at First Nation's sacred and culturally important sites and land and marinescape features. This has serious negative implications for Gitga'at First Nation peoples' ability to preserve their traditional knowledge, cultural way of life, and health and safety. The proponent's current suggested mitigations to combat these issues are high level, non-specific to the Gitga'at Nation, and inadequate to effectively mitigate the potential impacts of the KL LNG project.

### 1.5.3 Indigenous Governance, Self-Determination and Territorial Stewardship

#### Background

Gitga'at First Nation has a dual governance arrangement comprised of the elected Gitga'at First Nation Council and Gitga'at First Nation Hereditary Sm'ooogyet. The hereditary, matrilineal government structure has been in place since pre-contact times and remains a central aspect of Gitga'at First Nation culture. In addition, Gitga'at members serve as stewards of their territory, overseeing the monitoring and maintaining of environmental health.

#### Existing Conditions

For governance and administration (development of infrastructure and services, including education, employment, housing, and health to support Gitga'at members), Gitga'at First Nation has an elected Council.

The foundation of social and ceremonial power in the community is rooted in long standing custom and tradition. This is based around the Sm'ooogyet (Real Person) who represents the three clans or crest groups.<sup>159</sup> The Sm'ooogyet, in close conjunction with the clan Matriarchs and Gitga'at Elders, hold authority over the cultural affairs of the Nation, and oversight over the stewardship of the lands and waterways in Gitga'at Territory. Although the elected Gitga'at First Nation Council is legally responsible for the Nation and its administration, many aspects of Gitga'at First Nation's socio-economic structure remain tied to their inherent system of self-governance and self-determination.

Gitga'at First Nation offers educational services to support their members through integration of culturally appropriate programming and works closely with the health department to provide health education activities based on children and family health priorities. The Gitga'at Oceans and Lands Department (GOLD) is responsible for territorial stewardship under the direction of Gitga'at Leadership Council, comprised of both elected and hereditary leadership. The Gitga'at Health Department provides community health and wellness services and cultural support through organized cultural programs, such as harvesting initiatives. The Gitga'at Emergency Response Team provides services to the community of Hartley Bay focused on emergency preparedness and response, fire protection, emergency medical response, and search and rescue. The Gitga'at Guardian Program works to protect food security and community wellness by patrolling/monitoring their traditional territory.

The introduction of industrial facilities and shipping traffic into Gitga'at Territory and TUOS sites have affected the Nation's autonomy and self-determination by hindering the Nation's ability to make decisions on the use of their land and waterways. Gitga'at members have already reported having to make substantial detours to access traditional sites due to increases in large scale shipping traffic.<sup>160</sup>

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<sup>159</sup> Gitga'at First Nation (n.d.). *Our Community, Culture, Lands, Waters, and Current Projects*. Retrieved from: <https://www.gitgaatnation.ca/gfn>

<sup>160</sup> Cedar LNG Partners LP. (2022). *Section 12 Gitga'at First Nation. Environmental Assessment Application*.

As stewards, the Gitga'at members are responsible for the environmental health of their territory. Threats to the ecosystem, especially marine environments in their territory, are posed by the KL LNG facility and the subsequent shipping traffic that it will bring. These environmental threats include contamination through loss of containment of LNG and other hazardous substances, air quality, acoustic environments, and wildlife populations. Since the intensification of large-scale shipping traffic, the number of whale strikes in and around Gitga'at Territory has increased.<sup>161</sup> Gitga'at First Nation has expressed concerns that the additional shipping traffic that KL LNG will contribute to this problem, and further displace local wildlife from their natural habitat.<sup>162</sup> Gitga'at waters are notably high population centers from humpback and fin whales. A recent report modeling the future of whale collisions in the foreseeable decade predicts that whale encounters are set to triple for most vessel types by 2030.<sup>163</sup> However, this increase is predicted to be significantly higher for large shipping vessels (length >180 m), with encounters becoming 30 times more likely in Gitga'at waters.<sup>164</sup> Whale strikes are predicted to increase 2.3 times for fin whales and 3.9 times for humpback whales, and models indicate that the largest single source of whale mortality risk in 2030 will be from LNG carriers.<sup>165</sup> This report focused on the additional shipping traffic that will be introduced through the LNG Canada and Cedar LNG projects, and does not incorporate the additional 140-160 ships per year that KL LNG is predicted to contribute to the waters of northwestern BC.<sup>166</sup> The ships for the KL LNG project are scoped to transit along the MSSR at speeds of 12 to 19 knots/hour. Previous studies have shown that maintaining speeds of <10 knots is the most effective way to reduce lethality of vessel strikes (for vessels >180m long).<sup>167</sup>

The proponent's project application includes a map of the density of baleen whale sightings in and around the Marine Shipping regional Assessment Area between 2017-2022 (Figure 14). This map indicates that the currently proposed shipping route in between the Dundas Islands and Stephens Island (See Figure 4) intersects with areas of higher densities of baleen whale sightings than the alternative route to the north of Dundas Island, thus increasing the risk of disruption or a vessel strike.

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<sup>161</sup> Baker, R. (2023). *Research Groups Sound Alarm After Reports of Three Whales Struck by Ships Off BC*. Times Colonist. Retrieved from: <https://www.timescolonist.com/local-news/research-groups-sound-alarm-after-reports-of-three-whales-struck-by-ships-off-bc-7374404>

<sup>162</sup> Sidaway, K. (2023), *Researchers, First Nations Call for Change After Multiple Humpback Whales Hit Along BC Coast*. Chek News. Retrieved from: <https://www-cheknews-ca.cdn.ampproject.org/c/s/www.cheknews.ca/researchers-first-nations-call-for-change-after-multiple-humpbacks-hit-along-b-c-coast-1166622/?amp>

<sup>163</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga'at territory*.

<sup>164</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga'at territory*. p.1

<sup>165</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga'at territory*

<sup>166</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-5

<sup>167</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga'at territory*. p.50

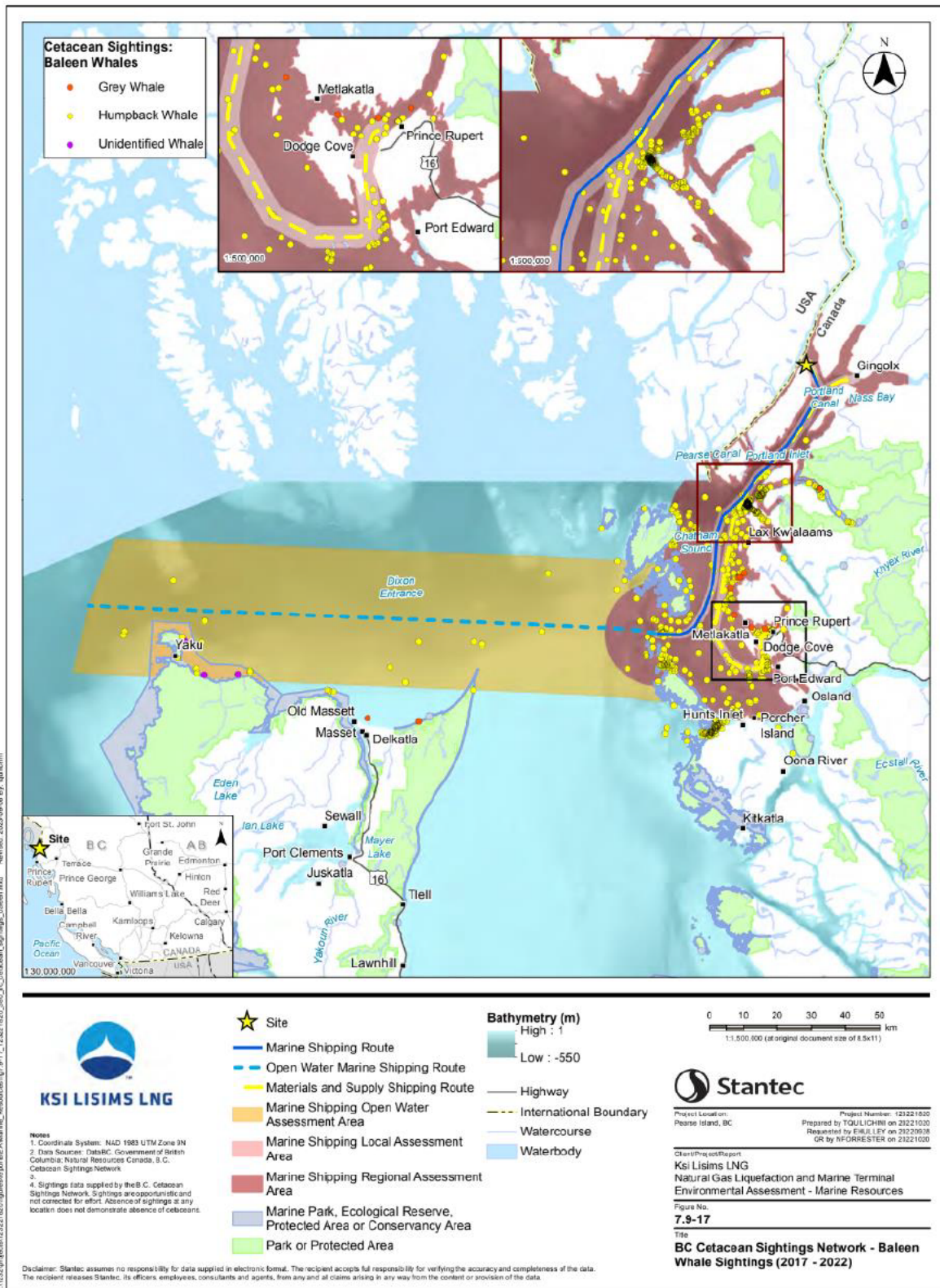


Figure 14. BC Cetacean Sightings Network - Baleen Whale Sightings (2017-2022), Ksi Lisims LNG Gitga'at Nation Assessment, Fig. 7.9-17

In addition to these direct environmental threats, Gitga'at First Nation is also concerned by the indirect risks the KL LNG project will pose to their social environments. This includes increases in

levels of recreational fishing and hunting on their territory and TUOS sites by people from outside of the region. Over a third (38%) of all Gitga’at members participating in the 2023 household CHWS survey reported that tourism and recreational activities had increased in their territory over the last 12 months.<sup>168</sup> These activities require Gitga’at First Nation to dedicate increased time and resources to managing and monitoring the landscape to ensure its proper usage. Interviews with Gitga’at members identified that 15% of those who participated in the survey from Hartley Bay had had a negative/confrontational experience with non-Indigenous tourists or recreational users in the last year alone.<sup>169</sup>

## Potential Project Effects and Proposed Mitigations

### Potential Project Effects

In section 17.3.3 of the project application, the KL LNG identified potential risks to “Gitga’at First Nation Governance” for the following VCs:

- Wildlife and Wildlife Habitat (Section 7.07)
- Marine Resources (Section 7.09)
- Marine Use (Section 7.11)
- Community Health and Well-being (Section 7.13)

The following list provides a description of potential effects the KL LNG project may have on Gitga’at First Nation’s Indigenous governance, self-determination, and territorial stewardship over the lifespan of the Project (construction, operations, and decommissioning). The effects described are based on the residual effects associated with the aforementioned VCs detailed in the KL LNG Application.

- Effects to the Nation’s ability to make decisions on the regarding their marine use of the territory due to the large-scale increase in LNG carrier and associated tug traffic, which is expected to interfere with vessel passage and safety and the marine environment during all project phases.
- Dedication of additional resources/capacity to stewardship activities by Gitga’at First Nation to maintain and monitor the surrounding environment, as a result of increased marine traffic and subsequent pollution issues, and increased local populations, workforce, and income in the region leading to greater intensity of wilderness and marine recreational activities/tourism.
- Increased risk of marine mammal strikes through elevated levels of shipping traffic potentially threatening marine mammal populations in the region.
- Effects to Gitga’at First Nation’s self-governance and economy through changes to commercially traded resources from Gitga’at fisheries, and effects to local economies through changes in regional employment and the associated potential for wage inflation, labour drawdown, inequitable access to training and employment, and increased cost of housing and living.

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<sup>168</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.21

<sup>169</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.21

These effects affect Gitga’at First Nation by limiting the ways in which they are able to access and interact with their territory and TUOS sites, limiting the ways they can positively engage with the wider local economy. In addition, these effects require Gitga’at First Nation to take on greater responsibilities as stewards of the land and waterways, dedicating additional time and resources to managing the adverse effects that industrialization has for social and natural environments in the region.

## Mitigation Measures

### Mitigations in the KL LNG Project Application

With regard to project effects on Gitga’at First Nation governance, the KL LNG project application references mitigation chapters for the following VCs:

- Wildlife and Wildlife Habitat (Section 7.07)
- Marine Resources (Section 7.09)
- Marine Use (Section 7.11)
- Community Health and Well-being (Section 7.13)

The mitigations suggested for each VC apply to the Project as a whole, and not specific to Gitga’at First Nation. Individual mitigation measures for each of these VCs can be found in the Project application (Table 1.A, Appendix A - Summary of Mitigation Measures).

### Gitga’at First Nation’s Mitigations

*Table 8 Gitga’at’s Mitigations Indigenous Governance, Self-Determination, and Territorial Stewardship*

Potential Effect	Mitigation	Timing	Duration	KPIs
<b>Marine Use/Marine Resources/Archaeological and Heritage Resources</b>				
Increase in shipping traffic on proposed shipping route increases risk of collision with species of cultural importance (whales)	Follow guidelines on avoiding fatal marine mammal strikes with a 10 knot speed ceiling for large ships in waters/seasons where marine mammal activity is known to be high;	Start of construction	Construction; Operations	# of whale sightings along shipping route; # of collisions with whales
<b>Malfunction and Accidents</b>				
Risk of vessel collision or spills of hazardous materials	Requirement for KL to engage/work with Gitga’at First Nation to develop and implement a comprehensive <b>Marine Incident Preparedness, Response and Recovery Plan</b> and Emergency Management and Response mechanism to ensure readiness in the event of emergency including the following key components and topics areas:	Pre-construction	Construction; Operations	# of review and practice sessions
Accidents and malfunction causing human or environmental harm Risk of fire; damage to human and environmental health, from project work				# of tabletop exercises; \$ contributed to tabletop exercises  Relevant Management Plans and Policies reviewed by

Potential Effect	Mitigation	Timing	Duration	KPIs
	<ul style="list-style-type: none"> <li>Risk management procedures for spills of hazardous materials, fires, vessel collision, etc. (including offshore activities)</li> <li>Accidents and malfunctions - Ensure hierarchy of safety controls is incorporated into health and safety systems (elimination, substitution, engineering control, administrative control, PPE) into planning.</li> <li>Recommend establishing a repair and maintenance program, as well as manuals. Recommend integrating into the design during feed the automatic alarm system prior of the emergency shutdown.</li> </ul> <p>Support emergency preparedness and response in communities by participating in and providing financial support for cross-agency tabletop emergency response drills. These drills are being piloted by Northern Health. They are designed to bring regional emergency response agencies, health providers, and industrial partners together to simulate emergency scenarios. The goal is to improve emergency preparedness and response practice by understanding roles and responsibilities, coordinating responses, streamlining communications, and making necessary adjustments to emergency response plans.</p>			independent 3rd party specialist
<b>Wildlife and Habitat</b>				
Increased strain on the Gitga'at Nation's territorial stewardship through project related pollution	Assist Gitga'at in their territorial stewardship by providing ongoing and up to date data on the environmental health of the project's marine use areas,	Pre-construction	Construction; Operations	TBD

Potential Effect	Mitigation	Timing	Duration	KPIs
	<p>and any changes to it as a result of shipping traffic. This includes:</p> <ul style="list-style-type: none"> <li>LNG carriers are required to immediately report marine mammal strikes, and share the report information with Gitga'at immediately.</li> <li>Follow guidelines on avoiding fatal marine mammal strikes with a 10 knot speed ceiling for large ships in waters/seasons where marine mammal activity is known to be high;</li> <li>Requirement that KL LNG establish a Marine Accident and Malfunction Follow-up Program that immediately notifies the Gitga'at Nation in the event of a shipping accident/malfunction, and report its impacts on marine safety and environmental health. This includes participation in shipping-related marine spill response plans and facilitate and share with Gitga'at detailed information about any KL LNG carrier accident of malfunction that results in a release of cargo or fuel to the environment;</li> <li>Monitor changes to marine vegetation and wildlife populations along the shipping route, and share data with the Nation on an ongoing basis.</li> </ul>			
<b>Human Health, Community Health and Wellness</b>				
Increased strain on the Gitga'at Nation's territorial stewardship through project related environmental degradation, and increased numbers of non-local recreational	Address community health, safety and security risks and impacts (IFC PS4) by making financial contributions to Gitga'at First Nation community health and monitoring initiatives. This will mitigate against the increased	Pre-construction	Construction; Operations	\$ Fund contributed; TBD



Potential Effect	Mitigation	Timing	Duration	KPIs
users of the land and waterways	burden on environmental stewardship that the Gitga'at Nation will shoulder through the increased levels of traffic, pollution, recreational activities, and tourism occurring in their TUOS sites and traditional territory. The primary institution to dedicate funding to for this purpose is the Gitga'at Guardian program, which monitors the waterways and how people use them. Additional institutions for monitoring community and environmental health include: <ul style="list-style-type: none"> <li>We Monitor by Living Here (WMBLH), that focuses on gathering traditional resource use, climate, and sharing networks related data to observe changes in trends over time;</li> <li>Gitga'at's new community health and well-being monitoring program includes Gitga'at members that live in HB and elsewhere (including PR region)</li> </ul>			
Increased risk of wildfires from increased highway traffic and project activity in the area	Implement measures to reduce risk of wildfires during transit along the highway during periods of high wildfire risk (such as a non-smoking policy for staff members in transit);	Start of construction	As needed	TBD

### Gitga'at's Analysis and Conclusions

Following the consideration of the Potential Effects and Mitigation Measures described above, Gitga'at First Nation identified the following residual effects:

#### Decision making:

- Negative effects on the ability of Gitga'at First Nation to make decisions about their community and their traditional territory/TUOS sites;

#### Territorial stewardship:

- Increased burden on Gitga'at First Nation in terms of territorial stewardship;

#### Employment and economy:

- Inequality in economic/employment opportunities for Gitga'at members and businesses.

The suggested mitigations of KL LNG do nothing to directly address Gitga’at First Nation, and only suggest mitigations that apply to the Project as a whole. This makes their inclusion in a section on Gitga’at First Nation governance, self-determination, and territorial stewardship largely ineffective. The mitigations themselves are broad and incomplete and have little to no relevance to the concerns of Gitga’at First Nation.

For example, a primary concern for the Nation is the ability to access their territory and TUOS sites, as well as make decisions around their usage. The KL LNG application acknowledges this proposed Project will affect Gitga’at First Nation’s governance by referencing Project-wide mitigations for the Marine Use VC to combat this issue.<sup>170</sup> For this entire VC, there are three suggested mitigations as described below:<sup>171</sup>

- *In consultation with Transport Canada, CCG, and BC Coast Pilots, identify and install appropriate aids to navigation within the marine Project footprint;*
- *Establish an operational buffer zone around the Project marine infrastructure; and*
- *Develop a Terminal Operations Manual and include information specific to the Project’s marine operations and relevant risk mitigation measures.*

This represents the entirety of KL LNG’s plan to mitigate against access problems for Gitga’at First Nation marine use, and the subsequent effects on their governance, self-determination, and territorial stewardship. These mitigations fail to address the multiple specific aspects of Gitga’at First Nation’s concerns relating to marine use, such as the potential danger of vessel collisions or wake waves, the experiential effects of increased shipping traffic levels around TUOS sites, restricted access to TUOS due to shipping activity, and the increased levels of recreational users and tourism in and around Gitga’at TUOS sites as a result of the Project. The suggested mitigations for the other affected VCs according to KL LNG (Wildlife and Wildlife Habitat, Marine Resources, Community Health and Well-being) are similarly vague and non-specific to Gitga’at First Nation’s interests.

In cases where the KL LNG does identify relevant effects that reflect the concerns of Gitga’at First Nation, the seriousness is often minimized without justification. For example, as stewards of the land and waterways, a concern of Gitga’at First Nation is the increase in whale strikes that will likely come with increased industrial shipping traffic. While the KL LNG acknowledges this increased likelihood,<sup>172</sup> it is concluded that “Population wide effects to any culturally important marine mammal species caused by vessel strikes are not anticipated.”<sup>173</sup> This however is not supported by studies and predictive models of the effects of industrialization to whale strike frequency in the region, which anticipate significant increases in strikes as a direct result of increased LNG traffic.<sup>174</sup>

Suggested mitigations to address potential problems in economic opportunity inequality are similarly inadequate. While increased employment opportunities are cited as the primary potential benefit for Gitga’at members from the KL LNG Project, the application explicitly and pre-emptively

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<sup>170</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17.3.3

<sup>171</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Appendix A-23-24

<sup>172</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.9

<sup>173</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.9

<sup>174</sup> Keen et al. (2023): *Ship-strike forecast and mitigation for whales in Gitga’at territory*.

recognizes the improbability of success in this area, stating that “measurable changes in employment equity across the Employment and Economy LAA are not expected.”<sup>175</sup> No alternative courses of action are suggested to remedy this predicted failure. This contradicts the KL LNG’s own corporate commitments, with Rockies LNG stating:

*“A key component of developing positive relationships with Indigenous communities is through workforce inclusion and business participation, such as the hiring of local Indigenous employees and businesses.”<sup>176</sup>*

The lack of specific mitigation measures to address the concerns of Gitga’at First Nation, the minimizing of the seriousness of major concerns, and the lack of follow through on the KL LNG’s own corporate commitments indicate serious short fallings and absence of thoroughness in the development of the KL LNG’s application.

Table 9 below provides a summary of residual effects for Indigenous governance, self-determination and territorial stewardship that reflect the views of Gitga’at First Nation. Specifically, this table provides information pertaining to the criteria, assessment rating and rationale for determining the severity of each outlined residual effect.

*Table 9. Summary of Residual Effects for Indigenous Governance, Self-Determination, and Territorial Stewardship*

Criteria	Assessment Rating	Rationale
Context	Low resilience	Gitga’at First Nation’s Indigenous governance, self-determination and territorial stewardship is recovering from the effects of colonization including resource extraction and development). Further recovery may be achieved through reconciliation negotiations and implementation of UNDRIP, but that recovery is still very sensitive to disturbance in the form of ongoing exclusion from their ability to exercise their inherent right to make decisions that affect themselves and their territory.
Magnitude	Moderate	<b>Decision making:</b> KL LNG will result in moderate residual effects to the Indigenous governance, self-determination, and territorial stewardship, as increased shipping traffic and regional population increase, and development will affect their ability to make decisions about the use of their territory and TUOS sites. The Project will also affect decision-making, planning, and resourcing requirements for services provided by Gitga’at’s Health Department and

<sup>175</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17.62

<sup>176</sup> Rockies LNG Partners (2023) *Responsibility; Indigenous Engagement*, retrieved from: <https://www.rockieslng.com/community>

Criteria	Assessment Rating	Rationale
		<p>Emergency Response Team.</p> <p><b>Territorial stewardship:</b> KL LNG will result in a moderate residual effect to stewardship responsibilities as additional resources will be required to maintain effective territorial stewardship through all stages of the Project.</p> <p><b>Employment and economy:</b> the residual effects to Gitga’at First Nation employment will result in both positive and negative residual effects. A low magnitude of positive effects will be experienced through increase in local employment opportunities. However, this is expected to be outweighed by a moderate to high magnitude of negative effects, including: inequitable ability for subpopulations such as women and LGBTQ2S+ to participate in employment opportunities; loss opportunity to live in-community and engage in cultural activities due to the requirement to relocate for employment opportunities; of and the potential for increased cost of living and housing, and negative effects to local businesses.</p>
Extent	Regional	Gitga’at First Nation will be affected both within their territory and TUOS sites (overlapping the Marine Shipping Route and MSSR) as well as by regional economic development that will occur outside of their traditional territory and TUOS sites.
Duration	Long-term	Indigenous governance, self-determination and territorial stewardship will be affected throughout all phases of the Project (approximately 35 years).
Frequency	Ongoing	Residual effects on the increased burden of Gitga’at First Nation’s territorial stewardship activities will be a constant feature through the lifespan of the project. Gitga’at First Nation’s ability to make decisions around the use of their territory and TUOS sites will be continuously affected prior to decommissioning.
Reversibility	Irreversible	The various factors that will influence Indigenous governance, self-determination, and territorial stewardship (e.g., employment, accommodations, marine

Criteria	Assessment Rating	Rationale
		traffic) will last throughout the lifetime of the Project (approximately 35 years), which is longer than one generation (i.e., 25 years), meaning the Project has the potential to cause and entrench negative effects for Gitga’at First Nation irreversibly.
Affected Populations	Disproportionate	<p>Decisions on the use of the land and marine environments for the KL LNG project are dominated by the KL LNG and the government, removing agency from Gitga’at First Nation.</p> <p>As specified by the application, Indigenous groups are expected to benefit less from the economic and employment opportunities that the Project will bring to the region. This is especially relevant for subgroups who already experience additional barriers to industrial employment (primarily women).</p>
Uncertainty	Moderate	<p>The effects on Gitga’at First Nation’s ability to make decisions on the use of their territory are reasonably certain as marine traffic increases will be guaranteed.</p> <p>Economic opportunities and employment volumes for Gitga’at members are uncertain. Mitigation measures in this regard may be moderately effective.</p>

*Note: Criteria and assessment ratings are defined in Annex: Residual Effects Characterization Definitions for Effects on Gitga’at Indigenous Interests*

## Cumulative Effects

The potential cumulative effects resulting from KL LNG on Indigenous governance, self-determination and territorial stewardship include those related to marine navigation due to interaction with vessels and increasing shipping traffic (described in section 1.5.1 and 1.5.2), increased strain on territorial stewardship responsibilities, and economic effects and inequitable access to employment opportunities.

Cumulative effects of increased shipping traffic are described in section 1.5.1. The resulting restrictions on access to the marine environment effects Gitga’at First Nation’s ability to make decisions on its traditional territory and TUOS sites.

Given the uncertainty around the various potential cumulative effects to the health of the environment as a result of industrialization in the region, Gitga’at First Nation will face additional

challenges in relation to their inherent and aboriginal rights. Physical monitoring programs like the Gitga'at Guardians Program will be placed under greater stress to monitor the use of the marine environment by greater numbers of non-local recreational users and tourists. Other environmental monitoring programs will have additional pressure to identify potential adverse effects on the environment from the presence of additional industrial traffic and facilities. Further, Gitga'at First Nation's emergency response services will also need to take on additional responsibility as the likelihood of marine incidents or hazardous spills increases when the occurrence of large shipping vessel traffic increases.

Potential cumulative effects on Gitga'at First Nation's economy and employment include those associated with inequitable access to employment and increased cost of housing, services, and general cost of living. The KL LNG project interacts cumulatively with other projects in the region by adding to the influx of employment opportunities and populations to fill them. It is unlikely that KL LNG will successfully contain all of its staff and associated family members to the on-site floatel and the permanent on-site accommodation units. It is similarly unlikely that all other industrial projects in the region will be successful in separating their workforces from local communities. The cumulative result is that the region will experience an increase in population (especially in major centres like Prince Rupert). Demographically, these will mostly be construction/facility operation staff from out of town and their family members. This will have region-wide effects on the economy and availability of housing, medical facilities, and public infrastructure (e.g., schools, transportation services). The influx of job opportunities from multiple projects is likely to result in increased cost of living and cost of housing in northern BC, which will disproportionately affect groups (including Gitga'at First Nation) that already experience shortages of affordable housing as evidenced by Gitga'at First Nation's 2023 Housing Report. The increase in job opportunities may have potential positive cumulative effects on Gitga'at First Nation employment, though it is likely that Gitga'at members (especially female members) will face equitable access to these opportunities. As a result, a potential cumulative effect is that Gitga'at First Nation will disproportionately face a general increase in the cost of living in the region, while not equally benefiting from the potential financial opportunities.

Mitigation measures for cumulative effects of increased shipping traffic are described in section 1.5.1. To address cumulative effects on Gitga'at First Nation's territorial stewardship and economic conditions, proponents of industrial projects in the region should financially contribute to Gitga'at First Nation's monitoring programs (e.g., the Gitga'at Guardians Program) to alleviate the additional burden, and impose restrictions on workers from using Gitga'at Territory and TUOS sites for recreation. Effective communication and data sharing between all industrial projects, and between projects and Gitga'at First Nation, can ensure that the boundaries and use of Gitga'at First Nation TUOS sites are well understood and respected. To mitigate against cumulative economic effects, proponents must adhere to their corporate commitments to provide training and employment opportunities from Gitga'at First Nation in order to adequately ensure equal access to economic benefits. To reduce the effect on the cost of housing/living in the region, proponents must ensure minimal effect of their staff and associated family members on settlements in the region. This primarily entails providing enough temporary accommodation for both staff and family members who will be residing in the region for employment purposes.

## **Conclusion**

Taking into account all available information, the EAO's engagement with Gitga'at First Nation, Gitga'at First Nation's engagement with KL LNG, KL LNG's commitments, cumulative effects, EAO's recommended conditions, and current economic climate in Northern BC, federal mitigation measures, Gitga'at First Nation anticipates that KL LNG will have residual site-specific and regional effects that will combine with the effects of other industrial projects in the region. These effects are anticipated to result in long-term moderate adverse cumulative effects on Gitga'at First Nation's Indigenous governance, self-determination and territorial stewardship. In doing so, the industrial projects in the region remove a great deal of agency and decision-making capabilities from Gitga'at First Nation, while placing additional burdens on their economy and environmental responsibilities. The proponent's current suggested mitigations to combat these issues are high level, non-specific to the Gitga'at Nation, and inadequate to effectively mitigate the potential impacts of the KL LNG project.

## 1.5.4 Indigenous Health and Wellbeing

### Background

Indigenous determinants of health encompass a wide array of VCs that affect the physical and mental wellbeing of individuals and the community as a whole. This holistic approach combines the health of the community, the physical environment, and access to essential services.

### Existing Conditions

Gitga'at First Nation's 5-year Health Plan<sup>177</sup> outlines the following VCs (determinants of health) that are critical the health and wellbeing of Gitga'at members:

- Families and children;
- Colonization;
- Self governance and cohesion;
- Health of the territory;
- Health of the lived environment;
- Demographics;
- Access to Gitga'at Territory;
- Traditional food security;
- Living your culture;
- Tourism/recreational users;
- Climate change;
- Health services;
- Housing;
- Emergency preparedness and response;
- Livelihood and income;
- Employment opportunities and working conditions;
- Education and training (including cultural opportunities);
- Industrial development; and
- Health behaviours and outcomes.

Similarly, Gitga'at First Nation's 2022 Mental Health and Wellness Framework identified the following guiding principles for positive mental health:<sup>178</sup>

- Living our culture;
- Recovering from effects of COVID;
- Supporting mental wellness in workplace
- Community engagement;
- Improve mental health outcomes for those who access mental health services in Hartley Bay;
- Supporting mental awareness, education, and literacy;

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<sup>177</sup> Gitga'at First Nation (2021), *Gitga'at First Nation 5 Year Health Plan 2021-2026*

<sup>178</sup> Gitga'at First Nation (2022), *Gitga'at First Nation Mental Health and Wellness Framework*



- Addressing abuse in Hartley Bay;
- Supporting Gitga’at children, youth, and families; and
- Increasing accessibility to mental health services in Hartley Bay.

Gitga’at First Nation’s 2023 Household CHWS<sup>179</sup> specifically identified concerns around the future of housing, income/livelihood, connection to Gitga’at culture/territory, industrial development and tourism, and general health and wellness.

Previous industrialization has affected Gitga’at First Nation’s ability to live their culture by restricting access to/alienating members from traditional use and occupancy sites,<sup>180</sup> and by effecting the social and economic conditions where members live, effecting access to services and healthy living environments. Past studies have identified existing issues with housing and healthcare services in Hartley Bay and Prince Rupert,<sup>181,182,183</sup> and Gitga’at First Nation has raised concerns that further industrial activities will compound these problems for housing, healthcare, road safety, social environments, and the natural environment.

## Housing

Housing environments have a profound effect on an individual’s health and wellbeing. Exposure to poor housing conditions may lead to worse physical and mental health. For example, poor indoor environmental conditions (such as overcrowding and the presence of mould) increases the risk of injury, respiratory illness (such as asthma), food insecurity, infectious diseases, and some mental disorders.<sup>184</sup> For children, the exposure to mould in the household has been linked with the development of severe asthma and allergies.<sup>185,186</sup> Poor housing conditions may also increase the number of times a person seeks medical care.<sup>187</sup>

Housing conditions also encompass issues concerning housing security, and the risks of experiencing homelessness. Risks around housing security greatly affect mental health through stress. For individuals who are experiencing homelessness, they often encounter stigma and discrimination when accessing health services. Homelessness can decrease life expectancy, increase suicide risk, and increase the vulnerability of marginalized population groups.<sup>188,189</sup>

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<sup>179</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.21

<sup>180</sup> Inglis Consulting, with Gitga’at First Nation Knowledge Holders (2022). *Final Report: Gitga’at FN TUOS for the Ksi Lisims LNG Project*. p.34-53

<sup>181</sup> Gitga’at First Nation (2023). *Gitga’at First Nation Housing Needs Assessment 2023*

<sup>182</sup> Gitga’at First Nation (2022). *Community Health and Wellness Study Technical Report*.

<sup>183</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*.

<sup>184</sup> Juan Palacios, Piet Eichholtz, Nils Kok, Erdal Aydin (2020). *The effect of housing conditions on health outcomes*, Real Estate Economics, 10.1111/1540- 6229.12317

<sup>185</sup> Loppie Reading, C. & Wien, F. (2009). *Health inequalities and social determinants of Aboriginal Peoples’ Health*. Retrieved from [http://ahrnets.ca/files/2011/02/NCCAH-LoppieWien\\_Report.pdf](http://ahrnets.ca/files/2011/02/NCCAH-LoppieWien_Report.pdf)

<sup>186</sup> National Collaborating Centre for Aboriginal Health. (2010). *Housing as a social determinant of First Nations, Inuit and Metis health*. Retrieved from: [http://www.nccah-ccnsa.ca/docs/fact%20sheets/social%20determinates/-NCCAH\\_fs\\_housing\\_EN.pdf](http://www.nccah-ccnsa.ca/docs/fact%20sheets/social%20determinates/-NCCAH_fs_housing_EN.pdf)

<sup>187</sup> Juan Palacios, Piet Eichholtz, Nils Kok, Erdal Aydin (2020). *The effect of housing conditions on health outcomes*, Real Estate Economics, 10.1111/1540- 6229.12317

<sup>188</sup> Guirguis-Younger, M., McNeil, R., & Stephen W. Hwang (Eds.). (2014). *Homelessness & Health in Canada*. University of Ottawa Press. Retrieved October 6, 2020, from <http://www.jstor.org/stable/j.ctt184qqc6>

## Prince Rupert

In 2023, Gitga'at First Nation released the third annual CHWS report and completed a new Housing Needs Assessment. Both reports identified several critical housing challenges experienced by Gitga'at members living in Prince Rupert. These include housing affordability and stability, the need for maintenance/repairs in a substantial number of homes, and concerns related to mould and heating, as indicated in Figure 15 below.

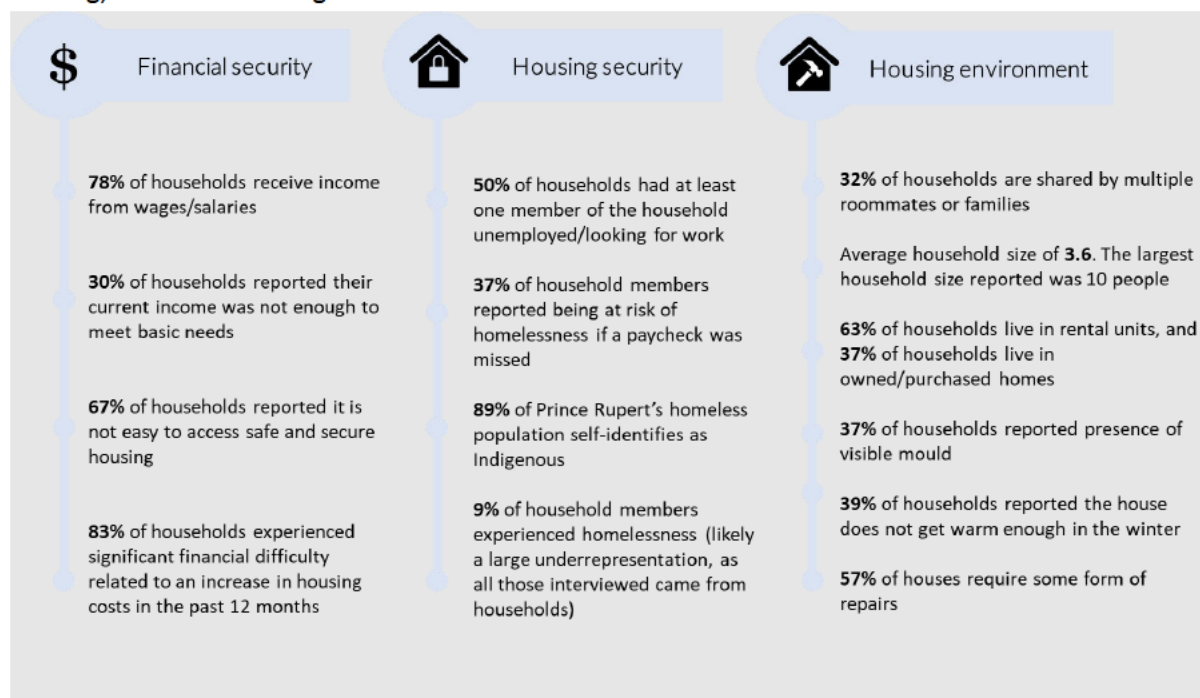


Figure 15. Recent housing statistics for Gitga'at members living in Prince Rupert

Gitga'at households in Prince Rupert are subject to rapidly increasing costs associated with housing (e.g., rents and mortgages). A brief scan of available rental units posted from April 2023 to June 2023 on Kijiji, Facebook Marketplace, and Craigslist retrieved 28 listings, with an average price per month of \$1,953.<sup>190</sup> The average cost to buy a home has increased by 54%, from \$277,611 in 2017 to \$427,776 in 2021.<sup>191</sup> Over 83% reported an increase in financial strain associated with housing costs over the last 12 months. Canada Mortgage and Housing Corporation (CMHC) defines "affordable" housing as housing costs that are less than 30% of a household's income before-tax income.<sup>192</sup> A significant proportion of Gitga'at households located in Prince Rupert (39%) reported that they spend  $\geq 40\%$  of their monthly income on rent. This strain has similarly been felt for the cost of living, as nearly a

<sup>189</sup> Hwang, SW., Wilkins, R., Tjepkema, M., O'Campo, PJ., and Dunn, JR. (2009) *Mortality among residents of shelters, rooming houses and hotels in Canada: An 11-year follow-up study*. BMJ. Oct 26

<sup>190</sup> Gitga'at First Nation (2023). *Housing Needs Assessment*. p.21

<sup>191</sup> City of Prince Rupert (2022). *Housing Needs Report*. Retrieved from: [https://princerupert.ca/sites/default/files/reports/221128\\_Final\\_PR\\_HNR.pdf](https://princerupert.ca/sites/default/files/reports/221128_Final_PR_HNR.pdf)

<sup>192</sup> Canada Mortgage and Housing Corporation (2018). About affordable housing in Canada. Retrieved from: <https://www.cmhc-schl.gc.ca/professionals/industry-innovation-and-leadership/industry-expertise/affordable-housing/about-affordable-housing/affordable-housing-in-canada>

third of households also report that their current income is not enough to meet their basic needs including bills, groceries, clothing and utilities (30%).<sup>193</sup>

As a result, housing security is a serious issue for Gitga'at members residing in Prince Rupert, with 67% of Gitga'at households reporting that it was not easy to find safe and secure housing in the city. Reports have emerged of an increase in “renovictions” throughout the city, by which tenants are evicted so landlords can conduct repairs or renovation to units.<sup>194</sup> In February 2023, over 30 tenants, some of whom were First Nation Elders with accessibility needs, were evicted from two apartment buildings.<sup>195</sup> Considering the reports on Gitga'at First Nation experiences of homelessness in Prince Rupert, and that 37% of households surveyed as part of the 2023 CHWS reported they felt the risk of homelessness if a pay check was missed, these circumstances in Prince Rupert present real threats to the housing situations of the Gitga'ata.

As aforementioned, Gitga'at First Nation has expressed concern that the increasing industrialization of the region will lead to increased cost of living and costs associated with housing (rent/mortgages).<sup>196</sup> The KL LNG facility will bring in workers, subcontractors, and their families to build, operate, and decommission the facility, who will require housing in the region. It is anticipated that the influx of workers and their families will increase the demand/cost of housing and the cost of living in Prince Rupert.<sup>197</sup> Contextually, industrial development projects have been widely linked to the reduced availability and affordability of housing in communities.<sup>198,199,200,201,202</sup>

## Hartley Bay

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<sup>193</sup> Gitga'at First Nation (2023) *Housing Needs Assessment*. p.21

<sup>194</sup> The Northern View (2023). *Renovictions through the roof in Prince Rupert*. Retrieved from: <https://www.google.com/search?q=increased+renovictions+in+prince+rupert&oq=increased+renovictions+in+prince+rupert&aqs=chrome..69i57j33i160.5574j1j7&sourceid=chrome&ie=UTF-8>

<sup>195</sup> Wilson, L. (2023). *More than 30 tenants in Prince Rupert face evictions during a housing crisis*. Retrieved from: <https://www.aptnnews.ca/national-news/more-than-30-tenants-in-prince-rupert-face-evictions-during-a-housing-crisis/>

<sup>196</sup> Gitga'at First Nation (2021) *Gitga'at Social Determinant of Health Risk Report prepared for the Kitimat LNG Terminal Project*

<sup>197</sup> City of Prince Rupert (2018). *Community Planning*. Retrieved from:

[http://www.princerupert.ca/city\\_hall/community\\_planning/planning\\_major\\_projects/reports](http://www.princerupert.ca/city_hall/community_planning/planning_major_projects/reports)

<sup>198</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority. - (Version 1.0.. ed.)*. Prince George, B.C.]: Northern Health.

<sup>199</sup> Shandro, J., Sam, A. M., Jokinen, L., Kerr, K., Scoble, M., & Ostry, A. (2014) *Ten Steps Ahead: Community Health and Safety in the Nak'at/Bun/Stuart Lake Region During the Construction Phase of the Mount Milligan Mine*. Retrieved from: <http://bchealthycommunities.ca/res/download.php?id=1819>

<sup>200</sup> Amnesty International, (2016). *Out of Sight, Out of Mind: Gender, Indigenous Rights, and Energy Development in Northeast British Columbia, Canada* (London, UK: Amnesty International)

<sup>201</sup> Shandro, J., Veiga, M. M., Shoveller, J., Scoble, M., & Koehoorn, M. (2011) *Perspectives on community health issues and the mining boom–bust cycle*. *Resources Policy*, 36(2), 178–186. doi:10.1016/j.resourpol.2011.01.004

<sup>202</sup> Shandro, J. (2014) *Summary Report for the Regional Health Forum on Community Health and Extractive Industry Development*. Saik'uz, British Columbia. doi:10.1017/CBO9781107415324.004

The 2023 Household CHWS and Housing Needs Assessment identified several key housing and related financial challenges for Gitga’at First Nation residents of Hartley Bay including the lack of housing availability and overcrowding, the need for maintenance/repairs on a significant number of homes, and issues with mould and heating (Figure 16).

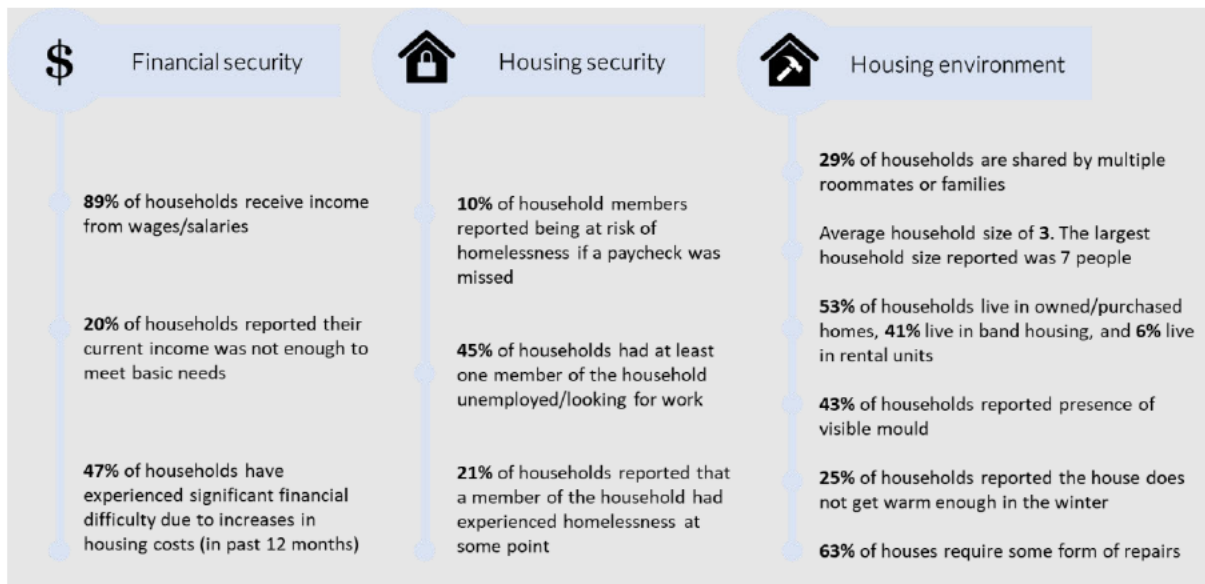


Figure 16. Recent housing statistics for Gitga’at members living in Hartley Bay

The availability of housing in Hartley Bay poses a potential problem following the knock-on cumulative effects of industrial development in northern BC. In response to Gitga’at cultural erosion in conjunction with the rising cost of living and decreasing availability of affordable housing in cities like Prince Rupert, more Gitga’at members may need to move to Hartley Bay. The current housing infrastructure in Hartley Bay is not equipped to deal with an influx of Gitga’at members who may be pushed out of other settlements as a result of wide scale industrialization.

## Healthcare and Emergency Services

Adequate health service access is critical for the prevention and treatment of a wide range of health outcomes. Timely access (to appropriate health services) is directly linked to decreases in morbidity and mortality and can greatly improve overall quality of life for people and communities.<sup>203,204</sup>

Many Gitga’at members live in remote regions of BC and often cannot access the certain health services they need in their hometowns. As a result, these members are often required to travel great distances for medical care. Table 10 below summarizes 2023 household CHWS survey data that highlights where Gitga’at households access health services and the overall physical conditions of their household members. The data highlighted in green represents survey data that is specific to Gitga’at members who reside in Hartley Bay.

<sup>203</sup> World Health Organisation. (2019). *Uneven access to health services drives life expectancy gaps*: WHO <https://www.who.int/news-room/detail/04-04-2019-uneven-access-to-health-services-drives-life-expectancy-gaps-who>

<sup>204</sup> Martin, D et al. (2018) *Canada's universal health-care system: achieving its potential*. Retrieved from [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)30181-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)30181-8/fulltext)

Table 10. Indicators describing the general health and wellbeing of Gitga’at households (N=146) and households in Hartley Bay (N=47) based on data collected during the 2023 CHWS.<sup>205</sup>

Health and Wellness indicators	Proportion of HOUSEHOLDS (%) ALL HOUSEHOLDS	Proportion of HOUSEHOLDS (%) HARTLEY BAY
<b>Where members access non-emergency health services</b>		
Nursing station in Hartley bay	30%	91%
Prince Rupert	41%	<5%
Terrace	5%	<5%
Kitimat	<5%	0%
Other	13%	0%
We don’t access non-emergency health services	7%	0%
No response	<5%	<5%
<b>Overall physical health of household</b>		
Everyone is physically healthy	27%	17%
Some people face physical health challenges	40%	45%
Everyone faces physical health challenges	18%	15%
I don’t know/No response	15%	23%

### Hartley Bay

Hartley Bay provides a variety of in-community health services through its Health Department and Nursing Station such as administering vaccinations and pre/postnatal care, chronic disease management, health promotion and response to acute health care needs.<sup>206</sup> This Health Department and Nursing Station provides 90% of non-emergency services in Hartley Bay. Specialized health services are currently not offered in Hartley Bay due to doctor shortages that have been experienced across BC, particularly in the northern region of the province. The suspension of the Mobile Primary Care Unit services that previously provided medical care for residents has further reduced the

<sup>205</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.27

<sup>206</sup> Gitga’at First Nation (n.d.). Health Services. Retrieved from: <https://www.gitgaatnation.ca/health>

medical capacity of Hartley Bay over the last several months.<sup>207</sup> In addition to this, accommodating temporary healthcare staff in Hartley Bay also poses a challenge, given that there is currently only one house in Hartley Bay that is empty and not scheduled for demolition.<sup>208</sup>

The 2023 Household CHWS found that only 62% of households reported that local health services were meeting their needs, and 80-85% of households had to travel to Prince Rupert to access more specialized services.<sup>209</sup> For example, once women reach 36 weeks at gestation, they travel to Prince Rupert to have a hospital birth resulting in additional stress and economic burdens placed on the individual.<sup>210</sup> The journey to Prince Rupert is both time consuming and costly. Prince Rupert is 130 km northwest of Hartley Bay and is either a four-hour ferry ride or a one hour float plane flight. Since the North Co-Corp ferry only travels two times per week, Gitga'at members from Hartley Bay will need to arrange accommodations for one to four nights (depending on the appointment time and the ferry schedule). Overall, the total estimated costs for one person living in Hartley Bay to attend an appointment in Prince Rupert, including accommodations and food for two nights, is estimated at approximately \$500.<sup>211</sup> Medical Travel logistics between Hartley Bay and Prince Rupert have been further complicated, as the Prince Rupert Aboriginal Community Services Society (PRACSS) has now taken on the role of managing transport, when it was previously arranged within the Gitga'at community. This shift has led to reduced flexibility in travel arrangements, as the PRACSS office serves many communities, and requires earlier notice (5 days) to schedule appointments. Key Informant Interviews on the subject have highlighted issues with cost reimbursement for Gitga'at members, unsatisfactory accommodation in Prince Rupert, and increased difficulties in responding to last minute logistical changes/accessing services on the weekend.<sup>212</sup>

For some appointments, it is necessary for Gitga'at members to travel to Vancouver. The journey from Hartley Bay to Vancouver takes approximately 9 to 10 hours each way, and costs are estimated at \$1,000 for tickets per person per trip,<sup>213</sup> excluding accommodation and food. These cost and time barriers to medical travel make it difficult for residents to regularly access needed health services.

A major concern that is shared amongst the Gitga'at members relates to the occurrence of medical emergencies in Hartley Bay. In the event of a medical emergency, patients are required to be airlifted to Prince Rupert by medical evacuation (medivac). Access to medivac airlifts is dependent on wait times which widely fluctuate. For example, In 2020, medivac wait times were recorded to be anywhere between 1 and 13 hours, and these services do not operate at night.<sup>214</sup> An additional

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<sup>207</sup> Key Informant Interview 2 (virtual interview, February 2024)

<sup>208</sup> Gitga'at First Nation (2023). *Gitga'at First Nation Housing Needs Assessment*, p.12

<sup>209</sup> Gitga'at First Nation (2023). *Community Health and Wellness Study Technical Report*.

<sup>210</sup> Silver, H., Sarmiento, I., Pimentel, J. P., Budgell, R., Cockcroft, A., Vang, Z. M., & Andersson, N. (2021). *Childbirth evacuation among rural and remote Indigenous communities in Canada: A scoping review. Women and birth: journal of the Australian College of Midwives*, S1871-5192(21)00038-X. Advance online publication. <https://doi.org/10.1016/j.wombi.2021.03.003>

<sup>211</sup> Based on single return trip on the North Co-Corp ferry, single occupancy for two nights in a standard Prince Rupert hotel, and \$60 per day for food

<sup>212</sup> Key Informant Interview 2 (virtual interview, February 2024)

<sup>213</sup> Specifically single return trip on the North Co-Corp ferry from Hartley Bay to Prince Rupert and single return trip via Air Canada from Prince Rupert to Vancouver

<sup>214</sup> Gitga'at First Nation.(2021), *Gitga'at FN Social Determinant of Health Risk Report Prepared for the Kitimat LNG Terminal Project*. p.27

problem is that the Medical Transportation benefits program that helps address the financial burden of medical travel only covers the cost of the trip to the emergency unit, and not the return, meaning that Gitga’at members are responsible for paying their journey home after being discharged from a medical facility.<sup>215</sup>

Table 11 provided below details health services indicators that are specific to Gitga’at members residing /accessing health services in Hartley Bay. The data provided was collected during the 2023 Household CHWS.

*Table 11. Hartley Bay CHWS participants’ perspectives on local health services (2023)<sup>216</sup>*

<b>Hartley Bay Health Services Indicators</b>	<b>Proportion of Households (%)</b>
Household access to services in Hartley Bay	<b>80-85</b>
Local Health Services Meet the Needs of the Household	<b>62</b>
All Household Members have a Family Doctor	<b>60</b>
≥ 1 Household Member Requires a Health Service that is Unavailable or Difficult to Access	<b>38</b>

### Prince Rupert

Prince Rupert has the largest hospital in the region and is the main provider of specialist services in Northwest BC. Healthcare services in Northern BC are known to be overburdened and understaffed, which has resulted in difficulties recruiting and retaining health care professionals, insufficient health and transportation infrastructure, long wait times, patient diversions, a lack of specialized and culturally appropriate services, and systematic racism in the health care system.<sup>217,218,219</sup> These healthcare problems have been further exasperated both directly and indirectly by industrial development in the region.<sup>220,221</sup>

Services available at the City’s Regional Hospital include emergency services, acute care, internal medicine, surgery, CT, paediatrics, obstetrics, gynaecology, internal medicine, extended care,

<sup>215</sup> Gitga’at First Nation.(2021), *Gitga’at FN Social Determinant of Health Risk Report Prepared for the Kitimat LNG Terminal Project*. p.27

<sup>216</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*.

<sup>217</sup> Sibley, L.M., Weiner, J.P. *An evaluation of access to health care services along the rural-urban continuum in Canada*. BMC Health Serv Res 11, 20 (2011). <https://doi.org/10.1186/1472-6963-11-20>

<sup>218</sup> Richmond, C. & Ross, N. (2009). *The determinants of First Nation and Inuit health: A critical population health approach*. Health Place, 15(2), 403-411.

<sup>219</sup> Turpel-Lafond. *Addressing Racism: An independent investigation into Indigenous-specific discrimination in B.C. health care* (2021). Retrieved from: <https://engage.gov.bc.ca/addressingracism/>

<sup>220</sup> Shandro, J., Jokinen, L., Kerr, K., Sam, A.M., Scoble, M., Ostry, A. (2014) *Ten Steps Ahead: Community Health and Safety during the Construction Phase of the Mount Milligan Mine*.

<sup>221</sup> Shandro, J., Ostry, A., and Scoble, M. (2012) *Meeting the Health Needs of the Stuart Lake-Nak’al Bun Area: A Baseline Study of Community Health, Community Health and Social Services and Reported Effects from Local Mining Developments*. Available online at: <http://bchealthycommunities.ca/res/download.php?id=1818>

radiology, and ultrasound. Other important services include community health and palliative care.<sup>222</sup>,<sup>223</sup> Despite these facilities, only 60% of Gitga’at households located in Prince Rupert that participated in the 2023 CHWS reported that their local health services met their needs.

Depending on the nature of the appointment and how specialized the necessary services are, Indigenous people (including Gitga’at members) living in Prince Rupert are often required to fly to Vancouver. Excluding travel to and from the airport, this is a 1 hr 45 min journey from Prince Rupert.

Table 12 provided below details health services indicators that are specific to Gitga’at members residing /accessing health services in Prince Rupert. The data provided was collected during the 2023 Household CHWS.

*Table 12. Prince Rupert CHWS participant's perspectives on local health services (2023)<sup>224</sup>*

<b>Prince Rupert Health Services Indicators</b>	<b>Proportion of Households (%)</b>
Household access to services in Prince Rupert	<b>98</b>
Local Health Services Meet the Needs of the Household	<b>60</b>
≥ 1 Household Member Requires a Health Service that is Unavailable or Difficult to Access	<b>25</b>

A concern for the Gitga’at Nation is that the influx of workers, subcontractors, and their families has the potential to put additional strain on the already stretched medical and emergency services in the Prince Rupert and Kitimat LHAs.<sup>225,226</sup> While proponents are expected to provide onsite health services, in reality, many rely heavily on local pre-existing systems, putting additional pressure on local health infrastructure and services, in addition to driving up the cost of living and housing.<sup>227</sup> In the case of the Prince Rupert Regional hospital, the severe staffing shortages leave the emergency room vulnerable to being overwhelmed by a sudden influx of patients. With the current staffing presence in the ER, the protocol “Code Orange” (whereby the department is considered overwhelmed and new patients are diverted to other facilities) can be triggered by as few as 2 patients simultaneously arriving in critical condition. An increase in construction and industrial activity, shipping traffic, and road traffic in the region greatly increases the risk of an accident that could overwhelm Prince Rupert’s emergency room.<sup>228</sup>

<sup>222</sup> Northern Health. (n.d.). *Prince Rupert facility information*. Retrieved September 27, 2021, from <https://www.northernhealth.ca/our-communities/prince-rupert/facility-information>

<sup>223</sup> Northern Health. (n.d.). *Acropolis Manor*. Retrieved September 27, 2021, from <https://www.northernhealth.ca/locations/long-term-care/acropolis-manor>

<sup>224</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*.

<sup>225</sup> Gitga’at First Nation.(2021), *Gitga’at FN Social Determinant of Health Risk Report Prepared for the Kitimat LNG Terminal Project*. p.7

<sup>226</sup> City of Prince Rupert (2022). *Housing Needs Report*. Retrieved from: [https://princerupert.ca/sites/default/files/reports/221128\\_Final\\_PR\\_HNR.pdf](https://princerupert.ca/sites/default/files/reports/221128_Final_PR_HNR.pdf)

<sup>227</sup> City of Prince Rupert (2018). *Community Planning*. Retrieved from: [http://www.princerupert.ca/city\\_hall/community\\_planning/planning\\_major\\_projects/reports](http://www.princerupert.ca/city_hall/community_planning/planning_major_projects/reports)

<sup>228</sup> Key Informant Interview 6 (virtual interview, February 2024)



## Communicable Disease Emergency Response

The importance of communicable disease emergency response planning became clear across the globe with the onset of the COVID-19 pandemic in 2020. Rural and remote communities are particularly vulnerable to adverse impacts due to limited access to emergency services. A lack of emergency preparedness and response planning can increase the likelihood of exposure-related deaths, illness, and injury during a communicable disease emergency event. It can prompt post-traumatic stress disorders amongst community members and those who do respond. It can yield devastating effects on both the land and waterways that can impact First Nations for generations.<sup>229</sup>

Established in 2015, the Gitga'at Emergency Response Team provides a wide range of emergency services in Hartley Bay. Given the remote location of the village, the availability of emergency assistance from external agencies is limited. There are four key areas of service that are provided by the Emergency Response Team:

- Emergency Preparedness and Response
- Fire Protection
- Emergency Medical Response
- Royal Canadian Marine Search and Rescue<sup>230</sup>

The Gitga'at Emergency Response Team oversees all emergency preparedness and response initiatives. This includes natural and man-made disasters and emergencies that require coordination of personnel and resources. The department provides search and rescue services for the area surrounding Hartley Bay by operating the Royal Canadian Marine Search and Rescue (RCM SAR) Station. In collaboration with the Gitga'at Health Department, the Emergency Response Team plays a critical role in the implementation of the Gitga'at First Nation Communicable Disease Emergency Response Plan (2021).

With the onset of the COVID-19 pandemic, the department also became responsible for triaging with the Nation and Health Department to safeguard residents against an outbreak of disease in Hartley Bay.<sup>231</sup> This includes closing traffic coming in and out of the village (with the exception of supplies and emergency services) and implementing an application and internal review process for those wishing to visit the community.

Gitga'at also has a small volunteer fire department (VFD) with members who have received Red Cross First Responder and Advanced Marine First Air training. These members play a critical role in providing emergency health services in the community; they represent the first level of response during a medical emergency.

## Social Environment

Indigenous People in Canada are particularly vulnerable to changes in the natural environment resulting from industrial development projects and these changes may lead to adverse outcomes

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<sup>229</sup> Gitga'at First Nation (2021). *Community Health and Wellbeing Risk Report for the Cedar LNG Project*. p.25

<sup>230</sup> Gitga'at First Nation website. (2017). Retrieved from <http://gitgaatnation.ca/>

<sup>231</sup> Personal communications. (2020)

across all dimensions of health (i.e., physical, mental, emotional, and spiritual). Northwestern BC has undergone a development ‘boom’ over the past 20 years and based on the number of operations currently proposed and operating in the region (see Table 1), it should be considered a major industrial zone in Canada. Industrial projects may have both positive and negative effects to the surrounding communities. For example, industrial projects provide economic/employment opportunities/benefits for individuals living in the region. Conversely, industrial projects also attract foreign workers (both temporary and permanent) to support a project’s construction, operation and decommission. The influx of foreign workers, particularly, temporary workers, has been linked to various negative social effects, including increased alcohol and tobacco use, drug-related issues, crime, and violence as described below.<sup>232</sup>

### Alcohol, Tobacco, and Substance Use:

Alcohol and tobacco-related issues are more prevalent in the Prince Rupert Kitimat LHAs compared with the BC average (Table 13). Per capita, alcohol consumption in these areas exceeds the provincial average, and potential years of life lost due to alcohol and smoking-related deaths are significantly higher than the provincial norm. These indicators shed light on the availability and effectiveness of social programs and services aimed at enhancing individual health practices in these regions.<sup>233</sup>

*Table 13. Select indicators of substance use in Prince Rupert LHA, Kitimat LHA, and BC.<sup>234,235</sup>*

Indicator	Prince Rupert LHA	Kitimat LHA	BC
Per capita alcohol consumption (litres of absolute alcohol in 2019*)	12.63 <sup>a</sup>	12.63 <sup>a</sup>	9.36
Consumption of standard alcoholic drinks per capita (2016)	2.5/day	2.2/day	1.5/day
Potential years of life lost index (PYLLI related to alcohol (2011-2015)	2.87	1.52	1
Potential years of life lost index (PYLLI) related to smoking attributable deaths (2011-2015)	1.50	1.02	1

\*1 litre of absolute alcohol=58.65 standard drink

<sup>232</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority . - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health. p 24.*

<sup>233</sup> Gitga’at First Nation (2021) *Gitga’at Social Determinant of Health Risk Report prepared for the Kitimat LNG Terminal Project. p.18*

<sup>234</sup> Provincial Health Services Authority. 2019. *BC Community Health Profile – Prince Rupert*. Retrieved at: <http://communityhealth.phsa.ca/HealthProfiles/PdfGenerator/Prince%20Rupert>

<sup>235</sup> PHSA. 2019. *BC Community Health Profile – Kitimat*. Retrieved at: <http://communityhealth.phsa.ca/HealthProfiles/PdfGenerator/Kitimat>

<sup>A</sup> Value reported at Health Service Delivery Area (HSDA) level

Unintentional drug overdoses have become a critical public health concern in BC. The reduced access to safe supply by drug users, coupled with the availability of highly potent synthetic opioids like fentanyl, has contributed to a rise in overdose deaths. In October 2023, 208 BC residents died from unregulated drug use equating to 6.1 days per day. This rate represented a 7% increase in unregulated drug death when compared with September 2023 numbers (177).<sup>236</sup> In 2023, the Northern Health region, where the KL LNG Project is located, reported the highest illicit toxicity death rates in the province (61 deaths per 100,000 individuals), compared to the BC rate of 45 deaths per 100,000 individuals (see Table 14).<sup>237</sup>

Table 14. Illicit toxicity death rate reported by the Northern Health Authority and BC.<sup>238</sup>

Indicator	Northern Health Authority	BC
Illicit toxicity death rate (per 100,000 people) in 2023	61	45

#### Infectious Diseases and Crime:

The health of the KL LNG workforce and local communities are interconnected. Individual health behaviours can have significant public health consequences. Actions taken by the KL LNG workforce can directly affect public health issues, such as the spread of infectious diseases and increased crime rates. Factors like sexually transmitted infections (STIs), increased demand for illicit drugs, and sex trade services can all influence behaviour of the workforce.<sup>239</sup> These can affect local communities by the presence of workforce members within regional settlements, or through the employment of locals in project workforces, causing them to spend time on-site.

#### Crime and Violence:

Industrialization frequently leads to increased crime levels, including drug-and alcohol-related offenses, sexual offenses, and domestic violence. The influx of money and workers can foster gang and sex trade activities, increase access to illegal substances, and contribute to higher crime rates. A 2018 article developed by Aalhus and Lee reported that:

“increased crime levels, including drug-and alcohol-related offenses, sexual offenses, and domestic and ‘gang’ violence, have been linked to “boomtown” and other resource development contexts. Unlike population growth in other rural contexts, resource development activities often bring an in-migration of young men with high salaries and little stake in host communities. The influx of money and workforces into communities can

<sup>236</sup> BC Coroners Service (2023). *Unregulated Drug Deaths – 2023 Summary*. Retrieved from: <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports>

<sup>237</sup> BC Coroners Service (2023). *Unregulated Drug Deaths – 2023 Summary*. Retrieved from: <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports->

<sup>238</sup> BC Coroners Service (2023). *Unregulated Drug Deaths – 2023 Summary*. Retrieved from: <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports>

<sup>239</sup> Gitga’at First Nation (2021) *Gitga’at Social Determinant of Health Risk Report prepared for the Kitimat LNG Terminal Project*. p.8

influence gang and sex trade activities, and can increase access to illegal substances within communities. Increasing crime levels can also be fuelled by the increased consumption of alcohol and drugs, the social isolation of camp environments, “hyper-masculine” camp cultures, and the disconnection of workers from local communities.”<sup>240</sup>

The effects of industrialization and extraction industries in BC are also directly linked to violence against women.<sup>241,242</sup> Indigenous women and children are disproportionately vulnerable to the adverse effects of the influx of industrial workers.<sup>243</sup> In general, statistics indicate that Indigenous women consistently experience higher rates and more severe forms of physical assault and robbery than other groups in Canada.<sup>244,245</sup>

#### Human trafficking, Sexual Violence, and Sex Trade Work:

In addition, sexual violence in all forms presents a threat to community health and wellness, and is similarly linked to industrialization processes.<sup>246,247</sup> Indigenous women and youth are sexually assaulted three times more often than their non-Indigenous counterparts,<sup>248</sup> and most of the women and children trafficked in Canada are Indigenous.<sup>249,250</sup> According to a study conducted by Amnesty International in 2016, reasons for the high prevalence of Indigenous women and children in the sex trade are complicated and varied; however, underlying factors such as, poverty, past history of abuse, dysfunctional family systems, and low self-esteem have been shown to increase the likelihood of women and youth engaging in sex trade work. As an illegal and unregulated activity, sex

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<sup>240</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority.* - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health. p 24.

<sup>241</sup> CBC (2020). *Influx of 4,500 workers raises fear of violence against women in B.C.'s northwest.* Retrieved from: <https://www.cbc.ca/news/canada/british-columbia/violence-against-women-bc-1.5486095>

<sup>242</sup> Globe and Mail (2014). *Study shows link between B.C. extraction industries, domestic abuse.* Retrieved from: <https://www.theglobeandmail.com/news/british-columbia/mining-forestry-tied-to-domestic-violence/article19735561/>

<sup>243</sup> Stockwell, A. M. (2015). *Capturing vulnerability: towards a method for assessing, mitigating, and monitoring gendered violence in mining communities in British Columbia* (T). University of British Columbia. Retrieved from: <https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/24/items/1.0223120>

<sup>244</sup> Boyce, (2014) *“Victimization of Aboriginal People in Canada*

<sup>245</sup> MMIWG (2019). *Reclaiming Power and Place. The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls. V.1* Privy Council Office.

<sup>246</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority.* - (Version 1.0.. ed.). Prince George, B.C.]: Northern Health. p 24.

<sup>247</sup> Shandro, J., Jokinen, L., Kerr, K., Sam, A.M., Scoble, M., Ostry, A. (2014) *Ten Steps Ahead: Community Health and Safety during the Construction Phase of the Mount Milligan Mine.*

<sup>248</sup> Conroy S. and Cotter, A. (2014). *Self-reported Sexual Assault in Canada*

<sup>249</sup> Government of Canada (2019). *Public Safety Canada, National Action Plan to Combat Human Trafficking.* Retrieved from: <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/2019-ntnl-strtg-hmnn-trffc/index-en.aspx>

<sup>250</sup> Buller, M. et al. (2019). *Reclaiming Power and Place. The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls. V.1* Privy Council Office.

trade work poses serious risks to human health, such as exposure to violence, HIV/AIDS, unplanned pregnancy, substance use, and suicide.<sup>251</sup>

### Employment Opportunities:

The workforce required to construct, operate, and dismantle the facility could in theory provide employment opportunities for Gitga'at members in the region. However, the KL LNG application states that *"given the estimated size of the Project's workforce, measurable changes in employment equity across the Employment and Economy LAA are not expected."*<sup>252</sup>

While industrial development projects can provide opportunities for stable and well-paying employment opportunities within local communities, these benefits are often skewed toward men, who make up the majority of the workforce (sometimes exceeding 80%).<sup>253</sup> The KL LNG application states that *"Given existing labour force characteristics it is likely that a larger percentage of non-Indigenous men will be employed on the Project than other subpopulations."*<sup>254</sup> As a result, Indigenous female workers in particular are often marginalized, and face a plethora of challenges and barriers when engaging in the extractive industry resulting in numerous negative determinants of health outcomes.

## **Natural Environment**

The health of the natural environment is a crucial determinant of Gitga'at members' health and wellbeing. Gitga'at culture is intimately connected to the health of the ecosystem in their territory and TUOS sites, and their ability to interact with them according to their culture. Previous industrial activity in and around the Gitga'at Territory and TUOS sites have adversely affected the natural environment, and created barriers to the social determinants of health for Gitga'at First Nation. These adverse effects have been experienced through pollution, marine safety, and non-Indigenous commercial and recreational resource harvesting.

### Pollution

Environmental pollution from past projects has contaminated the physical environment, blocking or alienating Gitga'at members from traditional harvesting sites. This effects not only their ability to live according to their cultural traditions and values, but threatens food security as well, given the large percentage of traditional resources (especially marine resources) that feature in Gitga'at diets (Table 3). Past industrial spills have affected large areas of the territory and damaged or destroyed culturally important harvesting areas.<sup>255</sup> Current and proposed projects like KL LNG have the potential to interact cumulatively with this environmental pollution from previous projects, amounting to drastic changes in the natural environment. KL LNG's own application for the facility

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<sup>251</sup> Amnesty International (2016). *Out of Sight, Out of Mind: Gender, Indigenous Rights, and Energy Development in Northeast British Columbia, Canada* (London, UK: Amnesty International)

<sup>252</sup> Ksi Lisims LNG, (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-62

<sup>253</sup> Canadian Broadcast Corporation (CBC). (2020). *Influx of 4,500 workers raises fears of violence against women in BC's northwest*. Retrieved from: <https://www.cbc.ca/news/canada/british-columbia/violence-against-women-bc-1.5486095>

<sup>254</sup> Ksi Lisims LNG, (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-62

<sup>255</sup> Environmental Assessment Office (2022), *Assessment Report for Cedar LNG (Project)*. p.580

states that the likelihood of an onshore or offshore spill of hazardous materials or LNG is 'possible'.<sup>256</sup> The application classifies a spill of this nature as having only 'moderate' consequences to 'Marine Resources', and no consequences at all for 'Community Health and Wellness'.<sup>257,258</sup> This classification fails to recognize the severity of a pollution event for a community so uniquely reliant on marine resources for food security and cultural fulfilment.<sup>259</sup>

Similarly, Gitga'at First Nation has reported that pollution from urban and industrial development have ruined many areas for harvesting and habitation on Kaien Island, Ridley Island and Port Edward.<sup>260</sup> With the construction of additional LNG facilities imminent, alongside large-scale expansions of the Port of Prince Rupert,<sup>261</sup> these industrial areas considered unfit for harvesting activities will grow in size and number.

This gradual degradation of the health of Gitga'at Territory presents potential effects on the health of the Gitga'ata through emotional stress, declining mental health, loss of cultural identity and reduced access to spiritual, cultural and social resources in their territory and by compounding existing barriers to Gitga'at culture, Indigenous rights, and food security.

Industrial activity also poses threats to the ecosystem outside of resource harvesting activities. Past studies have indicated the adverse effects of industrial projects to air quality and underwater acoustic levels in the region,<sup>262</sup> as well as diminishing the overall experience of being in and travelling through this remote and naturally beautiful part of BC.

### Marine Safety

The increase in shipping traffic that past and current projects require(d) poses safety risks for both Gitga'at members travelling through the region, and for wildlife. For Gitga'at members, the remoteness of the region and lack of transport infrastructure (especially for those living in Hartley Bay) means that boating is one of the primary ways of travelling from place to place. At present, Gitga'at members have already experienced issues in transportation due to the hazards posed by large shipping traffic in their marine environment.

An additional concern for Gitga'at members is the increase in non-indigenous recreational/commercial recreational activities (such as fishing) that is associated with industrialization in the region. For example, the population increase from the construction and operation of LNG facilities contributes to the number of recreational fishers who use Gitga'at's

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<sup>256</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Table 9.4-1

<sup>257</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Table 9.4-1

<sup>258</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Table 9.6-1

<sup>259</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*.

<sup>260</sup> Inglis Consulting, with Gitga'at First Nation Knowledge Holders (2022). *Final Report: Gitga'at FN TUOS for the Ksi Lisims LNG Project*. p.60

<sup>261</sup> Prince Rupert Port Authority (2023). *2022 Annual Report from the Board of Directors* Retrieved from: <https://2022.rupertport.com/>

<sup>262</sup> Environmental Assessment Office (2022), *Assessment Report for Cedar LNG (Project)*. 5.1-5.2

territory and TUOS sites to catch resources.<sup>263,264</sup> In addition to detracting from the experience of harvesting activities for Gitga’at members, these activities require Gitga’at First Nation to dedicate increased time and resources to managing and monitoring the landscape to ensure its proper usage. Survey data collected from Gitga’at households in 2023 identified that 15% of members from Hartley Bay households had had a negative/confrontational experience with non-Indigenous tourists or recreational users in the last year.<sup>265</sup>

## Potential Project Effects and Proposed Mitigations

### Potential Project Effects

In section 17.5.3 the project application, the KL LNG identified potential risks to “Gitga’at First Nation’s Social and Economic Conditions, Health and Well-being” for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Wildlife and Wildlife Habitat (Section 7.07)
- Employment and Economy (Section 7.10)
- Marine Use (Section 7.11)
- Community Health and Well-being (Section 7.13)
- Human Health (Section 7.14)

The following list provides a description of potential effects the KL LNG project may have on Gitga’at First Nation’s Social and Economic Conditions and Health and Well-being over the lifespan of the Project (construction, operations, and decommissioning). The effects described are based on the residual effects associated with the aforementioned VCs detailed in the KL LNG application.

- The influx of a KL LNG workforce (and subcontractors) to the region will put greater pressure on the availability and cost of safe and affordable housing in Northwestern BC. Gitga’at members who live outside of Hartley Bay may be unequally affected by strains placed on housing markets. This regional strain may also exacerbate housing issues in Hartley Bay (e.g., if more members want to move to Hartley Bay due to the high cost of living in the region). This has the potential to increase the likelihood of Gitga’at members living in substandard conditions and increase the risk of homelessness for Gitga’at community members.
- Effects on the health and wellbeing of the Gitga’at community through substandard living conditions, and the associated adverse conditions for mental health.
- Effects to regional businesses as a result of increased competition for labour, and upward pressure on wages through comparatively higher project-related wages.
- Increase of the cost of living through changes to the population, demand, and economic conditions of settlement areas. Upward pressure on wages can result in businesses increasing prices of goods to cover increased operating expenses.

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<sup>263</sup> Cedar LNG Partners LP. (2022). *Section 12 Gitga’at First Nation. Environmental Assessment Application*. Section 12.2.2, p.24-25

<sup>264</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.21

<sup>265</sup> Gitga’at First Nation (2023). *Community Health and Wellness Study Technical Report*. p.21

- Effects on employment opportunities, and inequitable economic conditions for Gitga'at members through changes to the regional economy, job market competition, and cost of living.
- Effects on the availability of healthcare and emergency services as a result of the increase in local population from the influx of project workforce (in some cases and their families) during construction, operation, and decommissioning phases. Increases in population will place additional strain on a healthcare system that has existing problems with meeting the needs of the Gitga'at community members.
- Potential effects to human health and wellbeing through exposure to pollution as a result of industrial activity (air quality, noise levels, odours, aesthetic conditions), and subsequent mental health effects of lack diminished experience of being in and interacting with Gitga'at Territory and TUOS sites.
- Effects of risk behaviours associated with industrialization and the influx of migrant workers. The increase in workers with little attachment to the region and disposable income is linked to increased prevalence in the region for drug, alcohol, and tobacco consumption, violent behaviour and crime, sexual harassment and sexual violence, increased safety issues for women, communicable diseases (e.g., STIs), and sex trade work. These risk behaviours effect the Gitga'at community's sense of safety, community health, and social cohesion.
- Increased exposure to communicable disease either through facility staff visiting areas where Gitga'at members live, or through Gitga'at members being present on site through inclusion in the project workforce.
- Effects to the mental health and community cohesion of Gitga'at First Nation members through the erosion of culture, identity, and language through industrial effects of the natural, social, and economic environments.
- Increased potential for environmental degradation through industrial activity, pollution, and potential for accidents/malfunctions resulting in loss of containment of hazardous contaminants.
- Risk of vessel collision through increased levels of shipping traffic, limiting Gitga'at members' ability to travel through and access their territory and TUOS sites. This has the potential to effect Gitga'at community wellbeing by obstructing Gitga'at members' ability to live their culture, and share knowledge at culturally important sites.
- Loss of access/alienation from resource harvesting in Gitga'at Territory and TUOS sites (as a result of pollution, diminished sensory experience, loss of access from transit routes and collision/safety risks from shipping traffic, and increases in recreational fishing and tourism) affects consumption of marine and terrestrial resources and associated cultural practices. These are connected to food security and connection to place, and effect Gitga'at First Nation's overall social and economic conditions, health, and well-being. These effects may lead to the subsequent loss of Gitga'at First Nation's ability to live their culture, share knowledge at important sites, and preserve their cultural history effects the identity, mental health, and effect the social cohesion of the community.

## **Mitigation Measures**

### **Mitigations in the KL LNG Project Application**



With regard to project effects on Gitga’at First Nation social and economic conditions and health and well-being, the KL LNG project application references mitigation chapters for the following VCs:

- Air Quality (Section 7.02)
- Acoustic (Section 7.03)
- Wildlife and Wildlife Habitat (Section 7.07)
- Employment and Economy (Section 7.10)
- Marine Use (Section 7.11)
- Community Health and Well-being (Section 7.13)
- Human Health (Section 7.14)

The mitigations suggested for each VC apply to the Project as a whole, and not specific to Gitga’at First Nation. Individual mitigation measures for each of these VCs can be found in the Project application (Table 1.A, Appendix A - Summary of Mitigation Measures).

KL LNG specifically notes that its primary mitigation strategy for addressing factors relating to the influx of personnel into the region (and subsequent effects on housing availability, strain on infrastructure, social issues, and communicable disease) is through the provision of project floatel (a fully self-contained modular floating camp), and permanent on-site accommodations for workers.<sup>266</sup> The floatel will be located near the facility in the Portland Canal, and will provide self-contained electrical power, communications, potable water supply, waste containment systems, waste removal system, and waste water disposal system.

These accommodations will house all construction workers (peaking at approximately 800 people) and operation personnel (around 150-200 people) for the entirety of the construction and operation phases, and provide additional space for temporary guests.<sup>267</sup> The application states:

“The remote location of the Site, and the provision of services, including catering and recreation, at the floatel will limit the ability and desire for non-local workers to spend time in LAA communities, and this will limit interactions between non-local workers and community members, including women, visible minorities, and members of Indigenous Nations.”<sup>268</sup>

While the project is expected to increase demand on emergency services, the application includes the provision of medical and first aid services to personnel at site, including first-aid/medical staff and a medical clinic, and a procedure for medical emergencies requiring evacuation. Two medical staff will be present on site at all times (a nurse practitioner and a paramedic).<sup>269</sup>

### Gitga’at First Nation’s Mitigations

*Table 15. Gitga’at’s Mitigations Indigenous Health and Wellbeing*

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<sup>266</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Section 7

<sup>267</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.12-60

<sup>268</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.12-69

<sup>269</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.13

Potential Effect	Mitigation	Timing	Duration	KPIs
<b>Employment and Economy</b>				
Potential for economic opportunities from the project to be minimised for local communities	Develop a <b>Local and Indigenous Employment and Procurement Plan</b> that includes Gitga'at-specific targets and procedures that promote opportunities for Gitga'at businesses and members. Key components and targets of the plan can include: Purchase 60% of goods and services from Northern BC; 50% of workforce hired from local communities; Minimum of 5% procurement from Indigenous enterprises (as recommended by CCAB), but in consideration of growing demand for Indigenous goods and services in the energy sector, this should be higher for the KL LNG Project	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist; % goods and services purchased from Northern BC per year; % of workforce hired from local communities per year # of Gitga'at members employed by the project (incl. contractors)
	Hiring of a Gitga'at Liaison to work with the project to ensure opportunities for Gitga'at members and businesses are maximized.	Pre-construction	Construction; Operations	TBD
	Internships and scholarships to Gitga'at members to attend post-secondary education fields related (but not limited) to health and safety, emergency preparedness and response, environmental science, engineering, LNG and energy development; Job training and apprenticeships for Gitga'at members, including on the job training programs for career development.	Pre-construction	Construction; Operations	# of Gitga'at members accessing opportunities; # of candidates accessing training; # of candidates securing a project job after training; \$ contributed to training initiatives
	KL LNG project must work with Gitga'at First Nation to identify what types of positions their members (living in PR, HB, and elsewhere) are interested in. This process should begin immediately, in order to ensure proper mechanisms are in place to connect Gitga'at members with meaningful employment	Pre-construction	Construction; Operations	# info sessions held; # of Gitga'at members accessing opportunities; # of Gitga'at members

Potential Effect	Mitigation	Timing	Duration	KPIs
	opportunities when they arise.			employed by the project (incl. contractors)
	Engage directly with Gitga'at to provide information sessions and/or community training and job fairs to inform community members about opportunities and actively recruit for programs and jobs. These sessions should be held in both HB and PR.	Pre-construction	Construction; Operations	# info sessions held;
	Over the lifespan of the project, KL LNG works to actively identify potential shortages of workers with specific skill requirements and training, and work with Gitga'at to increase opportunities for Indigenous and local community members to obtain training required for project participation.	Pre-construction	Construction; Operations	# of Gitga'at members accessing opportunities; # of Gitga'at members employed by the project (incl. contractors)
	Engage with local educational institutions to support the development or improvement of training and education that build skills that are in-demand for the project. This can include sponsoring tuition, expanding offerings, or developing and delivering relevant micro credentials	Pre-construction	Construction; Operations	# of candidates accessing training; # of candidates securing a project job after training
Potential for population groups (particularly women and Indigenous people) to be excluded from project related employment opportunities	Female specific initiatives to encourage young Gitga'at women to take part in these proposed offerings such as gender specific scholarships and allocated job positions, mentorship programs,	Pre-construction	Construction; Operations	# of candidates accessing training; # of candidates securing a project job after training; \$ contributed to training initiatives
	Engage local governments, Indigenous groups, and social services providers to identify populations that may have difficulty accessing opportunities, and how best to reach them.	Pre-construction	Construction; Operations	N/A
Potential for local hiring mechanisms to be short lived, and not provide long term employment opportunities	The establishment of a monitoring program by KL LNG to track training-related outcomes to assess whether these initiatives result in the hiring and retention of Gitga'at members. This should incorporate GBA Plus Follow-up programs to collect data on the success of Indigenous hiring and retention in	Pre-construction	Construction; Operations	TBD

Potential Effect	Mitigation	Timing	Duration	KPIs
	terms of gender equity. The KL LNG project should also report on specific data related to Gitga'at employment and contract awards.			
<b>Infrastructure and Services</b>				
Influxes of worker populations may cause increases in local housing/rental prices, and decrease housing availability in an area already experiencing a housing crisis	<p>Development of a worker accommodation plan.</p> <p>Conducting regular reassessments of the housing market in affected communities.</p> <p>Support (e.g., financial, resources, donations, etc.) for projects and initiatives that add to the permanent housing supply in affected communities, and improve housing availability, conditions and affordability for vulnerable groups. These may include recommendations included in Housing Needs Assessment reports for PR, TC and the North Coast Regional District.</p> <p>Support Gitga'at-specific housing initiatives in HB, allowing more community members to live in-community and have better access to opportunities.</p> <p>Partnership and regular communication with local and provincial housing authorities, and First Nations to better understand the local demands for housing.</p>	Pre-construction	Construction; Operations	TBD
	KL LNG must ensure that the flotel and permanent on-site accommodation is sufficient to house peak numbers of anticipated construction/operation staff, along with additional personnel (family, visitors, short term contractors) that may be associated with the site. It must therefore be capable of accommodating at least 800 people full-time during the construction phase, and 200 people full-time during the operation phase. Additional space will be required for visitors;	Pre-construction	Construction; Operations	# workers living in flotel; # of workers living off-site; Avg. rental prices;
	Provide appropriate accommodation for families of construction and operation staff, some of whom are likely to move near the site during its anticipated multi-decade lifespan. This may include building new housing in the project area.	Pre-construction	N/A	# of new housing units provided; # of working living off-site

Potential Effect	Mitigation	Timing	Duration	KPIs
	Provide financial support for planned Gitga'at led initiatives (i.e., Gitga'at Cultural Wellness Centre) which will include emergency short-term and transitional housing options for Gitga'at families.	Pre-construction	Construction; Operations	# of workers living off-site; Avg. rental prices; \$ contributed
<b>Human Health, Community Health and Wellness</b>				
Increased strain on the Gitga'at Nation's territorial stewardship through project related environmental degradation, and increased numbers of non-local recreational users of the land and waterways	Address community health, safety and security risks and impacts (IFC PS4) by making financial contributions to Gitga'at First Nation community health and monitoring initiatives. This will mitigate against the increased burden on environmental stewardship that the Gitga'at Nation will shoulder through the increased levels of traffic, pollution, recreational activities, and tourism occurring in their TUOS sites and traditional territory. The primary institution to dedicate funding to for this purpose is the Gitga'at Guardian program, which monitors the waterways and how people use them. Additional institutions for monitoring community and environmental health include: <ul style="list-style-type: none"> <li>We Monitor by Living Here (WMBLH), that focuses on gathering traditional resource use, climate, and sharing networks related data to observe changes in trends over time;</li> <li>Gitga'at's new community health and well-being monitoring program includes Gitga'at members that live in HB and elsewhere (including PR region)</li> </ul>	Pre-construction	Construction; Operations	\$ Fund contributed; TBD
Increase in road traffic from project related transport and activity increased the risk of collision, loss of containment, and road wear	Develop a robust traffic management plan to maintain traffic safety in communities impacted by project activities and avoid risks and impacts related to increased traffic patterns, particularly during the construction phase a project. Project policies may include: <ul style="list-style-type: none"> <li>Establishing policies and procedures that emphasize safety practices among drivers (e.g., licensing, speed controls on large project vehicles, remote monitoring of driving, regular maintenance);</li> <li>Limiting trip duration and routes to reduce fatigue and avoid dangerous routes for the</li> </ul>	Start of construction	Construction; Operations	# of traffic-related near misses; # of traffic-related lost time incidents; # workers accessing ride share programs

Potential Effect	Mitigation	Timing	Duration	KPIs
	<p>workforce;</p> <ul style="list-style-type: none"> <li>Providing affected communities with resources to promote safe roadway use (e.g., awareness raising and educational campaigns on risks and safe driving practices and universally-accessible updates on road conditions);</li> </ul> <p>Encouraging ride sharing among project staff, and by providing bus transportation if large numbers of workers are anticipated to be travelling to the site via this route</p>			
	<p>Support emergency preparedness and response in communities by participating in and providing financial support for cross-agency tabletop emergency response drills. These drills are being piloted by Northern Health. They are designed to bring regional emergency response agencies, health providers, and industrial partners together to simulate emergency scenarios. The goal is to improve emergency preparedness and response practice by understanding roles and responsibilities, coordinating responses, streamlining communications, and making necessary adjustments to emergency response plans.</p>	Pre-construction	Construction; Operations	# of tabletop exercises; \$ contributed to tabletop exercises
Influx of project workers will increase the number of people accessing CCFN TUOS sites.	<p>KL LNG Project employees and subcontractors undergo mandatory cultural sensitivity training that is specific to the region and Gitga'at Nation. This training should include focus on the impacts of colonization on Indigenous People in BC, Canada's Truth and Reconciliation process, and an introduction to the cultures present in the project's area of influence. In addition, sensitivity training must promote awareness of those most vulnerable to the impacts of the project. This includes, but is not limited to, an overview of vulnerability of Aboriginal women and children in BC (e.g., Highway of Tears), female project staff and community members, and gender-based violence prevention. "Sanyas" is an example of a recommended cultural safety training provider.</p>	Start of construction	Construction; Operations	# of Codes of Conduct signed; # of disciplinary actions taken due to Code of Conduct violations;

Potential Effect	Mitigation	Timing	Duration	KPIs
	<ul style="list-style-type: none"> <li>Establish a workplace Code of Conduct that requires all employees to: uphold cultural and environmental values in the project area and surrounding communities. This includes being aware of restricted and/or culturally sensitive areas and their role in protecting them while both on and off duty.</li> </ul>			
Influx of project workers to the region is likely to increase strain on already overburdened healthcare system, impacting the access of the local population to these services	The Project's HMSP (Health and Medical Services Plan) will stipulate the following: KL LNG project and accompanying flotel will include a first aid station and primary health services (two medical personnel and/or virtual access to e-health) that are fully prepared to attend to the health and wellness of their own workforce at the project site. The project health care facilities should be able to address issues of levels 4 and 5 on the Canadian Triage and Acuity Scale (CTAS) within their own resourcing.	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist; Further KPIs embedded in HMSP
	Provide all employees with access to an Employee Assistance Program (EAP) that includes supports for: mental health, substance use and recovery, intimate partner violence, return to work programs, and child and family supports. Consider providing contractors access to the EAP for the duration of their contract.	Start of construction	Construction; Operations	TBD
	Provide on or off-site daycare services for project employees, in order to reduce the demand for local child care services that are already strained in PR region.	Pre-construction	Construction; Operations	# of daycare spaces provided;
	Ongoing monitoring review of the adequacy of medical emergency services, including those requiring medical evacuation to ensure the facility is sufficiently capable of evacuating its own personnel within their own resourcing in the event of a medical emergency	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist.
Influx of project workers to the region is likely to increase strain on already overburdened healthcare	Ensure that out-of-province and out-of-country employees and/or contractors have proper health insurance to cover medically necessary visits, in order to reduce the administrative burden on the Northern Health Authority facilities.	Start of construction	Construction; Operations	TBD
	Provide financial contribution to purchase and implement Wellness	Start of construction	Construction; Operations	\$ funds contributed;

Potential Effect	Mitigation	Timing	Duration	KPIs
system, impacting the access of the local population to these services	Vending Machines on site and at flotel. These machines have been piloted by Northern Health and supply harm reduction kits, first aid materials, sexual health supplies, and women's health supplies.			# vending machines installed;
	Include a clause for ongoing monitoring of on-site medical facilities and staffing levels as part of the HMSP. This should include a commitment to increase the number of medical staff onsite and/or the services available, should it become evident that off-site hospital/emergency services are frequently necessary.	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist.
	Consider provision of housing specifically for health care workers (nurse practitioners, doctors, etc.)	Pre-construction	Construction; Operations	TBD
	Provide financial support (e.g., establishment on Nation managed trust) to support Gitga'at members to access health services not covered by FNHA or the FNIHB program	Pre-construction	Construction; Operations	TBD
	Lobby for enhanced health and emergency services in the PR region. Development in the Northwest region of BC has grown substantially over the past decade, with multiple projects currently underway such as coastal gas link and LNG Canada. Protecting community health and safety is dependent on the availability/capacity of health care facilities, emergency services, and infrastructure. As an additional Proponent looking to establish operations in the already strained region, it is recommended that the KL LNG Project engage in lobbying to the BC Government to enhance current health care and emergency services (e.g., fire, police, BC Emergency Health Services). This includes providing additional resources to improve access and availability of these critical services when needed by both development projects and communities.	Pre-construction	As needed	TBD
Increased risk of wildfires from increased highway traffic and project activity in the area	Implement measures to reduce risk of wildfires during transit along the highway during periods of high wildfire risk (such as a non-smoking policy for staff members in transit);	Start of construction	As needed	TBD



Potential Effect	Mitigation	Timing	Duration	KPIs
Increased risk of opioid use and overdose associated with industrial development	Require KL LNG to commit to align their facility policies with <i>'Northern Health's Guidelines Recommendations for Industrial Camps: Health and Safety During the Opioid Overdose Emergency'</i>	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist.
	Provide Mental Health First Aid training to employees	Start of construction	Construction; Operations	# of employees with valid training on site per year
	Provide financial and/or in-kind support for toxic drug awareness programs lead by Gitga'at First Nation's Health Department.	Pre-construction	Construction; Operations	TBD
	Provide mandatory in-house training regarding drug and alcohol use to all employees (full-time and subcontractors);	Start of construction	Construction; Operations	TBD
	Implement a zero tolerance policy for alcohol and drug use in the workplace; and mandatory pre-employment drug testing for personnel in high-risk roles	Start of construction	Construction; Operations	# of cases of policy violation
Increased risk of gender-based violence and human trafficking in the region (especially in urban areas like PR) associated with industrial development. These risks are disproportionately high for Indigenous people, especially women.	<p>Require KL LNG to follow guidance, mitigation measures, and monitoring programs to prevent sexual violence and human trafficking as a result of project development, set out in Good Practice Guidance for gender based violence (GBV) commissioned by the IFC, EBRD and CDC Group. Measures include:</p> <ul style="list-style-type: none"> <li>Contractual requirements for GBV to be integrated into company or contractors' systems, plans and procedures;</li> <li>Training for all staff and contractors on GBV. Training may teach staff and contractors about the types of GBV, local legislation dealing with GBV, company grievance systems and policies, how to recognize and respond to incidents of GBV, and how to handle disclosures of GBV from victims;</li> <li>Worker grievance redress mechanism (GRM) with specific GBV provisions;</li> <li>Community GRM that is well-disseminated, accessible, and trusted, and a system to track the</li> </ul>	Pre-construction	Construction; Operations	Relevant Management Plans and Policies reviewed by independent 3rd party specialist.

Potential Effect	Mitigation	Timing	Duration	KPIs
	resolution of queries and complaints; <ul style="list-style-type: none"> <li>• IFC/EBRD worker accommodation standards, including lockable toilets, adequate lighting in the evening for workers walking throughout accommodation, and safe access arrangement to site and accommodation;</li> <li>• Supporting and developing GBV programs for the workforce (targeting domestic abuse, discrimination, and social stigmatization, as well as making physical spaces more secure for female employees);</li> <li>• Fund safety planning resources and community organizations for women and families in affected communities.</li> </ul>			
Increased risk of gender-based violence and human trafficking in the region (especially in urban areas like PR) associated with industrial development. These risks are disproportionately high for Indigenous people, especially women.	Develop and implement workplace violence, harassment, bullying and discrimination processes that promote a safe and respectful environment, including consideration of gender-based violence, Indigenous women and girls, and calls to justice within the Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls;	Implemented at start of construction;	Construction; Operations	TBD
	Align to the Northern Society for Domestic Peace’s standards from the Camp Assault Mitigation Project	Implemented pre-construction	Construction; Operations	TBD
	Complete criminal record checks on all new hires (particular attention that applicants who have history of violence against women, are properly vetted). This includes subcontractors.	Implemented pre-construction	Construction; Operations	# criminal record checks completed; # of new hires rejected due to criminal record
	Contractual requirements for GBV to be integrated into company or contractors’ systems, plans and procedures	Implemented at start of construction;	Construction; Operations	TBD
Increased risk of communicable disease transmission associated with industrial development	The project’s HMSP (Health and Medical Services Plan) must include a plan for managing communicable disease risks. Gitga’at members are likely to be included to some degree in the workforce for the project and will be on-site, and facility staff are likely to	Implemented at start of construction;	Construction; Operations	TBD

Potential Effect	Mitigation	Timing	Duration	KPIs
	<p>visit areas where Gitga’at members live (e.g., PR). HMSP should address communicable disease transmission between on site personnel, as well as mitigate against the spread of communicable disease from site to off-site settlements in the region. Some recommended measures to be included in the HMSP include:</p> <ul style="list-style-type: none"> <li>• Ensure free availability of STI prevention materials and supplies on site</li> <li>• Provide rapid STI testing through onsite primary health services</li> <li>• Ensure free availability of communicable disease PPE (masks, gloves, hand sanitizer, etc.) on site</li> <li>• Establish designated quarantine facilities at the flotel in the event of a communicable disease outbreak</li> </ul>			
	On-site medical providers will share critical health data with Northern Health, Gitga’at Health Department, and other agencies in order to monitor the incidence of communicable diseases during the project lifespan.	Implemented at start of construction;	Periodically during Construction; Operations	TBD
Increased risks of cultural insensitivity/violence towards Indigenous people (especially women) associated with industrial development	<p>KL LNG Project employees and subcontractors undergo mandatory cultural sensitivity training that is specific to the region and Gitga’at Nation. This training should include focus on the impacts of colonization on Indigenous People in BC, Canada’s Truth and Reconciliation process, and an introduction to the cultures present in the project’s area of influence. In addition, sensitivity training must promote awareness of those most vulnerable to the impacts of the project. This includes, but is not limited to, an overview of vulnerability of Aboriginal women and children in BC (e.g., Highway of Tears), female project staff and community members, and gender-based violence prevention. "Sanyas" is an example of a recommended cultural safety training provider.</p>	Implemented pre-construction	Construction; Operations	Cultural Awareness Training developed; # of attendees per year
	KL LNG should support Gitga’at to develop and deliver their own cultural awareness and training as part of site induction processes. This includes providing financial support for content	Implemented pre-construction	Construction; Operations	Cultural Awareness Training developed; # of

Potential Effect	Mitigation	Timing	Duration	KPIs
	development and delivery via a website or video.			attendees per year
	Ensuring that hires from the Gitga'at community includes a female Gitga'at Indigenous liaison officer on site and in any worker accommodations to support fellow Indigenous female workers with their concerns, submission of grievances, and complaints to ensure they are handled in a respectful and systematic manner.	Implemented pre-construction	Construction; Operations	# of Gitga'at Indigenous Liaisons hired; # of cases handled per year

### Gitga'at's Analysis and Conclusions

After consideration of the Potential Effects and Mitigation Measures, described above, Gitga'at First Nation identified the following residual effects:

#### Housing, health, and infrastructure:

- Increased cost of housing and cost of living in the region from influx of workers and wage inflation in the region (notably in Prince Rupert);
- Negative effects on human health through exposure to pollution, communicable disease, increased levels of drug and alcohol use in the region, and greater safety risks undertaking marine travel/activities from increased shipping traffic.
- Increased strain on infrastructure and services in the region: reduced availability of housing, increased strain on medical and emergency services;
- Increased risk of fatality/injury from road traffic and boating incidents.

#### Mental health:

- Negative effects on mental health of Gitga'at First Nation members through the erosion of culture, identity, and language through industrial effects of the natural, social, and economic environments.

#### Social environments and risk behaviours:

- Negative effects on the social determinants of health, and subsequent negative effects on community health and wellbeing;
- Increased safety risks in Gitga'at communities (particularly to female members) from the influx of workers, and associated increase in risks of violent behaviour, abuse, sexual violence, and drug and alcohol use;

#### Economic inequalities:

- Inequality of economic/employment opportunities for Gitga'at members (especially for female members) as a result of the KL LNG project;

#### Cultural erosion:

- Erosion of Gitga'at cultural way of life through loss of access to traditional sites, cultural activities, traditional knowledge, and experience.

The mitigation measures listed by the proponent for Indigenous health and wellbeing do not specifically address the needs of the Gitga'at community members, but apply to the Project as a whole. Physical, mental, and social determinants of health within a community are highly individual, and so it is not effective or appropriate to address the health and wellbeing concerns of all Indigenous communities simultaneously in this manner.

Suggested measures that are relevant to the concerns of Gitga'at First Nation are frequently vague or incomplete. For example, the use of a floatel and permanent on-site housing for all staff during construction and operation phases of the project. This measure has the potential to be very successful, as it would address/mitigate a number of identified negative effects associated with the large influx of foreign workers into the region such as those related housing availability/cost and adverse social environments. However, aspects of this mitigation measure are incomplete. KL LNG needs to provide a robust plan for the housing of the families of workers, some of whom are likely to move near the site (most likely to Prince Rupert) for the multi decade lifespan of the Project. The floatel/on-site housing measures only accommodate for the staff and will not address the effects of families who move to be closer to them. This plan also does not accommodate for the high likelihood that workers will spend free time off-site.

Similarly, a more complete plan needs to be set out for the restriction of non-local employees from recreational marine activities. While this serves the needs of Gitga'at First Nation in the short term, it should also be recognized that limiting risk behaviours of the workforce will be dependent on promoting positive mental and physical health for workers on site, which will require access to healthy recreational activities. More detailed strategies need to be constructed about how to permit workers to engage in recreational activities without effecting the lifestyle, Aboriginal rights, or experience of the Gitga'at community in their territory and TUOS sites.

As with Indigenous governance, self-determination, and territorial Stewardship, economic and employment opportunities are a central aspect of Gitga'at health and wellbeing in relation to the KL LNG Project. Again, the lack of mitigations or alternative action plans to address the predicted lack of Indigenous hiring<sup>270</sup> associated with the Project is unacceptable, and demonstrates little commitment to establishing equitable economic conditions in the region.

Indigenous health and wellbeing covers a wide range of different factors and potential problems, and KL LNG's summary of these issues and mitigation measures do not adequately meet the breadth or complexity of the effects to Gitga'at First Nation. In addition to these absences, there is a limited emphasis on establishing effective Gitga'at specific GRM and monitoring programs to track the various effects and their seriousness over the life span of the Project. Considering the unprecedented scale of the industrial developments that is currently happening in Northern BC today, engagement and monitoring programs are essential to fully understanding the nature of these uncertain risks.

Table 16 below provides a summary of residual effects for Indigenous governance, self-determination and territorial stewardship that reflect the views of Gitga'at First Nation. Specifically,

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<sup>270</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17.62

this table provides information pertaining to the criteria, assessment rating and rationale for determining the severity of each outlined residual effect.

*Table 16 Summary of residual effects for Indigenous health and well-being*

Criteria	Assessment Rating	Rationale
Context	Low resilience	<p>The majority of the negative residual effects anticipated for Gitga’at health and wellbeing are outside of Gitga’at First Nation’s control (e.g., increased cost of living, reduced access to services, increased crime and risk behaviours in the community, inequitable economic opportunities). Historically, the effects from development and resource extraction have had disproportionate adverse effects on the most vulnerable members of Indigenous Nations in the region, including: women, girls, low-income families, and LGBTQ2S+ people. Without specific mitigations to protect vulnerable groups, their resilience to negative residual effects is low.</p>
Magnitude	Moderate/High	<p><b>Housing, health, and infrastructure:</b> The KL LNG project will have moderate/high magnitude residual effects to Gitga’at housing and infrastructure. Higher demand for housing and public infrastructure will impact the ability of Gitga’at members to access these goods and services. Residual effects will negatively affect the physical health of Gitga’at community members through exposure to pollution, communicable diseases, increased levels of drug and alcohol use in the region, and greater safety risks undertaking marine travel/activities from increased shipping traffic.</p> <p><b>Mental health:</b> Residual effects will negatively affect the mental health of Gitga’at community members through the reduced ability for them to live their culture, identity, and language; due to industrial effects on the natural, social, and economic environments.</p> <p><b>Social environments and risk behaviours:</b> The KL LNG project will have moderate magnitude residual effects to the social environment and community safety. Without adequate social services (health, mental health, addictions), the anticipated project-related residual effects are associated with increased levels of crime, drug and alcohol consumption/availability, and sexual violence.</p>

Criteria	Assessment Rating	Rationale
		<p><b>Economic inequalities:</b> A low magnitude of positive effects will be experienced through increase in local employment opportunities. However, this is expected to be outweighed by a moderate to high magnitude of negative effects, including: inequitable ability for subpopulations such as women and LGBTQ2S+ to participate in employment opportunities; loss opportunity to live in-community and engage in cultural activities due to the requirement to relocate for employment opportunities; of and the potential for increased cost of living and housing, and negative effects to local businesses.</p> <p><b>Cultural erosion:</b> The KL LNG project will have high residual negative effects on Gitga’at culture and Gitga’at members’ ability to lead traditional lifestyles. Cultural erosion is anticipated as a result of alienation from and reduced access to culturally important sites and traditional knowledge, disturbances in food security and traditional harvesting activities, and the altered experience of the region as it becomes increasingly industrialized.</p>
Extent	Beyond regional	<p>The KL LNG project will have residual effects throughout the region to Gitga’at health and wellbeing, such as reduced access to housing, health and infrastructure, increased crime, and increased cost of living throughout the region.</p> <p>In addition, the overall erosion of Gitga’at culture will affect the health and wellbeing of Gitga’at members. While this effect will primarily be experienced by members living in the project area, members living in other regions will also lose opportunities to live their culture when they travel home for events, harvesting, learning, and knowledge exchange.</p>
Duration	Long-term	<p>The residual effects of the KL LNG project on Gitga’at health and wellbeing will last for lifespan (approximately 35 years) at a minimum. The time frame of the Project is longer than a single generation (i.e., 25 years), and therefore the residual effects to Gitga’at First Nation on</p>

Criteria	Assessment Rating	Rationale
		<p>health and wellbeing are considered long-term.</p> <p>In addition, some residual effects, such as the cost of housing and living, economic conditions, erosion of Gitga’at culture, have the potential to permanently change the region.</p>
Frequency	Continuous	<p>Project activities during construction and operations will produce the aforementioned residual effects continuously throughout the KL LNG project. While effects on specific physical locations may change as the project moves from construction to operations, and effects related to worker influx and the demand for housing and infrastructure may lessen during operations, Gitga’at members will experience some residual impacts to health and well-being during the life of the project. Loss of access to culturally important sites and traditional harvesting, increased marine traffic, and cultural cohesion will continue to be residual effects during project operations.</p>
Reversibility	Irreversible	<p>As the Project lifetime is longer than a single generation, the residual effects to Gitga’at health and wellbeing are considered irreversible. Loss of access to living your culture will result in impacts to cultural continuity and the ability to share land and marine-based knowledge, oral histories, etc.</p> <p>Therefore, residual effects on Gitga’at culture are considered irreversible.</p>
Affected Populations	Disproportionate	<p>Historically, the health and traditional culture of Indigenous communities have been disproportionately affected by industrial development and resource extraction when compared with the general population.<sup>271</sup> This holds particularly true for Gitga’at First Nation due to their heavy reliance on marine travel and resources.</p> <p>In terms of economic opportunities and access to housing</p>

<sup>271</sup> Aalhus, M., Laura M. Lee Consulting, British Columbia. Northern Health Authority, & BC Centre for Disease Control. (2018). *The social determinants of health effects of resource extraction and development in rural and northern communities : A summary of effects and promising practices for assessment and monitoring / prepared by Melissa Aalhus; prepared for Northern Health and the Provincial Health Services Authority. - (Version 1.0.. ed.).* Prince George, B.C.]: Northern Health.



Criteria	Assessment Rating	Rationale
		and services, residual effects will be disproportionately experienced by the Gitga’at community members, especially subgroups (e.g., women, children, families, Indigenous women requiring specific health services, low-income families requiring housing, other vulnerable populations) who already experience challenges in this regard. These subgroups may be more adversely affected than other groups by the increased demand for and cost of access to such services.
Uncertainty	Moderate/High	<p>The residual negative effects from this Project are largely uncertain for Gitga’at health and wellbeing, due to the unpredictable nature of the scale of many effects (e.g., degree of cost of housing/living increase, frequency of worker related risk behaviours, severity of strain on medical infrastructure).</p> <p>Uncertainty is moderate/high overall based on the uncertainty in a number of factors related to the project including level of social risk from the non-local workers (individual human behaviour will vary greatly), final long-term effects, and effectiveness of mitigation measures and conditions, especially of those intended to separate project workers from settlements in the region.</p>

*Note: Criteria and assessment ratings are defined in Annex: Residual Effects Characterization Definitions for Effects on Gitga’at Indigenous Interests*

### **Cumulative Effects**

The increased levels of industrial activity from KL LNG and other projects in the region, and the associated increases in non-local population, have the potential to cumulatively effect the health and wellbeing of Gitga’at First Nation in terms of; housing (increased cost and decreased availability); health (reduced access to healthcare services, and increased risk of communicable disease, negative mental health factors, or accident and injury); infrastructure (increased strain on emergency services, transportation, schools, etc.); social environment (increased crime, increased presence of drug and alcohol use, increased levels of sexual harassment and violence); economic environment (increased cost of living, inequitable access to employment, disruption of food security); and cultural erosion (displacement and alienation of Gitga’at members from traditional sites and practices).

These effects are primarily caused by the influx of non-local workers and their family members to the region. KL LNG will contribute at least 800 additional people during the construction phase, and

at least 150-200 people during the operation phases of the project (excluding additional family members).<sup>272</sup> Considering the number of additional industrial projects occurring in the region, and the wider picture of substantial development of housing and port infrastructure in Prince Rupert,<sup>273,274</sup> there will be a substantial increase in the population of the region (especially in larger population centres like Prince Rupert, Terrace, and Kitimat). This will adversely impact conditions for Gitga'at members living all over Northern BC. Cumulative effects may cause knock-on effects, such as more Gitga'at members moving from various locations to Hartley Bay if housing price/availability becomes unsustainable in northern cities, which in turn may cause strain on local housing prices and availability.

Mitigations to address housing costs and availability are discussed in section 1.5.3. The same mitigations relating to the effective prevention of risk behaviours and separation of project workforces from local settlements similarly apply to effects on social environments where Gitga'at members live. Aside from direct separation, central to the mitigation of many social issues surrounding the influx of non-local workers is adequate education on the history and current situation of Gitga'at First Nation (and other Indigenous Nations). Project proponents should collaborate to ensure standardized mandatory training in Gitga'at culture is in place for all project workers. This training should be put together in direct collaboration with Gitga'at. Cultural sensitivity training will help non-locals to understand the seriousness of the potential adverse effects to the Gitga'ata, and the delicate position of their cultural heritage in the face of large-scale industrial development.

As a collective body, the proponents of the various projects for this region have the ability form a strong voice for changes to provincial services to provide real mitigations for issues on the availability and affordability of infrastructure. This includes lobbying for enhanced health care, better equipped emergency services, and construction of affordable housing in growing centres like Prince Rupert. The responsibility falls to the project proponents to recognize this potential, and effectively communicate to present a unified voice to lobby for these local Indigenous interests.

The cumulative effects on the erosion of Gitga'at culture in its ancestral heartland will have adverse effects on the health and wellbeing of Gitga'at members regardless of where they live. Given the uncertainty of the true effects of these combined developments, the scale of the projects being undertaken, the sensitivity of the Gitga'at Nation's cultural position, and the lack of data to display how effective mitigation strategies may be, these cumulative effects have the potential to permanently damage or eradicate central aspects of Gitga'at's Indigenous culture and identity. This would have a profound adverse effects on the mental wellbeing of the Gitga'ata, and their cultural existence.

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<sup>272</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 7.12-60

<sup>273</sup> The City of Prince Rupert (2023). *Building Development*. Retrieved from: <https://www.princerupert.ca/building-development/community-planning/housing-strategy>

<sup>274</sup> Prince Rupert Port Authority (2023). *2022 Annual Report from the Board of Directors* Retrieved from: <https://2022.rupertport.com/>

## **Conclusion**

Taking into account all available information, the EAO's engagement with Gitga'at First Nation, Gitga'at First Nation's engagement with KL LNG, KL LNG's commitments, cumulative effects, EAO's recommended conditions, and federal mitigation measures, Gitga'at First Nation anticipates that KL LNG will have residual site-specific and regional effects that will combine with the effects of other industrial projects in the region. These residual effects will result in long term moderate/high adverse cumulative effects on health and wellbeing of Gitga'at First Nation. These cumulative effects will also result in potential problems for Gitga'at members' physical and mental health, financial security, and ability to live their lives according to their cultural values. The proponent's current suggested mitigations to combat these issues are high level, non-specific to the Gitga'at Nation, and inadequate to effectively mitigate the potential impacts of the KL LNG project.

### 1.5.5 Positive Effects of Ksi Lisims LNG

The KL LNG project has the potential to establish positive effects within Nisga'a villages, Terrace and Prince Rupert through local infrastructure and services, and community health and wellness. The workforce requirements for the Project have the potential to increase employment opportunities for Gitga'at First Nation. These effects may similarly manifest themselves through increased and stable income sources for Gitga'at First Nation members. The project may therefore help to diversify the economic base of the local economy.

## 1.6 Conclusion

Considering the contextual setting and the potential adverse effects to Gitga'at's Indigenous interests, the conclusion of this report is that KL LNG will have the following effects:

- Long-term moderate/high adverse residual and cumulative effects on Gitga'at First Nation's ability to travel in and carry out traditional harvesting activities in the marine environment;
- Long-term moderate/high effect on Gitga'at First Nation's use and integrity of sacred and culturally important sites and land and marinescape features;
- Long-term moderate negative effect on Gitga'at First Nation's Indigenous governance, self-determination, and territorial stewardship;
- Long-term moderate/high negative effect (and a potentially minor positive effect) on Gitga'at First Nation's Indigenous health and well-being.

Given the uncertainty of the true effect of these combined developments, the scale of the projects being undertaken, the sensitivity of Gitga'at First Nation's cultural position, and the lack of data to display how effective mitigation strategies may be, these cumulative effects have the potential to eradicate central aspects of Gitga'at First Nation's Indigenous culture and identity. This would have a profound adverse effect on the livelihoods and wellbeing of the Gitga'ata, and their cultural existence. Cumulatively, these effects are a continuation of colonial practices in BC, as decisions that are outside the control of Gitga'at Nation continue to displace, inhibit, and erode their cultural values, and negatively affect their social and economic wellbeing.

This current assessment chapter on Gitga'at's interests has accurately defined effects to Gitga'at that, without appropriate mitigation from both the proponent and the Province and other actors associated with the topic, are unacceptable. Currently, appropriate mitigations have yet to be established by the proponent. The review of the KL LNG's application, their understanding of the extent of effects to Gitga'at First Nation, and their suggested mitigations, demonstrates major discrepancies in their efforts to minimize potential negative effects. Most importantly, KL LNG's Gitga'at-specific mitigations are severely lacking. The only mitigation in the entire application specific to Gitga'at First Nation is as follows:

“The Proponents will continue to work with Gitga'at First Nation to develop a shared understanding of how the Project may affect their Indigenous rights and interests. The Proponents will continue engaging with Gitga'at First Nation to discuss the Project and its effects, understand concerns that may arise and respond to those concerns.”<sup>275</sup>

The associated risk for Gitga'at First Nation is stated by KL LNG as: “Low”. The expected success of this measure is stated as: “Effective in the long term”, and success is: “Contingent upon Gitga'at First Nation willingness to engage with the Proponents, Gitga'at First Nation's specific communication protocol needs, and implementation of additional public notices.”<sup>276</sup> This displays KL LNG's lack of interest in addressing Gitga'at First Nation's specific needs and dismisses the appropriate course of

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<sup>275</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-34

<sup>276</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. 17-34

action as wholly reliant on the Gitga'at community's willingness to engage with the proponent, rather than the proponent suggesting appropriate mitigation measures themselves. This measure is then defined as effective and low risk without justification as to why this is the case. This mitigation is identical to the singular mitigation offered in response to the specific concerns and circumstances of every other Indigenous nation addressed in the application (apart from the Nisga'a Nation (the majority shareholder of the Project), who are addressed with one other mitigation concerning the Nisga'a Treaty).<sup>277</sup> Far more detailed measures are required to adequately address the effects to Gitga'at First Nation and their unique circumstances in relation to the industrialization of the region. Further emphasis needs to be placed on Nation-specific measures, establishing well-defined and actionable mitigations rather than vague and overarching management plans, and sufficient commitments to follow-up measures and monitoring programs to track the success or failure of the proposed mitigations.

The development of strong mitigations that adhere to international best practices require proponents, such as KL LNG, to collaborate with affected communities to develop measures. This is an iterative process that requires continued collaboration over the lifespan of the project. Gitga'at First Nation collects robust baseline data on a yearly basis through their annual household CHWS, which is frequently referenced throughout this document. Information collected from CHWS and other Gitga'at led baseline studies should be used to continually update and develop KL LNG project related mitigations that are appropriate for Gitga'at First Nation. KL LNG has thus far failed to incorporate these studies in spite of Gitga'at requests that they do so. The Gitga'at Nation is hence profoundly dissatisfied with the inadequacy of KL LNG's ability to engage with the Nation, their acknowledgement that the Nation will be impacted by the project, and the single Gitga'at-specific mitigation measure the project application has suggested.

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<sup>277</sup> Ksi Lisims LNG (2023) *Natural Gas Liquefaction and Marine Terminal Project*. Appendix A

## Annex: Residual Effects Characterization Definitions for Effects on Gitga’at Indigenous Interests

**Table A-1:** Residual Effects Characterization Definitions for Effects on Gitga’at Indigenous Interests

		Indigenous Interest Assessments			
Characterization	General Description	Harvesting Rights	Use and Integrity of Sacred and Culturally Important Sites and Landscape Features	Indigenous Governance, Self-Determination and Territorial Stewardship	Indigenous Health and Well-Being
Context	How sensitive or resilient the Indigenous interest is to the potential residual effect caused by the Project.	<p><b>Low resilience:</b> the Indigenous interest has low resilience to imposed stresses and will not easily adapt to the potential residual effect</p> <p><b>Medium resilience:</b> the Indigenous interest has a neutral resilience to imposed stresses and may be able to respond and adapt to the potential residual effect</p> <p><b>High resilience:</b> the Indigenous interest has high natural resilience to imposed stresses and can respond and adapt to the potential residual effect</p>			
Magnitude	The intensity or severity of the anticipated change. Considers the amount the Indigenous interest is affected (e.g., relative to natural annual variation in the magnitude of change to the Indigenous interest).	<p><b>Negligible:</b> no detectable change from existing conditions</p> <p><b>Low:</b> the potential residual effect will slightly alter or change existing conditions but is within historic norms and within the system’s capacity to respond</p> <p><b>Medium:</b> the potential residual effect will alter or change the nature, role, or function of existing conditions but is within historic norms and within the system’s capacity to respond</p> <p><b>High:</b> the potential residual effect will substantially alter or change the nature, role, or function of existing conditions and is beyond the system’s capacity to respond</p>			
Extent	The spatial scale over which the residual effect is expected to occur.	<p><b>Site-specific:</b> the potential residual effect is restricted to the Project area</p> <p><b>Local:</b> the residual effect will be within the local assessment area</p> <p><b>Regional:</b> the potential residual effect will be within the regional assessment area</p> <p><b>Beyond Regional:</b> the potential residual effect will be beyond the regional assessment area</p>			
Duration	The period during which the potential effect persists and acts upon the Indigenous interest. This may be longer than the duration of the physical work or activity that produced the potential residual effect.	<p><b>Short-term:</b> the anticipated potential residual effect will be felt temporarily during the Project’s construction or deconstruction phases only. It also applies to any effect that will occur for less than two years in operations</p> <p><b>Medium-term:</b> the anticipated potential residual effect will be felt for a limited period of time greater than two years, generally corresponding to operations and decommissioning</p> <p><b>Long-term:</b> the anticipated potential residual effect will be felt beyond decommissioning</p>			
Frequency	How often or how many times the anticipated residual effect may occur.	<p><b>Single/Rare:</b> the residual effect is confined to one discrete event or rarely occurs</p> <p><b>Frequent/Regular:</b> the residual effect occurs at consistent intervals</p> <p><b>Irregular:</b> the residual effect occurs at sporadic intervals</p> <p><b>Continuous:</b> the residual effect occurs constantly</p>			

Reversibility	Whether or not the residual effect on the Indigenous interest can be reversed once the physical work or the activity causing the effects stop or Mitigation Measures take effect to eliminate the effect.	<p><b>Fully Reversible:</b> the residual effect is fully reversible</p> <p><b>Partially Reversible:</b> the residual effect is partially reversible</p> <p><b>Irreversible:</b> the residual effect is irreversible</p>
Affected Populations	The distribution of the effect amongst the population of affected Indigenous nations.	<p><b>Even:</b> the potential effect is experienced by any or all sub-populations</p> <p><b>Disproportionate:</b> the potential effect is experienced only by certain populations or experienced more acutely by certain sub-populations</p>
Uncertainty	Number of uncertainties remaining / confidence in conclusions of the assessment of potential effect to Indigenous interest.	<p><b>Low:</b> there is a good understanding of the cause-effect relationship between the Project and the Indigenous interest. Few or no unknown external influences for the Project area that are incomplete). The effectiveness of Mitigation Measures is expected to be high. High level of certainty in the conclusions of the assessment of potential effect to Indigenous interest</p> <p><b>Moderate:</b> the cause-effect relationships between the Project and an Indigenous nation are not fully understood (e.g., a few unknown external influences for the Project area that are incomplete). The effectiveness of Mitigation Measures may be moderate or high. Moderate level of certainty in the conclusions of the assessment of potential effect to Indigenous interest</p> <p><b>High:</b> the cause-effect relationships between the Project and an Indigenous interest are poorly understood. There may be several unknown external influences for the Project area that is incomplete. The effectiveness of the Mitigation Measures may not yet be proven. There is a high degree of uncertainty in the conclusions of the assessment of potential effect to Indigenous interest</p>



## 17.3. Gitxaala Nation

### 17.3.1. Community Profile

Gitxaala Nation (Gitxaala) Territory encompasses the lands and waters spanning from Prince Rupert Harbour, south to Aristazabal Island and includes Banks Island, McCauley Island, Pitt Island, the western side of Campania Island, portions of the mainland adjacent to Grenville Channel and surrounding waterways, as well as an oolichan fishing station on the Nass River.

Gitxaala hereditary leaders from the four clans, Gisbuutwada, Ganhada, Lax Sgyiik and Lax Gyibuu, manage and protect their territories and resources according to their ayaawx, traditional laws. Gitxaala harvesters use almost 100 different marine and terrestrial resources to feed their community. Gitxaala citizens, currently numbering 2094, wherever they reside, celebrate their history, practice their traditions, respect their laws, and cherish their lands, waters and resources.

The Proponents engaged with members of the Gitxaala Territorial Management Agency (GTMA), who are mandated by Gitxaala leadership to act as the primary point of contact in regulatory processes on behalf of the Gitxaala.

### 17.3.2. Gitxaala Involvement in the Consultation Process

During the Early Engagement Phase, Gitxaala identified as a participating Indigenous nation, which afforded Gitxaala certain procedural rights under the Act, as outlined in Section X: Participating Indigenous Nations.

The EAO worked collaboratively with Gitxaala throughout the assessment process. As part of the Technical Advisory Committee, Gitxaala participated in technical meetings throughout the environmental assessment for Ksi Lisims LNG. Gitxaala and the EAO worked together through joint work planning, consensus-seeking and collaborative drafting of this section of the EAO's Assessment Report. Gitxaala and the EAO held biweekly calls throughout the environmental assessment to discuss concerns related to Ksi Lisims LNG and to understand, address and resolve issues as they came up. The EAO and the Agency provided funding to support Gitxaala's engagement in the environmental assessment process. Through discussions with Gitxaala during the Process Planning phase, it was agreed upon that the EAO would conduct an assessment of project effects on Gitxaala's Indigenous interests with input and iterative review from Gitxaala, as captured in Appendix C of the [Assessment Plan](#).

The EAO used the following sources in drafting the assessment of Ksi Lisims LNG effects on Gitxaala's Indigenous interests:

- The Proponents' Revised Application
- Information submitted during the environmental assessment by the Proponents and Gitxaala
- Conclusions from the EAO's assessment of Valued Components
- The Proponents' Indigenous Consultation Report
- Gitxaala: Preliminary Existing Conditions Report for the Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project

A summary of the Proponents' engagement with Gitxaala is provided in section 16 of the Revised Application and the Proponents' Indigenous Engagement Report.

### 17.3.3. Assessment Boundaries

Spatial boundaries for the project assessment are divided into project footprint, marine shipping route, materials and supply shipping routes, an open water assessment area, as well as a transmission line assessment area. The spatial assessment boundaries for each Indigenous interest were identified based on the local assessment area and regional

assessment area for valued components and overlap with Gitxaala's territory. The materials and supply shipping routes intersects the northern extent of Gitxaala's territory, with the Project footprint, the marine shipping route, the transmission line Assessment Area and the open water Assessment Area not overlapping with Gitxaala's territory.

The Gitxaala Existing Conditions Report states that the spatial boundary selected for the report aligns with the community health and wellness Assessment Areas ([Section 7.13](#)), the human health Assessment Areas ([Section 7.14](#)), and the marine use Assessment Areas ([Section 7.11](#)) identified by Ksi Lisims for its Certificate Application. The Gitxaala Existing Conditions Report Study Area included the local Assessment Areas and regional Assessment Areas for these Valued Components because harvesting marine resources is important for Gitxaala's active trading and sharing economy and many resources that underpin these economies originate near the Project.

#### 17.3.4. Regional Context

Gitxaala territory encompasses the lands and waters spanning from Prince Rupert Harbour, south to Aristazabal Island and includes Banks Island, McCauley Island, Pitt Island, the western side of Campania Island, portions of the mainland adjacent to Grenville Channel and surrounding waterways, as well as an oolichan fishing station on the Nass River.

Gitxaala is a sovereign, self-governing and self-sustaining Nation that maintains a strong governance structure through established leadership. The way in which Gitxaala interact with their history, grow their Nation, exercise self-determination, govern, and enrich the future of their members, is through their ongoing connection, use, and access to the waters and lands of their territory, which is deeply connected to their Aboriginal title and rights, cultural identity, and well-being.

Gitxaala stated that their ability to exercise these constitutionally protected rights have been affected over time through colonialism, land appropriation and industrial development. Gitxaala experiences vessel traffic throughout their territorial waters which results in interferences with their harvesting and travel routes, leading to disruptions to their ability to exercise their rights throughout their territory. With the impending start-up of LNG Canada large vessel marine traffic in Gitxaala territory is set to increase substantially beginning in 2025.

Gitxaala has been affected by industrial development and physical activities in the region that have already resulted in cumulative effects on Gitxaala's Indigenous interests. Regional industrial development such as commercial fishing, aquaculture activities, logging and large industrial facilities have affected Gitxaala. Gitxaala have noted that far-reaching effects of the contamination of water sources and dispersal of contaminants has resulted in a decline in the quality and quantity of resource habitats. Gitxaala has also experienced alienation from sacred and Important Places due to development activities, such as shipping and increased vessel traffic, which changed their ability to meet required behaviours and/or show required respect for sacred places as dictated by Gitxaala's governance and cultural protocols.

#### 17.3.5. Indigenous Interests

The Proponents of Ksi Lisims LNG identified Gitxaala's Indigenous interests to be assessed in the Revised Application through:

- Identifying the appropriate contacts and engaging with the GTMA on behalf of Gitxaala to understand the nature and content of the Nation's Indigenous rights
- Identifying guiding values and "Valued Components" by developing an understanding of Gitxaala priority values, topic, and rights.
- Collaboratively establishing a clear criterion with Gitxaala on how to characterize impact
- Establishing an iterative two-way dialogue

- Maintaining ongoing engagement throughout the environmental assessment process

The Proponents of Ksi Lisims LNG identified the following interests:

- Changes to Gitxaala marine harvest and consumption
- Changes to Gitxaala terrestrial harvest and consumption
- Changes to Gitxaala governance
- Changes to Gitxaala social and economic conditions
- Changes to Gitxaala sacred places and heritage sites
- Changes to Gitxaala health, and well-being, and cultural well-being
- Changes to Gitxaala cultural identity
- Changes to Gitxaala access and travel

Based on the Revised Application and through discussion with GTMA the following Indigenous interests have been identified as having the potential to be affected by Ksi Lisims LNG:

- Harvesting Activities
- Use and Integrity of Sacred and Important Places
- Gitxaala governance
- Health and wellbeing, including socioeconomic

The assessment of Gitxaala's Indigenous interests in this chapter are assessed using these categories. The EAO's assessment of Gitxaala's Indigenous interests includes existing conditions, potential project effects, mitigation, analysis of effects, cumulative effects and conclusions. In addition to the EAO's assessment of effects to Gitxaala Indigenous interests, the GTMA provided their position on how the project will affect Gitxaala's Indigenous interests.

### 17.3.6. Harvesting

#### Background

Gitxaala harvests marine resources for the purposes of consumption, trading, sharing economy, well-being, and cultural and ceremonial purposes, comprised of highly complex protocols that are guided by ayaawx, and follow seasonal patterns, resource management practices and stewardship. The GTMA reported that harvesting is a fundamental component of Gitxaala way-of-life and representative of the rich resources that are present in the Gitxaala territory.

Gitxaala continue to actively harvest along the coastal waters of their territory. The waters within Gitxaala territory have provided Gitxaala with primary resources required for food, income and trade for millennia.

Gitxaala consider all five species of salmon (coho, chum, pink, spring, sockeye), steelhead trout, rock fish (black cod, ling cod and rock cod), herring and herring roe, halibut, red snapper, crab (Dungeness and king), shrimp and prawns, as well as abalone, clams (manilla and butter), cockles, mussels (blue and California), octopus, Chinese slippers, sea urchin (red and green), scallops and barnacles, sea cucumbers, sea prunes, kelp and sea grass as culturally critical species for consumption. Gitxaala also continue to harvest the following marine resources within their territory: chitons, grey shark, seagull eggs, shark, and squid.

Gitxaala harvests wild game and a diversity of forest foods and materials, which are consumed for subsistence as well as medicinal purposes. Gitxaala harvest deer, bear, geese, and ducks. Vegetation harvested by Gitxaala includes yew,

hemlock, fir, red cedar, blueberries, cranberries, huckleberry, frog berry, salmon berry, stink currant, Saskatoon berry, black berry, salal berry, devil's club, licorice fern, and Labrador tea. Plant resources, such as (but not limited to) blueberries, huckleberries, and salmonberries are harvested on Ridley Island, Lelu Island, Emerson Point, Casey Cove, and Dodge Cove on Digby Island (Vopak 2021). Ridley Island, Lelu Island, and Dodge Cove on Digby Island are within the MSSR.

### Existing Conditions

GTMA has reported that increased vessel traffic through the Nation's territorial waters interferes with Gitxaala harvesting practices due to changes in sensory experiences (noise, smell, wake), as well as changes to the health of the waters and resources and dispersal of contaminants from increasing activities in the area. As a result, Gitxaala members indicate that increased projects within Gitxaala territory have resulted in avoidance for safety and alienation of preferred harvesting areas, cultural and sacred places.

Underwater noise has been a concern for previous projects involving increased marine and tanker traffic. Members have explained that noise below the waters' surface disrupts fish and marine mammals and interferes with spawning and migration. Underwater noise poses a risk of impacting Gitxaala rights when it comes to harvest and fishing.

Regarding Ksi Lisims LNG, GTMA expressed concern on the potential effects to country food harvesting opportunities, such as change in quality through contamination. Contamination of culturally important plants in the marine environment and near-shore vegetation has the potential to lead to a change in use through avoidance. The increase in water turbidity on species valuable for Gitxaala harvest would limit the harvest available for those available to access them.

For Gitxaala members traveling on the water or harvesting on shore, increased marine shipping traffic may limit or diminish the ability for harvest or travel and the change in ability to access traditional foods and harvesting areas. Limited access and limited resources would have a compounding effect. Safety concerns and increased marine vessel traffic have a direct impact on Gitxaala rights, as well as the maintenance of culture and health.

Other pressures on Gitxaala are management of resources outside of Gitxaala jurisdiction and control (e.g., commercial fisheries, recreational fisheries, mining, shipping, forestry, etc.) and development of land and marine areas resulting in changes to locations of importance.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Gitxaala's harvesting rights:

- Interactions between project-related vessels and First Nations fishing activities may create a disturbance resulting in lost fishing time and the temporary displacement of fishers. ([chapter 18.9](#): Marine Use; [chapter 18.5](#): Marine Resources)
- Wake waves generated by project-related vessels may pose a risk to fishers, shoreline harvesters, and other Gitxaala marine uses ([chapter 18.9](#): marine use)
- Underwater noise produced during in-water construction activities has the potential to cause injury or disturbance to marine fish and marine mammals. ([chapter 18.9](#): marine use)
- Operation of the seawater intake may cause injury or mortality through impingement or entrainment of fish. ([chapter 18.9](#): marine use)
- During construction, operation, and decommissioning phases, vessel strikes from Project-related vessel traffic (e.g., LNG carriers or escort tugs) have the potential to injure or kill marine mammals. ([chapter 18.9](#): marine use)

- Concentrations of TSS can result in adverse effects on marine organisms, particularly fish and invertebrates, including injury to fish through gill abrasion, feeding impediment, and avoidance of impacted areas. ([chapter 18.5](#): marine resources)
- Indirect change in habitat effectiveness because of sensory disturbance (e.g., noise, vibration, light, human presence) during each Project phase. ([chapter 18.6](#): freshwater fish and fish habitat; [chapter 18.7](#): wildlife and wildlife habitat)
- Changes to fish habitat resulting in a decline in freshwater fish ([chapter 18.6](#): freshwater fish and fish habitat)

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to harvesting rights, the EAO identified the following potential effects to Gitxaala's harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased marine vessel traffic within the materials and supply shipping routes with the associated sensory disturbances (i.e., noise and light increase in local population (associated with Ksi Lisims LNG and in conjunction with other projects) and potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest and fish and marine resources, as well as wildlife, during seasonal rounds;
- **Time:** Time may be lost when harvesting, including when harvesting for Elders and/or redistribution to other Gitxaala members from the increase in marine vessel traffic in the materials and supply shipping routes, and potential for interference with Gitxaala fishing vessels engaged in and equipment used for harvesting salmon and halibut;
- **Access:** Access to preferred harvesting locations may be lost or altered from an increase in marine vessel traffic in the MSSR, type of vessels, and the potential for accidents and malfunctions in the materials and supply shipping routes;
- **Experience:** Harvesting experiences may be altered from an increase in vessel traffic and type of vessels, wake waves, sensory disturbances along the materials and supply shipping routes, and associated change in noise, light, and air quality; and
- **Subsistence-based livelihoods and trade:** Alteration of both subsistence-based livelihoods and trade relationships with neighbouring First Nations may occur from disruption of marine bird movement due to marine vessel traffic, change in marine mammal and fish behaviour and increased risk of marine fish, marine bird, and marine mammal mortality due to potentially fatal strikes with marine vessels, and displacement of marine users due to an increase in vessel traffic and type of vessels and wake waves within the MSSR and the potential for accidents and malfunctions.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on harvesting rights:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources

- Marine Use
- Human Health

The Revised Application states that as a Mitigation and Enhancement Measure proposed to reduce potential effects on Gitxaala Nation Interests the Proponents will continue to work with Gitxaala Nation to develop a shared understanding of how Ksi Lisims LNG may affect its Indigenous interests. The Proponents will seek to engage with Gitxaala Nation through monthly meetings to discuss Ksi Lisims LNG and its effects, understand concerns that may arise and respond to those concerns. Meeting frequency may be adjusted to meet the needs of Gitxaala Nation. A complete listing of the additional mitigation and enhancement measures to further avoid or reduce impacts to Gitxaala Nation interests can be found in [Appendix A](#) of the Proponents' Revised Application.

### **The EAO's Analysis and Conclusions**

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on harvesting.

#### **Analysis**

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, acidification and eutrophication monitoring in aquatic and terrestrial environments, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisim's LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty but off-work hours;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate.
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to harvesting:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to navigate safely in the presence of marine mammals to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;
- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife;
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Methods, locations and opportunities;
- Time;
- Access;
- Experience; and
- Subsistence-based livelihoods and trade.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on harvesting are summarized in the table below.

Table 12: Summary of residual effects on Gitxaala and its Harvesting Rights

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Harvesting Rights</b>	Context (resilience): Medium resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversable Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Gitxaala users along the Marine Shipping Route are considered moderately resilient to impacts based on existing conditions and existing effects to marine and terrestrial harvesting. Impacts to marine and terrestrial harvesting are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred harvesting locations. Impacts are partially reversable following decommissioning. Impacts may disproportionately affect Gitxaala members who rely heavily on marine resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Gitxaala members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### Cumulative Effects

Potential cumulative effects on both marine navigation and marine fisheries may occur along the Marine Shipping Route from the interaction of vessels with overlapping routes or increasing shipping traffic interfering with access to sites or activities (e.g., fishing and shoreline harvesting). Ksi Lisims LNG would contribute up to 140 to 160 LNG carriers and 8 to 12 natural gas liquid product carriers annually, representing a 6 percent increase in existing and future large commercial vessel traffic intersecting at the Triple Island Pilot Boarding Station. When the vessels are in Portland Canal, there is a low magnitude of cumulative interaction between the Project and the other projects given the remote location of the Project in Portland Canal and the existing limited presence of industrial or residential marine projects.

The increase in large vessel movements within the Marine Shipping Route from these potential cumulative effects attributable to Ksi Lisims LNG has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to Gitxaala members based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the projects associated with Ksi Lisims LNG could happen concurrently with the construction of the associated pipeline and transmission line. This additional concurrent activity could amplify the cumulative effects by increasing construction activities of underwater infrastructure in the project area.

Cumulative effects from Ksi Lisims LNG may be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.



### Conclusion

In consideration of the available information, the EAO's engagement with GTMA, GTMA's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Gitxaala's ability to harvest.

### 17.3.7. Use and Integrity of Sacred and Important Places

#### Background

Gitxaala define Sacred and Important Places as culturally important sites as named or important places; cabins and camping; cultural sites and stories; canneries; animal habitat and spawning; and landscapes, located within Gitxaala marine and terrestrial areas. Gitxaala previously noted that they have established behavioral guidelines that must be observed by members when accessing sacred places, such as requirements for how or if a sacred or cultural place is spoken about and how it must be treated.

Other culturally important sites may include grave sites, petroglyphs, Culturally Modified Trees, and other archaeological and heritage materials.

#### Existing Conditions

Increased noise from projects, along with interference with navigation freedom along travel and access routes impact Gitxaala members' ability to experience Sacred and Important Places. Gitxaala sacred places are important to Nation members, and an increase in non-Gitxaala members travelling through and staying nearby creates disruption or disturbance. If the necessary conditions of sacred places are unable to be met, Gitxaala members may experience disconnection from the sacred place which can have further implications to Gitxaala cultural identity, harvesting practices, governance and well-being.

Marine shipping and the increase in marine traffic related to LNG projects in Gitxaala territory is of major concern to Nation members. Many of Gitxaala's members utilize waterways within the spatial boundaries, raising safety issues for those on the water and the possibility for altered travel routes.

Contributing to safety concerns is the issue of wake. Previously, members highlighted the dangers of marine vessel wake for both those in small vessels on the water and harvesters on the shoreline. It was noted that the wake from a tanker is very forceful; if shoreline routes become unavailable, wakes increase safety risks for Nation members travelling in smaller vessels out from shore.

Gitxaala members have previously indicated that marine accidents could impact or damage valuable sites for Gitxaala. It was noted that tides move south and are strong in certain locations and any possible spill (e.g., ship fuel) or debris would be carried south, throughout the territory. Access to sites and harvesting locations includes location quality and perception. If a site has been contaminated, or a member finds the site unfit, the site is no longer accessible to Nation members.

Lost access to sites within the spatial boundaries has impacts to culture and economy.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Gitxaala's use and integrity of Sacred and Important Places:

- Increase in project vessels transiting the MSSR interfering with vessel passage and a change in access to sacred places and heritage sites ([chapter 18.9](#): Marine Use)

- Effects on use of sacred and cultural important sites and landscape features from elevated sensory disturbances from changes in air quality and noise levels within the material and supply shipping route ([chapter 18.1](#): Acoustic; [chapter 18.2](#): Air Quality)
- Wake waves generated by project vessels transiting the material and supply shipping route have the potential to result in impact to use and integrity of sacred and culturally important sites and landscape features based on the increase in risk to Gitxaala marine users ([chapter 18.9](#): Marine Use);

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to Gitxaala's use and integrity of Sacred and Important Places, the EAO identified the following potential effects to Gitxaala's use and integrity of Sacred and Important Places due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Access and use:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the material and supply shipping route, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Traditional knowledge:** Loss or alteration of ability to share traditional knowledge at sacred and culturally important sites and landscape features due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and due to increased marine vessel traffic within the material and supply shipping route, including associated wake waves, sensory disturbances, change in air quality and potential for accidents and malfunctions; and
- **Experience:** Reduced quality of experience at sacred and culturally important sites and landscape features as a result of sensory disturbance due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and marine vessel traffic within the material and supply shipping route, including associated wake waves, sensory disturbances and change in air quality. Privacy or peace needed to practice rights which experiences a high level of existing interference due to environmental, regulatory, political, and economic factors, and the quality of the experience of practicing the right which experiences a moderate level of interference due to environmental, regulatory and economic factors.

### Mitigation Measures

The following Valued Component sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on the use and Integrity of sacred and culturally important sites and landscape features:

- Air Quality
- Acoustic
- Marine Use
- Human Health
- Archaeological and Heritage Resources

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### The EAO's Analysis and Conclusions

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on sacred and culturally important sites and landscape features.

## Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on sacred and culturally important sites and landscape features:

- Condition 9 (Construction Environmental Management Plan), as described in [section 17.3.6](#), including a requirement for a chance find procedure for heritage resources;
- Condition 11 (Community Feedback Process), as described in [section 17.3.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [section 17.3.6](#);
- Condition 17 (Socioeconomic Management Plan), as described in [section 17.3.6](#); and
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments of archaeology and heritage sites, and implementation of any additional mitigation measures and Ksi Lisims LNG’s mitigation measures in [Appendix A](#) of the Revised Application.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to sacred and culturally important sites and landscape features:

- Marine Transportation Communication Plan, as described in [section 17.3.6](#);
- Community feedback protocol as described in [section 17.3.6](#)
- Chance find protocol for heritage resources during construction;
- Progressive reclamation of temporarily disturbed areas to establish self-sustaining vegetation, using plant species of interest to First Nations in consultation with First Nations; and
- Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [section 17.3.6](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Access and use;
- Traditional knowledge; and
- Experience.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on sacred and culturally important sites and landscape features are summarized in the table below.

Table 13: Summary of residual effects on Gitxaala and its use and integrity of sacred and culturally important sites and landscape features

Indigenous Interest	Assessment Rating*	Impact and Rationale
<i>Gitxaala’s use and integrity of sacred and culturally important sites and</i>	Context (resilience): Medium resilience Magnitude: Medium Extent: Regional	Gitxaala members use of sacred and culturally important sites and landscape features are expected to have moderate resiliency to impacts as there are other anthropogenic influences in the area and additional pressures on the use of the area from the local population and industrial development. Impacts to sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the

<p><b>landscape features</b></p>	<p>Duration: Long-term                      Frequency: Irregular to regular                      Reversibility: Irreversible                      Affected Populations: Disproportionate                      Potential Effect: Minor                      Uncertainty: Moderate</p>	<p>Marine Shipping Route resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Gitxaala members who rely heavily on culturally important sites and landscape features. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Gitxaala members will make in response to real and perceived impacts.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features include those related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [section 17.3.6](#).

The cumulative effects from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features may be alleviated by the Mitigation Measures described in [section 17.3.6](#).

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on access and the sense of peace and enjoyment of sacred and culturally important sites and landscape features due to a greater number of people accessing the land base in the region.

The cumulative effects associated with Ksi Lisims LNG workforces may be alleviated by the mitigation measures described in [section 17.3.6](#).

**Conclusion**

In consideration of the available information, the EAO’s engagement with GTMA, GTMA’s engagement with the Proponents, Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Gitxaala’s ability to sacred and culturally important sites and landscape features.

**17.3.8. Gitxaala Governance**

**Background**

Gitxaala oral histories document the Nation has occupied its territory for over 10,000 years. Gitxaala operates under two integrated governance systems: an elected council and a Hereditary Table.

This jurisdiction is independent of the Crown processes and institutions. Gitxaala has not signed any historical treaty, nor is it in the modern-day BC comprehensive treaty process. As such, Gitxaala’s governance rights, including the inherent title and authority held by sm’gyigyet, have never been ceded and they maintain their Indigenous rights and title throughout their traditional lands and waters.

Gitxaala consist of four clans including the Gisbuutwada (Blackfish), Lax Sgyiik (Eagle), Lax Gyibuu (Wolf), and Ganhada (Raven), each which are comprised of autonomous houses. Each house-group inherits a portion of Gitxaala territory,

which becomes the responsibility of the house-group, to care for and control access to the resources within their inherited territory.

Feasting remains an important part of Gitxaala governance as the process for cultural transference of hereditary names and associated status and territories and is linked to Gitxaala Aboriginal rights, resources, and stewardship responsibilities.

Gitxaala governance structures and cultural protocols are deeply connected with their Aboriginal title and rights, identity and overall well-being.

### Existing Conditions

Gitxaala's ability to undertake these activities and implement their ayaawx have been affected over time through land appropriation and industrial development). Vessel traffic throughout Gitxaala territorial waters has interfered with harvesting plans and travel vessels, which Gitxaala has previously noted results in disruptions to their ability to exercise their rights and practice their laws throughout their territory.

Underwater noise is not only important for harvested species, but nonconsumptive species as well, such as whales and marine mammals. Species of importance are not limited to those consumed by Nation members, and their presence and maintenance is important for Gitxaala culture, tradition, and governance.

The combination of all associated impacts from the project, alongside the existing concerns and issues with marine traffic related to other activities in Gitxaala territory, impact the ways in which Gitxaala members exercise their rights, practice tradition, and connect with culture.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Gitxaala's Governance:

- Effects from increase in marine shipping along the MSSR are anticipated to interfere with vessel passage during all Project phases in navigable waters ([chapter 18.9](#): marine use);
- Change in production of foods from discrete house territories overlapping the material and supply shipping route; ([chapter 18.5](#): marine resources)
- Positive or negative effects to regional employment and income that are moderate in magnitude given the workforce estimates ([chapter 18.12](#): employment and economy).

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to Gitxaala's Governance, the EAO identified the following potential effects to Gitxaala's Governance due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Use and Occupation:** Loss or alteration in the production of foods from discrete House Territories; loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the material and supply shipping route, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Decision making:** Changes in Gitxaala's ability to make decisions regarding land and marine use may occur due to increased and marine vessel traffic along the material and supply shipping route resulting in alterations of the status and position of Hereditary Leaders; and loss or alteration in the ability to uphold Gitxaala Nation management principles and ability to make decisions regarding land and marine use;

- **Employment and economy:** Positive and negative effects may be experienced due to changes in regional employment that may occur through increased demand for labour and employment opportunities as well as inability for certain sub-populations to participate equitably in employment. There is also the potential for wage inflation, labour drawdown, increased cost of living and increased cost of housing and accommodations.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on First Nations Governance:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Employment and Economy
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### The EAO's Analysis and Conclusions

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on Gitxaała's Governance.

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 11 (Community Feedback Process), as described in [section 17.3.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [section 17.3.6](#); and
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to Gitxaała's Governance:

- Marine Transportation Communication Plan, as described in [section 17.3.6](#);
- Community feedback protocol as described in [section 17.3.6](#);
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples; and

- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [section 17.3.6](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Use and Occupation;
- Decision making; and
- Employment and economy.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on Gitxaala’s Governance are summarized in the table below.

Table 14: Summary of residual effects on Gitxaala’s Governance

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Gitxaala’s Governance</b>	Context (resilience): Medium resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Gitxaala’s First Nation’s governance has a medium resilience based on the stress that Gitxaala has experienced from increased population land uses and marine vessel traffic in the region. Impacts to governance is considered within a broader regional extent and may alter Gitxaala’s roles or functions on use and decision making. Gitxaala member’s employment may experience a combination of positive effects through an increase in local employment opportunities, and negative effects due to inequitable ability for subpopulations to participate in these employment opportunities. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate overall based on the uncertainty regarding employment and economy and decision-making including volume of employment and business procurement throughout the Project’s lifetime.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on Gitxaala’s governance include the those related to more non-local population accessing the land base and related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [section 17.3.6](#). Cumulative effects on employment and economy were not identified due to the regional nature of this effect.

Although no cumulative effects to governance were identified, any potential cumulative effects from Ksi Lisims LNG on Indigenous governance may be alleviated by the mitigation measures described in [section 17.3.6](#).

**Conclusion**

In consideration of the available information, the EAO’s engagement with GTMA, GTMA’s engagement with the Proponents, Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Gitxaala’s governance.

### 17.3.9. Health and wellbeing, including socioeconomic

#### Background

Health and well-being can be influenced by several contributing factors that can affect quality of life, including: housing, employment, education, income, and community cohesion, crime rates, access to health care, access to harvesting, and overall conditions of human health, which can include various sensory components such as light, noise, and quality of air (odours).

The GTMA indicated that changes to the health (mental/spiritual) and well-being of Elders and other community members, and of Gitxaala cultural well-being as a whole, directly linked to the Nation's ability to access healthy lands and waters within Gitxaala territory (see also GTMA 2022:650). Personal health and well-being are therefore closely connected to Gitxaala's social and economic conditions.

Family support, the connection to land and water, mental wellness, maximizing capacity, unity, food sustainability, community leadership and economic development, and infrastructure are health determinants previously identified by Gitxaala.

#### Existing Conditions

The GTMA reported that Gitxaala's health and well-being, and cultural well-being has been affected over time through negative experiences with racism and discrimination experienced by members in major service centers within and near Gitxaala territory.

Gitxaala members identify cultural ways of life to be an essential part of Nation health and well-being. Access to quality and quantity seafood is important to Gitxaala for life and declining seafood resources are impacting access to food and cultural practices for Gitxaala. According to the Nation, there are increased instances of diabetes within Gitxaala as a result of lost traditional practices and lifeways during colonization, resulting in decreased food availability and affordability.

There are current and historic pressures on Gitxaala harvesting, and the socio-economic conditions which it supports, that influence the existing conditions. Factors applicable to harvesting and related socio-economic aspects: privacy or peace needed for practicing rights; and quality of the experience of practicing the right, both spiritually and physically.

Safety concerns and increased marine vessel traffic have a direct impact on Gitxaala rights and the maintenance of culture and health.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Gitxaala's health and wellbeing:

- Positive or negative effects to regional employment and income ([chapter 18.12](#): employment and economy);
- Positive effects may be unevenly distributed and not benefit groups that are under-represented, including First Nation peoples and women ([chapter 18.11](#): community health and wellness);
- Negative effects on housing availability and costs ([chapter 18.13](#): infrastructure and services);
- Increases in cost of living and affordability of market foods ([chapter 18.11](#): community health and wellness);
- Potential negative effects on utilities and waste management, emergency services and transportation infrastructure ([chapter 18.13](#): infrastructure and services, [chapter 18.11](#): community health and wellness);



- Decrease in access to health, medical and social infrastructure and services ([chapter 18.11](#): community health and wellness)
- Effects to mental health and well-being from erosion of culture, identity, sense of place and language ([chapter 18.11](#): community health and wellness);
- Increase substance abuse, crime rates, violence against women and girls, domestic violence, strain on family relationships, and erosion of community cohesion in communities, which disproportionately affects Indigenous communities, women, children and youth ([chapter 18.11](#): community health and wellness)
- Increase in rates of communicable diseases, injuries, and suicides, and changes in mental health outcomes ([chapter 18.11](#): community health and wellness);
- Change in harvesting and avoidance of consumption of country foods due to real or perceived sensory disturbances of harvesting areas and changes in quality of country foods, which could further affect knowledge transfer and cultural dissociation for children and youth ([chapter 18.11](#): community health and wellness);
- Potential negative effects on physical health with decreased air quality along shipping routes ([chapter 18.2](#): Air Quality)

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to changes to Gitxaała social and economic conditions, the EAO identified the following potential effects to Gitxaała's health and wellbeing due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Human health:** Changes in human health (e.g., mental and physical) due to outside stressors and loss of culture may occur through increased local population pressures on the land base and increased marine vessel traffic, associated sensory disturbances, changes in air quality, and potential for accidents and malfunctions, along the MSSR;
- **Social Determinants of Health:** Positive or negative effects through changes in employment that contribute to community well-being. Negative effects through changes in the social, health and culture effects that contribute to changes in human and community well-being (i.e., social determinants of health) of Gitxaała may occur due to effects of Ksi Lisims LNG on: culture, population growth, education, governance, health (including food security, access to healthcare and holistic mental health supports) infrastructure and housing (including increased homelessness), social stressors (including reduction or alteration of community cohesion) and availability and access to lands and resources (including reduction of cultural practices tied to identity, reduction of house status due to loss or alteration of harvested resources within discrete house territories and reduction in cultural transference opportunities in the territory).

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on health and wellbeing:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use

- Infrastructure and Services
- Community Health and Well-being
- Human Health
- Employment and Economy

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### **The EAO's Analysis and Conclusions**

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on health and wellbeing.

#### **Analysis**

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan, as described in [section 17.3.6](#);
- Condition 11 (Community Feedback Process), as described in [section 17.3.6](#);
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse;
- Condition 16 (Worker Health and Wellness), which will require Ksi Lisims LNG to provide medical services within the worker accommodation;
- Condition 17 (Socioeconomic Management Plan), which will minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty but off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to health and wellbeing:

- Health and medical services plan to mitigate impacts on local health services used by First Nations; and
- Measures to promote safe, respectful, and inclusive conduct in the workplace and community, including a workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-specific processes, including sexual harassment counseling and confidential, culturally sensitive care; and cross-cultural awareness training developed with First Nations.

After consideration of the Mitigation Measures and potential effects, described above, the EAO and GTMA identified the following residual effects:

- Human health; and
- Social determinants of health.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on health and wellbeing are summarized in the table below.

Table 15: Summary of residual effects on Gitxaala and its health and wellbeing

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Health and Wellbeing</b>	Context (resilience): Low resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Continuous Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Gitxaala’s conclusion: [Level of impact]  Gitxaala’s Indigenous health and well-being has a low resilience based on the current conditions in the region that do not allow for Gitxaala’s Indigenous health and well-being to easily adapt to additional residual effects. Impacts to health and wellbeing may be experienced in some manner by Gitxaala members residing throughout the region. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Gitxaala members will respond to impacts that influence human health, as well as other external factors that may influence social determinants of health.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for adverse cumulative effects on Gitxaala members receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources.

The cumulative effects from Ksi Lisims LNG on Indigenous health and well-being may be alleviated by the mitigation measures described in [section 17.3.6](#).

**Conclusion**

In consideration of the available information, the EAO’s engagement with GTMA, GTMA’s engagement with the Proponents, Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Gitxaala’s ability to health and wellbeing.

**17.3.10. Positive Effects of Ksi Lisims LNG**

The Proponents noted that increased employment opportunities in the Employment and Economy local Assessment Area may have positive effects on Gitxaala unemployment rates, increase income levels for Gitxaala individuals (and families)

who secure employment with the Project and provide experience that may be leveraged by workers to secure employment with other projects/employers following completion of project-related work.

Direct positive effects to Gitxaala interests will be limited when compared to existing conditions.

#### **17.3.11. Conclusions**

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal Mitigation Measures, the EAO concludes that Ksi Lisims LNG would have the following effects on Gitxaala's Indigenous interests:

- Minor on harvesting;
- Minor on use and integrity of sacred and culturally important sites and landscape features;
- Minor negative impact and minor positive impact on Gitxaala's governance; and
- Minor impact on health and wellbeing.

## 17.4. Kitselas First Nation

### 17.4.1. Assessment Approach

Kitselas drafted this assessment of the Project effects on Kitselas' Values, with input from the EAO. This Section reflects the perspective of Kitselas and, except where indicated, this Section does not necessarily reflect the Province's views or suggest its agreement with the perspectives set out in this assessment.

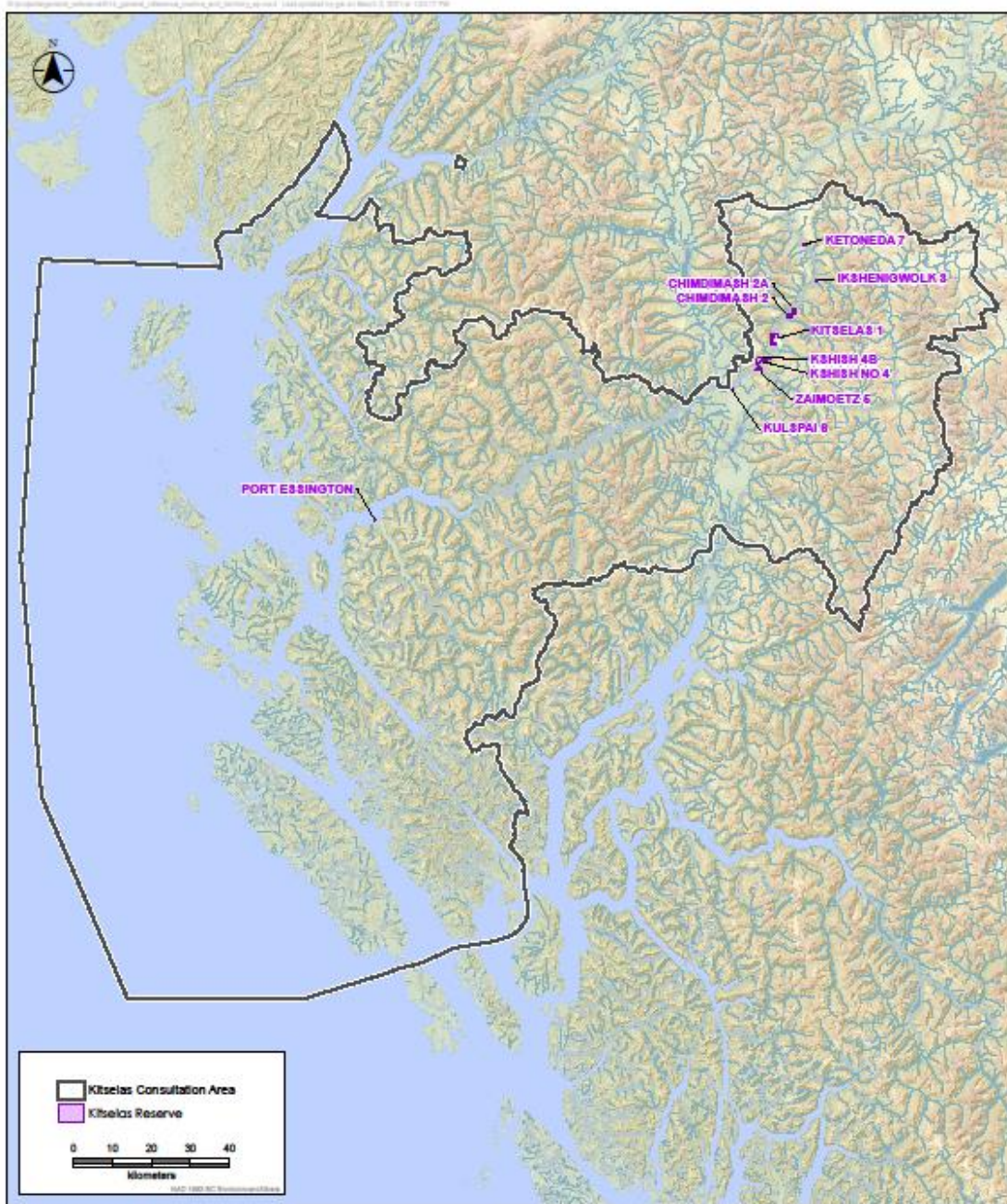
### 17.4.2. Overview

Kitselas is a proud and progressive Nation who have occupied the Skeena River and Kitselas Canyon areas since time immemorial. While Gitselasu (Kitselas) means 'people of the Canyon' in the Tsimshian language of Sm'algayax, the Kitselas Territory is described as stretching from the Pacific Ocean, on British Columbia's North Coast, inland up the Skeena River Valley. Within the Territory, there are eight Reserve areas, most of which are along the Highway 16 corridor (Figure 17.1). Kitselas maintains strong ties to the coastal environment as reflected by the large marine harvest area within Kitselas' traditional territory.

Kitselas' rich cultural history is grounded in adawx – traditional Tsimshian stories about the origins of the world. Adawx are 'true tellings' or 'sacred histories' which are passed on from generation to generation. Particular areas at the mouth of the Skeena River and in the Prince Rupert Harbour region can be tied to Kitselas names and stories (Kitselas First Nation, 2020).

Kitselas is governed by the Kitselas Band Council, which consists of one Chief and several councillors. The Chief and Council are elected every two years from members within Kitselas. The role of Council is to provide the overall direction for the Nation, and for the Kitselas Administration to carry out this direction. The council aims to act in the best interest of all Kitselas members, to enhance the well-being of Kitselas community members while protecting the Nation's assets.

Kitselas also has a hereditary governance system. Though heavily compromised by the effects of colonialism, Kitselas is house-based, and individuals identify with one of four clans: *Laxgibuu* (wolf), *Ganhada* (raven), *Gispwudwada* (blackfish/killer whale) and *Laxsgiik* (eagle). While the Chief and Council are the elected representatives for Kitselas, clan ties remain an important aspect of Kitselas governance, culture, and socio-economic conditions.



**Kitselas Traditional Use Overview**

**Kitselas Consultation Area and Reserves**

**FIGURE 1**

**Kitselas Lands & Resources**  
 The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing infrastructure whether shown or not.

Figure 17-1: Kitselas Consultation Area and Reserves

### 17.4.3. Engagement Activities

#### 17.4.3.1. Kitselas-EAO Engagement

During the Early Engagement phase, Kitselas identified as a participating Indigenous nation, which afforded Kitselas certain procedural rights under the Act, as outlined in [section 6](#): Indigenous Nation Engagement.

The EAO worked collaboratively with Kitselas throughout the assessment process.

As part of the Technical Advisory Committee, Kitselas participated in technical meetings throughout the environmental assessment for Ksi Lisims LNG. Kitselas and the EAO worked together through joint work planning, consensus-seeking and collaborating on this section of the EAO's Assessment Report. Kitselas and the EAO held biweekly calls throughout the environmental assessment to discuss concerns related to Ksi Lisims LNG and to understand, address and resolve, where possible, issues as they came up. The EAO and the Agency provided funding to support Kitselas's engagement in the environmental assessment process. Through discussions with Kitselas during the Process Planning phase, it was agreed upon that Kitselas would conduct an assessment of project effects on Kitselas's Indigenous Interests with input and iterative review from the EAO as outlined in Table 4 of the [Assessment Plan](#).

A summary of the Proponents' engagement with Kitselas is provided in section 14 of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

#### 17.4.3.2. Kitselas-Proponent Engagement

Engagement between Ksi Lisims and Kitselas has been positive and collaborative. We have met regularly to discuss concerns and additional information as it is provided by both Ksi Lisims and Kitselas. Both parties have acted in good faith seeking consensus on issues, and we have been engaged in impact management benefit agreement negotiations for months, and we are optimistic about the outcomes.

#### 17.4.4. Kitselas Values

Valued Components were previously defined by the EAO as: "components of the natural and human environment that are considered by the proponent, public, Aboriginal groups, scientists and other technical specialists, and government agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance" (EAO, 2013). The Impact Assessment Agency of Canada (IAAC) defines Valued Ecosystem Component as "the environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance" (CEAA 2006).

Kitselas is engaged in an independent, Nation-led process to define what matters to it when considering a new project in its Territory which has, as a goal, the identification of important elements and corresponding measurable parameters for assessment of impacts that matter to the Nation. While these measurable parameters are akin to the EA process concept of Valued Components, the term "component" does not resonate with Kitselas.

Kitselas community members have indicated that the term "component" implies (1) a division of the natural and human environments into parts and (2) a process of ranking these parts in terms of importance. This is at odds with the Kitselas worldview that is premised on equal importance of all parts of a single interconnected system and a responsibility to care for those things.

What does resonate for the Kitselas community is the concept of "values" based on relationships – ideas that define the Kitselas way ("Kitselas Values").

The development of a process to explain these values in a way that a conventional impact assessor will understand is ongoing. The first iteration of a set of Kitselas Values – against which project effects can be measured, was used to assess

effects to Kitselas from an earlier project. Since then, additional depth has been added to the Kitselas Values in the form of measurable parameters and a preliminary set of effects thresholds.

#### **17.4.4.1. Respect**

The Kitselas Values, all of which are related to the core concept of respect – meaning positive regard and corresponding respectful actions – are as follows:

- Respect for Kitselas’ History
- Respect for Kitselas’ Future
- Respect for Kitselas’ Lands
- Respect for Kitselas Authority
- Respect for the Kitselas Community

Respect is a relational concept: it implies two parties and a fundamental equality among them. Respect is the through-line in the Kitselas Values because it implies both a right and a responsibility which, if addressed in equal measure, result in balance and the ‘good way’.

#### **17.4.4.2. Interconnectedness and “Metrics”**

Intrinsic to the worldview is the interconnectedness of all things. To reflect this interconnectedness, Kitselas has intentionally and thoughtfully selected a series of 35 “metrics” that meet the western need for measurability but that speak to more than one value and can, together, provide a sense of the directionality of a proposed Project’s effects on Kitselas.

Each of the Kitselas Values, and the corresponding measurable parameters and thresholds, is described below. Recent baseline data associated with the measurable parameters has been collected from the community; these baselines are provided where they are not considered confidential.

Of note, consistent with Kitselas’ worldview that all things are connected, the measurable parameters appear in, and provide commentary on the state of, more than one Value. This is consistent in that one action by a proponent may have a negative or positive impact on more than one of Kitselas Values at once. The suite of metrics can therefore do more than provide simple insights into a Project’s direct and cumulative impacts on the things of importance to Kitselas, they can also:

- Be used to actively targeted key metrics for improvement that can yield benefits to multiple Kitselas values; and/or
- Identify the relative commitment of a project to reconciliation by how many metrics, though not adversely affected by a project, are improved through benefits agreements or Crown accommodation.

#### **17.4.4.3. Respect for Kitselas’ History**

Colonial processes have had a profound and continuing impact on this value. Much of Kitselas’ history has been lost, much has been suppressed, and the scars of attempted assimilation – particularly in the form of residential school – have created shame and fear that have slowed efforts to regain historical knowledge and restore traditional practices.

##### **Measurable Parameters associated with Respect for History**

This value is being quantified through both direct measurement of the state of cultural attributes (like language) and through proxies that speak to the legacy losses (to health and knowledge) associated with colonialism.



## Existing State – Preliminary Quantification

Overall, the health of this value ranges from 10% to 50% of the desired or “respected” state.

Table 16: Kitselas Assessment - Measurable Parameters - History

Metric #	Table 1 - Measurable Parameters - History	Current Conditions (2024)	2024 as % of Goal	Minimum acceptable condition	Goal
9.0	Number of community / cultural events	7	50%	No less than baseline	14
15.0	Number of knowledge holders / elders as a percentage of the community	20%	50%	20%	40%
20.1	Percentage of members able to understand S'malgyax	12%	24%	12%	50%
20.2	Percentage of members able to read S'malgyax	7%	14%	7%	50%
20.3	Percentage of members able to write S'malgyax	5%	10%	5%	50%
20.4	Percentage of members able to speak S'malgyax	8%	16%	8%	50%
21.0	Percentage of members desiring mentorship who are participating in a mentorship program	18%	16%	18%	100%
24.0	Percentage of households needing mental health services whose needs are met locally	60%	18%	60%	100%
28.0	Percentage of members who know how to hunt/gather/process traditional foods	67%	60%	67%	75%
29.0	Percentage of members who know their hereditary affiliations	50%	89%	100%	100%
33.0	Percentage of youth reporting “strong” connection with one or more elders	47%	50%	47%	90%

\*data sources available from Kitselas on request

## Existing State – Narrative

Of all Kitselas Values, Kitselas considers this as being perhaps the most compromised. Only a few elders remain who are fluent speakers of Sm'algyax. Direct and intergenerational effects of the residential school system are still affecting family health and community well-being. Understanding among outsiders (defined variously as ‘those who are not Kitselas,’ ‘those who are not Tsimshian,’ ‘those who are not from the Terrace region’, and ‘project proponents and their consultants’) of the Kitselas way is extremely limited. And pressure to sacrifice the elements of this Kitselas Value in favour of economic development is growing.

Prior to European contact, Kitselas society was healthy and strong. It was characterized by a deep spiritual connection to the lands and resources, a culture grounded in the *adawx*, and a robust economy. The location of the villages at Kitselas Canyon once offered a strategic advantage to the Kitselas people, who charged traders and travellers on the river a toll to pass through. The members of each *wilp* (house) moved throughout their *lax'yuup* (house territories) to harvest a vast array of plant, animal, and fish resources over the course of the year in a pattern known as the seasonal round.

Particular areas at the mouth of the Skeena River and the Prince Rupert Harbour region are tied to Kitselas names and stories: Kitselas views this as evidence of long-term occupation and use. Resources harvested from these areas were used to trade with other tribes on the coast and the interior via long-established travel routes.

Following European contact, the Kitselas way of life was drastically altered. The Grand Trunk Pacific Railway was constructed through one of the village sites at the Canyon, undermining Kitselas' strategic position for trade and eliminating their regional governance role as "toll-keepers" of the Skeena River. Kitselas use of the Territory also began to be impacted: the number, location, and availability of sites and areas used as part of the seasonal round began to change. Indian Reserves were established by the colonial government, several residential schools were established in the area, and many Kitselas people resigned themselves to permanent settlement in response to reduced access to the seasonal round. *Spokshuut* (Port Essington) was one such settlement: located near the mouth of the Skeena River in an area occupied seasonally by Kitselas long before being given its European name, *Spokshuut* / Port Essington grew into a year-round settlement built around two trading stores, and, later, a cannery and a sawmill. Kitselas people continued to live and work at Port Essington, using the town as a base for fishing on the coast into the early 20<sup>th</sup> century.

In the middle of the 20<sup>th</sup> century, a significant rise in classical (monetary) economic activity, land and resource development, and an increased regional population has resulted in significant changes to both the face and use of lands within Kitselas Territory, fundamentally changing Kitselas access to the land and sea. Many of these limitations can be traced back to federal and provincial resource laws and regulations that encouraged non-Indigenous use of the coast and limited the ability of Kitselas people to engage in traditional harvesting practices and other activities. For instance, during the 1960s, the Canadian federal government instituted a "Buyback Program" whereby fishermen could receive money from the government to "buy" their boat, after which the fisherman would pay that money back over a set period of time to achieve essentially an interest-free loan. However, if a fisherman was unable to make a payment on the boat, their vessel was taken and subsequently their fishing license was revoked. The strict terms of these loans and the loss of boats resulted in many Kitselas people being alienated from their traditional fishing grounds on the coast. This not only increased community pressure on the few Kitselas fishermen remaining to provide for the entire community, it also significantly narrowed the pool of individuals with knowledge of traditional harvesting methods and locations. In EA terms, this represents a "vulnerable context;" that is, it is already compromised and any further impact to it will have disproportionately large effects because it is not resilient in the face of impacts.

Impacts today are perpetuated by construction and authorization of projects that do not acknowledge or seek to reconcile past and cumulative impacts to respect for Kitselas History.

#### **17.4.4.4. Respect for Kitselas' History**

This Kitselas Value addresses the responsibilities current and future generations have to remember the people who have gone before and to protecting, following, and passing on the knowledge and ways to protect the land and each other that have come from Kitselas' ancestors.

##### **What this Value Encompasses**

This Kitselas Value encompasses both the period before European colonists arrived; and the colonial period extending to the present day. This Kitselas Value contains a number of ideas:

- Regaining lost knowledge / Restoring language;
- Recognizing Kitselas role in the history and development of the region;
- Addressing shame, stigma, and wounds of historical trauma; and
- Understanding the importance of sacred places and traditional practices.

Kitselas’ view of the Ksi Lisims LNG Project effects to this Value are discussed in [sections 17.4.6, 17.4.7, and 17.4.9](#).

**17.4.4.5. Respect for Kitselas’ Future**

This value addresses the responsibility to care for the children and the land so that the community remains strong, and the land remains healthy and can provide abundantly for the grandchildren of today’s grandchildren.

**What this Value Encompasses**

This value encompasses the idea that the future wellbeing of people, land, and creatures is connected. This value contains a number of ideas or goal statements, including:

- Kitselas’ youth are knowledgeable about their culture and proud of it;
- Kitselas youth have educational and recreational opportunities within the Territory and do not have to leave to learn or play;
- Kitselas youth have opportunities to connect with and learn from elders;
- Kitselas members have meaningful paid work;
- Parents have meaningful paid work near their families;
- Youth have the prospect of meaningful paid work in the Territory; and
- Kitselas traditions, including traditional economy, are passed on.

**Measurable Parameters associated with Respect for Future**

This value may be seen as the forward-looking companion to the first value. It is quantified through both direct measurement of the state of cultural attributes (like number of cultural events) and through proxies that speak to a healthy future.

**Existing State – preliminary quantification**

Overall, the health of this value ranges from 14% to 100% (average 49%) of the desired or “respected” state.

*Table 17: Kitselas Assessment - Measurable Parameter - Future*

#	Table 2 - Measurable Parameter - Future	Current Conditions (2024)	2024 as % of Goal	Threshold (minimum, unless noted)	Goal
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	76%	89%	76%	85%
7.0	Number of campouts and activities in the Territory	5	17%	No less than baseline	12
9.0	Number of community / cultural events	7	50%	No less than baseline	14
10.0	Number of cooperative governance / implementation agreements	pending		No less than baseline	More than baseline
11.0	Number of economic partnerships (JV, or partnership)	10		No less than baseline	More than baseline
13.0	Number of internships or work programs in government agencies (BC total)	13		No less than baseline	pending

#	Table 2 - Measurable Parameter - Future	Current Conditions (2024)	2024 as % of Goal	Threshold (minimum, unless noted)	Goal
14.0	Number of internships or work programs with private sector companies	2		1 per economic partnership	2 per economic partnership
15.0	Number of knowledge holders / elders as a percentage of the community	20%	50%	20%	40%
16.0	Percentage of members operating a business / self-employed	4%	40%	10%	10%
18.0	Overall carbon footprint / KFN members' carbon footprint	pending		12t	3t
19.0	Percentage of children able to attend childcare if their families wish them to	28%	28%	54.5%	100%
20.1	Percentage of members able to understand S'malgyax	12%	24%	12%	50%
20.2	Percentage of members able to read S'malgyax	7%	14%	7%	50%
20.3	Percentage of members able to write S'malgyax	5%	10%	5%	50%
20.4	Percentage of members able to speak S'malgyax	8%	16%	8%	50%
21.0	Percentage of members desiring mentorship who are participating in a mentorship program	18%	16%	18%	100%
22.0	Percentage of members gainfully employed	60%	100%	43%	60%
24.0	Percentage of households needing mental health services whose needs are met locally	60%	60%	60%	100%
25.0	Percentage of members over 18 with a degree, diploma, certificate, or accreditation	29%	42%	69%	69%
26.0	Percentage of members over 18 with a Dogwood Certificate / GED	88%	96%	91.4%	91.4%
28.0	Percentage of members who know how to hunt/gather/process traditional foods	67%	89%	67%	75%
29.0	Percentage of members who know their hereditary affiliations	50%	50%	100%	100%
32.0	Percentage of youth participating in Kitselas youth programs	45%	56%	45%	80%
33.0	Percentage of youth reporting "strong" connection with one or more elders	47%	52%	47%	90%

\*data sources available from Kitselas on request

### Existing State – Narrative

Kitselas considers this Value to be compromised in a number of ways that can be traced back generally to colonial disruption and specifically to the imposition of the residential school system. Children were forcibly removed from families of origin, mistreated, and made to feel shameful about their heritage. The legacy of this on current and future generations is significant: untreated mental health effects akin to PTSD were brought back to community with no support for healing; the adult-children of the residential schools who do retain memories of traditional ways are deeply embarrassed to share their memories with today's youth, and youth have insufficient grounding in their own culture to regain pride, leaving them feeling lost. Many do not readily recall their *wilp*; similarly, many do not feel they have been provided with the tools to excel in the broader Canadian economy.

Youth under the age of 18 represent the largest Kitselas demographic group, while elders (i.e., those 65 years or older) represent the smallest. Given limited access to the wisdom of their elders, today's youth take a narrow view of Kitselas Territory, first thinking in terms of colonially-granted Reserve Lands before taking a broader view that includes their claim to the full extent of the Territory.

There is, however, optimism that this Value is somewhat resilient: Kitselas has developed a robust 'culture camp' system that brings youth to the Canyon and allows them to be mentored by their elders on the land. Workshops with the youth suggest that this is a source of pride and an opportunity to improve the state of this value.

Kitselas' view of the Ksi Lisims LNG Project effects to this Value are discussed in [sections 17.4.6](#), [17.4.7](#), and [17.4.9](#).

#### 17.4.4.6. Respect for Kitselas' Lands

This Value will be recognizable to most EA practitioners as the grouping of biophysical valued components assessed in conventional EAs.

#### What this Value Encompasses

This Value encompasses the long-term health of the Territory and the ability of Kitselas to use its resources. It encompasses:

- Abundant, safe, clean, water; palatable freshwater; and
- Healthy fish, bird, and animal populations that can sustain traditional harvesting.

It also encompasses:

- Unimpeded /unrestricted movement for harvesting within the Territory;
- Protection of sacred, spiritual, sensitive places and ecosystems; and
- The existence of knowledge holders and students to whom knowledge can be passed.

#### Measurable Parameters associated with Respect for Lands

This value is being quantified both through direct measurement of the biophysical health on which culture depends, and on proxies which identify practices that infer a healthy environment. By default, the biophysical resources to be measured will depend heavily on the type of project and the location in which it is proposed to occur.

#### Existing state – Preliminary quantification

Overall, the health of this value ranges from 7% to 89% (average 49%) of the desired state. Of particular note, the fish stocks metric is most compromised.

Table 18: Kitselas Assessment - Measurable Parameter - Lands

#	Table 3 - Measurable Parameter - Lands	Current Conditions (2024)	2024 as % of Goal	Threshold (minimum acceptable, unless noted)	Goal
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	76%	89%	76%	85%
2.0	Cost to heat and cool homes	\$100	16% higher than desired	\$86	The lesser value
3.0	Fish return numbers	489,000	27%	1,100,000	1,789,000
5.0	Land and water area protected for ecosystem health	20%	67%	20%	30%
6.0	Number of adverse human / wildlife interactions (% respondents reporting)	32%	220% higher than desired	32%	10%
7.0	Number of campouts and activities in the Territory	5	42%	No less than baseline	12
12.0	Number of wholly owned Kitselas Nation businesses	5		No less than baseline	pending
15.0	Number of knowledge holders / elders as a percentage of the community	20%	42%	20%	40%
18.0	Overall carbon footprint / KFN members' carbon footprint	pending		12t (max)	3t
27.0	Percentage of households practicing traditional resource-based activities at desired rate	36%	36%	36%	100%
36.0	Wildlife population health	Specific to project and species		Specific to project and species	Specific to project and species

\*data sources available from Kitselas on request

### Existing state - Narrative

Kitselas considers this Value to be compromised in two discrete but interrelated ways. Biophysically, habitat loss and overharvesting are causing species populations to be in decline and pollution is affecting air, water and land quality. At the same time, the inability of Kitselas to dictate harvesting limits and access portions of the Territory limit the ability of Kitselas to discharge its duty to protect the Territory and all creatures living within it.

All Kitselas households that completed the 2020 Annual Determinants of Health Survey reported consuming traditional foods, and 32 households reported at least 30% of their diet is comprised of traditional food. However, participation in traditional resource-based activities such as fishing, hunting, and gathering intertidal resources has decreased among over half of Kitselas households over the past 4 years, despite four out of five members who report a desire to increase

their level of participation in traditional resource-based activities. The top concerns about traditional resources reported in the survey are the quantity of resources available, access to resources, and overall quality of resources.

Approximately half of the community members who completed the Survey reported they had lost access to a harvesting site or route, citing industrial development, contaminated resources, and commercial users as the main reasons.

Kitselas’ view of the Ksi Lisims LNG Project effects to this Value are discussed in [sections 17.4.6](#), [17.4.7](#), and [17.4.9](#).

#### 17.4.4.7. Respect for Kitselas’ Authority

This Value is related to reclamation of traditional governance practices and to the principles of free, prior, and informed consent contained in the United Nations Declaration on the Rights of Indigenous Peoples.

##### What this Value Encompasses

This Value encompasses all the ways in which Kitselas manages or is involved in the management of activities within its Territory. It encompasses:

- Participation in policy development and implementation;
- Inclusion in decision-making;
- Partnering in environmental management and in setting harvesting quotas/limits; and
- Economic partnerships on projects within the Territory.

##### Measurable Parameters associated with Respect for Authority

This value is being quantified through proxies related to conditions that support Kitselas governance (in terms of economic partnerships) and execution of governance.

##### Existing state – Preliminary Quantification

Overall, the health of this value ranges from 50% to 89% of the desired state. A number of data points are still required to be able to speak meaningfully to the conditions based on an average value.

Table 19: Kitselas Assessment - Measurable Parameter - Authority

#	Table 4 - Measurable Parameter - Authority	Current Conditions (2024)	2024 as % of Goal	Threshold (minimum acceptable, unless noted)	Goal
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	76%	89%	76%	85%
10.0	Number of cooperative governance/implementation agreements	pending		No less than baseline	More than baseline
11.0	Number of economic partnerships (JV, or partnership)	10		No less than baseline	More than baseline
17.0	Number of well-maintained signs in S'malgyax	pending		No less than baseline	More than baseline
29.0	Percentage of members who know their hereditary affiliations	50%	50%	100%	100%

*\*data sources available from Kitselas on request*

### Existing state - Narrative

Kitselas considers this Value to be significantly compromised: not only is involvement in decisions regarding the use of the Territory significantly diminished, the traditional government structures – particularly those related to kinship-based land management and resource sharing – have been all but lost to the current generation.

Traditionally, the head of a *wilp* was a key decision-maker, responsible both for protecting the land within the *wilp*'s purview and for sharing its wealth with the community. Feasts, observances, training, mentorship, gifting, and bequeathments were all tools for governance. With the loss of these and the imposition of colonial governance structures responsible only for reserve lands, Kitselas retains little of its former decision-making authority.

Kitselas has a strong Chief and Council and is actively looking to rebuild its role in managing for a healthy environment.

Kitselas' view of the Ksi Lisims LNG Project effects to this Value are discussed in [sections 17.4.6](#), [17.4.7](#), and [17.4.9](#).

#### **17.4.4.8. Respect for Kitselas' Community**

This Value is related to connectedness and the pride in being members of the Kitselas.

##### What this Value Encompasses

This Value is closely linked to all the other Values but is perhaps most intimately bound to the first Value – respect for Kitselas' History. The early colonial period led to major dislocations that have been carried forward across generations. With the Truth and Reconciliation Commission, there was a recognition at the highest level that a great deal of work needs to be done to address the ongoing effects – reflected in destabilized community relationships – that the arrival of colonists precipitated.

This Value encompasses:

- Frequency of community events and gatherings;
- Caring for each other and protecting elders;
- Relationships with neighbouring Nations;
- The beauty and cleanliness of the community;
- Physical and mental health; and
- A sense of safety.

##### Measurable Parameters associated with Respect for Community

This value is being quantified using a wide and combined set of parameters that reflects the deep connections among land, culture, and community. Some parameters are direct measures of community health, others are proxies representing the conditions upon which a healthy community are founded.

##### Existing state – Preliminary Quantification

Overall, the health of this value ranges from 10% to 84% of those for which thresholds represent minimum desired conditions.

For physical and mental health thresholds – where thresholds represent maximum acceptable conditions – the current state of this value is deeply compromised: incidence of various illnesses in the Kitselas community exceed Provincial averages by 267% to 857%



Table 20: Kitselas Assessment - Measurable Parameters - Community

#	Table 5 - Measurable Parameters - Community	Current Conditions (2024)	2024 as % of Goal	Threshold*	Goal
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	76%	89%	76%	85%
2.0	Cost to heat and cool homes	\$100	16% greater than the desired state	\$86 (max)	The lesser value
4.0	Income equality (Gini coefficient) – within Kitselas; between Kitselas & Terrace	\$14,000	0%	0	0
7.0	Number of campouts and activities in the Territory	5	42%	No less than baseline	12
8.1	# of chronic illnesses reported by members: Mood disorders	15%	517% greater than the desired state	2.43%	No worse than BC average
8.2	# of chronic illnesses reported by members: Heart Disease:	2%	167% greater than the desired state	0.75%	No worse than BC average
8.3	# of chronic illnesses reported by members: Diabetes:	3%	329% greater than the desired state	0.70%	No worse than BC average
8.4	# of chronic illnesses reported by members: Substance Use Disorder	3%	757% greater than the desired state	0.35%	No worse than BC average
8.5	# of chronic illnesses reported by members: Respiratory illness (asthma)	4%	700% greater than the desired state	0.50%	No worse than BC average
8.6	# of chronic illnesses reported by members: Cancer	1%	78% less than max threshold	4.60%	No worse than BC average
9.0	Number of community / cultural events	7	50%	No less than baseline	14
12.0	Number of wholly owned Kitselas Nation businesses	5		No less than baseline	pending
15.0	Number of knowledge holders / elders as a percentage of the community	20%	50%	20%	40%
17.0	Number of well-maintained signs in S'malgyax	pending		No less than baseline	More

#	Table 5 - Measurable Parameters - Community	Current Conditions (2024)	2024 as % of Goal	Threshold*	Goal
19.0	Percentage of children able to attend childcare if their families wish them to	28%	28%	54.50%	100%
20.1	Percentage of members able to understand S'malgyax	12%	24%	12%	50%
20.2	Percentage of members able to read S'malgyax	7%	14%	7%	50%
20.3	Percentage of members able to write S'malgyax	5%	10%	5%	50%
20.4	Percentage of members able to speak S'malgyax	8%	16%	8%	50%
21.0	Percentage of members desiring mentorship who are participating in a mentorship program	18%	18%	18%	100%
22.0	Percentage of members gainfully employed	60%	18%	43%	60%
23.0	Percentage of households involved in community volunteer programs	19%	25%	50%	75%
24.0	Percentage of households needing mental health services whose needs are met locally	60%	25%	60%	100%
27.0	Percentage of households practicing traditional resource-based activities at desired rate	36%	36%	36%	100%
30.0	Percentage of households who report feeling safe in their neighbourhood/community	56%	56%	56%	100%
31.0	Percentage of members with access to safe and reliable transportation	84%	56%	100%	100%
32.0	Percentage of youth participating in Kitselas youth programs	45%	84%	45%	80%
33.0	Percentage of youth reporting "strong" connection with one or more elders	47%	56%	47%	90%
34.0	Percentage of households with too little income to meet basic needs	20%	136% greater than the max threshold	8.80% (max)	No more than threshold
35.0	Percentage of households with needs unmet by local health services	28%	254% greater than the desired state	7.90% (max)	0%

\*data sources available from Kitselas on request

\*\*NOTE: for all EXCEPT health parameters, the threshold represents the minimum acceptable value. For health parameters, the threshold represents the maximum acceptable value.

### Existing state - Narrative

Unsurprisingly, this Value is compromised. Community members notice a series of stark trends that reflect the degraded state of this Value:

- The frequency of community gatherings (pre-pandemic) was steadily declining;
- Women and young people reported feeling less and less safe both in community and in the Terrace region;
- All members of the community have noted a decline in pride of place, as evidenced by rising incidence of littering and the percentage of homes (approximately half) that need repairs beyond basic maintenance;
- Despite over half of households reporting at least one person who has mental health issues and one third reporting at least one person with cardiovascular disease, opportunities (in the form of physical space and activities) to improve physical and mental health within the community are not growing; and
- There are fewer opportunities for the Tsimshian Nations to work together and support each other.

Like the “Respect for the Future” value, however, there are signs that this Value is singularly resilient: given support, the community has the strength to rebuild this Value.

Kitselas’ view of the Ksi Lisims LNG Project effects to this Value are discussed in [sections 17.4.6](#), [17.4.7](#), and [17.4.9](#).

#### 17.4.5. Information Gaps

While Kitselas notes that there may be some information gaps, none are sufficiently large to prevent Kitselas from making informed decisions regarding consent or non-consent to the project.

#### 17.4.6. Evaluation of Effects to Kitselas Metrics

Rather than considering potential effects as either positive or negative, Kitselas applies a third potential impact – that of neutrality. This concept of neutrality is critical to Kitselas in the context of reconciliation: it represents a lost opportunity to move in the direction of reconciliation and has a direct bearing on Kitselas’ assessment of the Project’s respect for Kitselas Values.

Table 6, below, identifies Kitselas’ determination of the direction of the Ksi Lisims’ potential impacts on individual Kitselas metrics.

Table 21: Kitselas’ determination of the Project’s potential impacts on individual Metrics

<b>Parameters related to Respect for Kitselas History</b>		
9.0	Number of community / cultural events	neutral
15.0	Number of knowledge holders / elders as a percentage of the community	neutral
20.1	Percentage of members able to understand S’malgyax	neutral
20.2	Percentage of members able to read S’malgyax	neutral
20.3	Percentage of members able to write S’malgyax	neutral
20.4	Percentage of members able to speak S’malgyax	neutral

21.0	Percentage of members desiring mentorship who are participating in a mentorship program	neutral
24.0	Percentage of households needing mental health services whose needs are met locally	neutral
28.0	Percentage of members who know how to hunt/gather/process traditional foods	neutral
29.0	Percentage of members who know their hereditary affiliations	neutral
33.0	Percentage of youth reporting “strong” connection with one or more elders	neutral
<b>Parameters related to Respect for Kitselas Future</b>		
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	negative
7.0	Number of campouts and activities in the Territory	neutral
9.0	Number of community / cultural events	neutral
10.0	Number of cooperative governance / implementation agreements	positive
11.0	Number of economic partnerships (JV, or partnership)	positive
13.0	Number of internships or work programs in government agencies (BC total)	neutral
14.0	Number of internships or work programs with private sector companies	positive
15.0	Number of knowledge holders / elders as a percentage of the community	neutral
16.0	Percentage of members operating a business / self-employed	positive
18.0	Overall carbon footprint / KFN members’ carbon footprint	negative
19.0	Percentage of children able to attend childcare if their families wish them to	neutral
20.1	Percentage of members able to understand S’malgyax	neutral
20.2	Percentage of members able to read S’malgyax	neutral
20.3	Percentage of members able to write S’malgyax	neutral
20.4	Percentage of members able to speak S’malgyax	neutral
21.0	Percentage of members desiring mentorship who are participating in a mentorship program	neutral
22.0	Percentage of members gainfully employed	positive
24.0	Percentage of households needing mental health services whose needs are met locally	neutral

25.0	Percentage of members over 18 with a degree, diploma, certificate, or accreditation	neutral
26.0	Percentage of members over 18 with a Dogwood Certificate / GED	neutral
28.0	Percentage of members who know how to hunt/gather/process traditional foods	neutral
29.0	Percentage of members who know their hereditary affiliations	neutral
32.0	Percentage of youth participating in Kitselas youth programs	neutral
33.0	Percentage of youth reporting “strong” connection with one or more elders	neutral
<b>Parameters related to Respect for Kitselas Land</b>		
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	negative
2.0	Cost to heat and cool homes	neutral
3.0	Fish return numbers	negative
5.0	Land and water area protected for ecosystem health	neutral
6.0	Number of adverse human / wildlife interactions (% respondents reporting)	neutral
7.0	Number of campouts and activities in the Territory	neutral
12.0	Number of wholly owned Kitselas Nation businesses	neutral
15.0	Number of knowledge holders / elders as a percentage of the community	neutral
18.0	Overall carbon footprint / KFN members’ carbon footprint	negative
27.0	Percentage of households practicing traditional resource-based activities at desired rate	neutral
36.0	Wildlife population health	negative
<b>Parameters related to Respect for Kitselas Authority</b>		
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	negative
10.0	Number of cooperative governance / implementation agreements	positive
11.0	Number of economic partnerships (JV, or partnership)	positive
17.0	Number of well-maintained signs in S’malgyax	neutral
29.0	Percentage of members who know their hereditary affiliations	neutral
<b>Parameters related to Respect for Kitselas’ Community</b>		

1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	negative
2.0	Cost to heat and cool homes	neutral
4.0	Income equality (Gini coefficient) – within Kitselas; between Kitselas & Terrace	positive
7.0	Number of campouts and activities in the Territory	neutral
8.0	Number of chronic illnesses reported by members	
8.1	· Mood disorders:	neutral
8.2	· Heart Disease:	neutral
8.3	· Diabetes:	neutral
8.4	· Substance Use Disorder:	neutral
8.5	· Respiratory illness (asthma):	neutral
8.6	· Cancer:	neutral
9.0	Number of community / cultural events	neutral
12.0	Number of wholly owned Kitselas Nation businesses	neutral
15.0	Number of knowledge holders / elders as a percentage of the community	neutral
17.0	Number of well-maintained signs in S'malgyax	neutral
19.0	Percentage of children able to attend childcare if their families wish them to	neutral
20.1	Percentage of members able to understand S'malgyax	neutral
20.2	Percentage of members able to read S'malgyax	neutral
20.3	Percentage of members able to write S'malgyax	neutral
20.4	Percentage of members able to speak S'malgyax	neutral
21.0	Percentage of members desiring mentorship who are participating in a mentorship program	neutral
22.0	Percentage of members gainfully employed	positive
23.0	Percentage of households involved in community volunteer programs	neutral
24.0	Percentage of households needing mental health services whose needs are met locally	neutral

27.0	Percentage of households practicing traditional resource-based activities at desired rate	negative
30.0	Percentage of households who report feeling safe in their neighbourhood/community	negative
31.0	Percentage of members with access to safe and reliable transportation	neutral
32.0	Percentage of youth participating in Kitselas youth programs	neutral
33.0	Percentage of youth reporting “strong” connection with one or more elders	neutral
34.0	Percentage of households with too little income to meet basic needs	positive
35.0	Percentage of households with needs unmet by local health services	negative

This may be presented graphically as below.

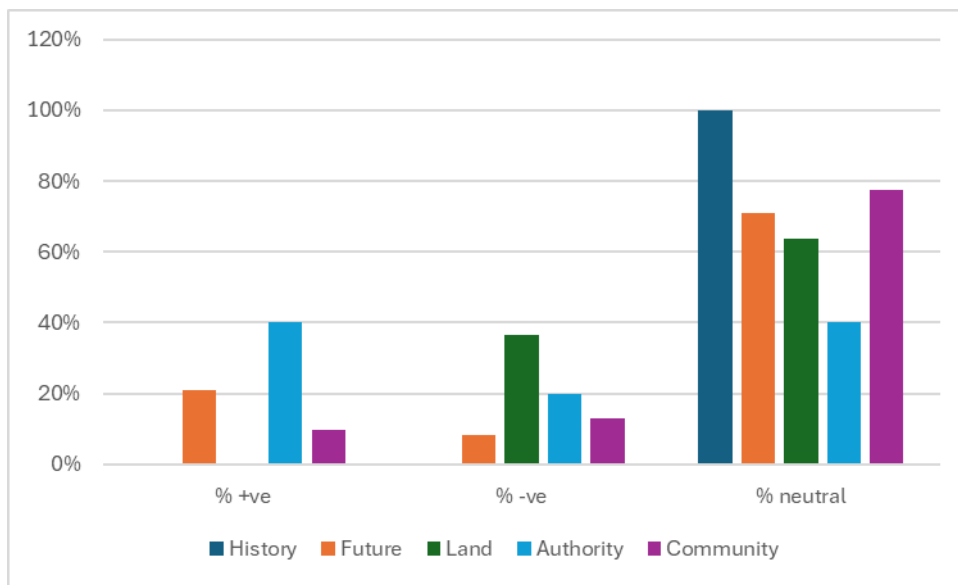


Figure 17-2: Kitselas' determination of the Project's potential impacts on individual Metrics

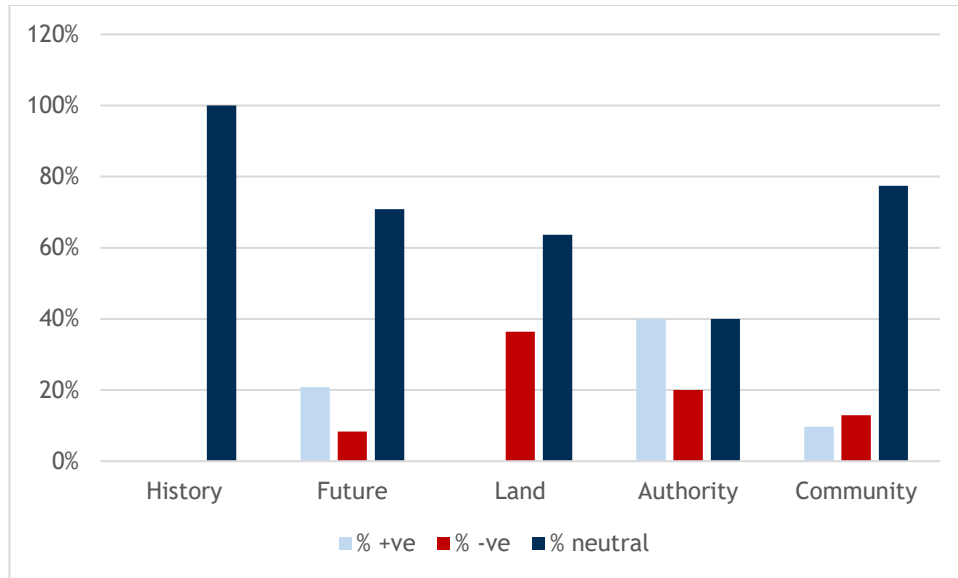


Figure 17-3: Kitselas' determination of the Project's potential impacts on individual Metrics Comparative Graph

Perhaps the most striking feature of the table above is the degree to which the potential direction of impact to things of Value to Kitselas is classified as neutral.

**17.4.7. Individual Metrics Analysis**

Based on Table 6, a deeper analysis of those metrics that are positively or negatively affected is warranted to support determinations made in [section 17.4.9](#).

Table 22: Kitselas Assessment - Description of potential impacts and their directionality

Table 7 – Description of potential impacts and their directionality			
#	Measurable Parameter	Direction of impact	Potential impact
1.0	Area of Territory available for spiritual/cultural use (peaceful enjoyment)	negative	<p>The Project will be sited in a remote and undeveloped location at the northern end of Kitselas territory near an area associated with a precontact gathering area which will impact experience, perception of experience, and sense of agency regarding governance of happenings in and about the Territory.</p> <p>The project will add commercial shipping volume to Kitselas' territorial waters with potential impacts to species, culture, stewardship, and access.</p>
3.0	Fish return numbers	negative	Project accidents/malfunctions and / or contribution to global heating may adversely affect fish stocks.



Table 7 – Description of potential impacts and their directionality

#	Measurable Parameter	Direction of impact	Potential impact
4.0	Income equality (Gini coefficient) – within Kitselas; between Kitselas & Terrace	positive	To the extent that the Project will provide opportunities for Kitselas members and/or businesses to participate in the formal (western) economy through construction and/or operations, the Project may offer opportunities for positive effects on parameters representing a number of Kitselas Values.
10.0	Number of cooperative governance / implementation agreements	positive	
11.0	Number of economic partnerships (JV, or partnership)	positive	
14.0	Number of internships or work programs with private sector companies	positive	
16.0	Percentage of members operating a business / self-employed	positive	
18.0	Overall carbon footprint / KFN members' carbon footprint	negative	If project cannot meet net carbon neutrality and/or if Project requires additional travel to worksites using non-renewable fuels, the project may have a negative impact on this metric.
22.0	Percentage of members gainfully employed	positive	As with other economic parameters (4/10/11/14/16), to the extent that the Project will provide opportunities for Kitselas to participate in the formal (western) economy, the Project may offer opportunities for positive effects on parameters representing a number of Kitselas Values.
34.0	Percentage of households with too little income to meet basic needs	positive	
35.0	Percentage of households with needs unmet by local health services	negative	To the extent that the Project adds strain to regional health services, the project may have negative impacts on this metric.
36.0	Wildlife population health	negative	Project construction may have adverse impacts to avian species at risk that range throughout Kitselas Territory; Project operations (shipping) may have impacts on species of concern to Kitselas.

#### Nature of Potential Negative Impacts

Unsurprisingly because it is a typical pattern of industrial development, the analysis above suggests that most potential negative impacts are related to the land, its use, and Kitselas' authority to steward it. Specifically, the project may

reduce health of species and spaces, ability to use and enjoy these, and the sense that Kitselas is in charge of its Territory and destiny.

#### Nature of Potential Positive Impacts

Also unsurprisingly, if relationship and benefit agreements are so designed, the Project has the potential to offer conventional economic benefits to Kitselas

#### Neutrality

As noted earlier, a significant number of the parameters that speak to the state of Kitselas' values are not expected to be altered.

This may be viewed in several ways:

- In terms of conventional impact assessment methodology, this suggests that there are relatively few impacts from the Project on those things that Kitselas Values.
- In other terms, the Project may be considered to have missed opportunities to identify novel means to enhance the positive effects or support Kitselas initiatives to positively affect other metrics.

#### 17.4.8. Ksi Lisims' Section on Kitselas' Aboriginal Interests

Ksi Lisims has prepared a 90-page assessment of the effects of the Project on Kitselas First Nation and included it as Chapter 15 of the Application.

##### 17.4.8.1. Interests as defined by the Proponent

Chapter 15 of the Project Assessment defines Kitselas interests in terms of those affirmed by Canada's Constitution Act. For the purposes of Assessment, they are identified as:

<ul style="list-style-type: none"> <li>• marine harvest and consumption</li> <li>• terrestrial harvest and consumption</li> <li>• governance and social and economic conditions</li> </ul>	<ul style="list-style-type: none"> <li>• sacred places and heritage sites</li> <li>• health and well-being</li> <li>• access and travel</li> </ul>
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##### 17.4.8.2. Relationship Between Application interests and Kitselas' Values

As noted previously, Kitselas world view is predicated on relationships and respect. Intrinsic to the worldview is the interconnectedness of all things. To reflect this interconnectedness, Kitselas has intentionally and thoughtfully selected a series of "metrics" that meet the western need for measurability but that speak to more than one value and can, together, provide a sense of the directionality of a proposed Project's effects on Kitselas.

Not only can the suite of metrics Kitselas uses provide insight into a Project's impacts, however, it can:

- Be used to identify key metrics that, if actively targeted for improvement, can yield benefits to multiple Kitselas values
- Identify the relative commitment of a project to reconciliation by how many metrics, though not adversely affected by a project, are improved through benefits agreements or Crown accommodation. In this regard, no net change in a metric is not considered a neutral effect; rather, it is considered indifference to Kitselas Values.

Kitselas has mapped its metrics and directionality of impact onto the framework provided by the Proponent to underscore the distribution of positive, negative, and neutral impacts as described in Section 2.7.

Table 23: Kitselas Assessment - Impacts to values related to interests identified in Application

Table 8 – Impacts to values related to interests identified in Application	
Changes to:	Kitselas Metrics Potentially Affected
Marine harvest and consumption	<ul style="list-style-type: none"> <li>• Area of Territory available for spiritual/cultural use (peaceful enjoyment)</li> <li>• Fish return numbers</li> <li>• Land and water area protected for ecosystem health</li> <li>• Wildlife population health</li> <li>• Percentage of members desiring mentorship who are participating in a mentorship program</li> <li>• Percentage of members gainfully employed</li> <li>• Percentage of households involved in community volunteer programs</li> <li>• Percentage of households practicing traditional resource-based activities at desired rate</li> <li>• Percentage of members who know how to hunt/gather/process traditional foods</li> <li>• Percentage of youth participating in Kitselas youth programs</li> <li>• Percentage of youth reporting “strong” connection with one or more elders</li> </ul>
Terrestrial Harvest and consumption	<ul style="list-style-type: none"> <li>• Area of Territory available for spiritual/cultural use (peaceful enjoyment)</li> <li>• Fish return numbers</li> <li>• Land and water area protected for ecosystem health</li> <li>• Wildlife population health</li> <li>• Percentage of members gainfully employed</li> <li>• Percentage of households involved in community volunteer programs</li> <li>• Percentage of households practicing traditional resource-based activities at desired rate</li> <li>• Percentage of members who know how to hunt/gather/process traditional foods</li> <li>• Percentage of youth participating in Kitselas youth programs</li> <li>• Percentage of youth reporting “strong” connection with one or more elders</li> </ul>
Governance, social, and economic conditions	<ul style="list-style-type: none"> <li>• Area of Territory available for spiritual/cultural use (peaceful enjoyment)</li> <li>• Fish return numbers</li> <li>• Cost to heat and cool homes</li> <li>• Income equality (Gini coefficient) – within Kitselas; between Kitselas &amp; Terrace</li> <li>• Number of adverse human / wildlife interactions (% respondents reporting)</li> <li>• Number of chronic illnesses reported by members</li> <li>• Number of community / cultural events</li> <li>• Number of cooperative governance / implementation agreements</li> <li>• Number of economic partnerships (JV, or partnership)</li> <li>• Number of wholly owned Kitselas Nation businesses</li> <li>• Number of internships or work programs in government agencies (BC total)</li> <li>• Number of internships or work programs with private sector companies</li> <li>• Number of knowledge holders / elders as a percentage of the community</li> <li>• Percentage of members operating a business / self-employed</li> <li>• Wildlife population health</li> <li>• Number of well-maintained signs in S'malgyax</li> <li>• Overall carbon footprint / KFN members' carbon footprint</li> <li>• Percentage of children able to attend childcare if their families wish them to</li> <li>• Percentage of members able to understand, read, write, speak S'malgyax</li> <li>• Percentage of members desiring mentorship who are participating in a mentorship program</li> <li>• Percentage of members gainfully employed</li> <li>• Percentage of members over 18 with a degree, diploma, certificate, or accreditation</li> <li>• Percentage of members over 18 with a Dogwood Certificate / GED</li> <li>• Percentage of households involved in community volunteer programs</li> <li>• Percentage of households needing mental health services whose needs are met locally</li> </ul>

**Table 8 – Impacts to values related to interests identified in Application**

Changes to:	Kitselas Metrics Potentially Affected
	<ul style="list-style-type: none"> <li>• <i>Percentage of members who know their hereditary affiliations</i></li> <li>• <i>Percentage of households with too little income to meet basic needs</i></li> <li>• <i>Percentage of households with needs unmet by local health services</i></li> </ul>
Sacred places and heritage sites	<ul style="list-style-type: none"> <li>• <i>Area of Territory available for spiritual/cultural use (peaceful enjoyment)</i></li> <li>• <i>Land and water area protected for ecosystem health</i></li> <li>• <i>Number of campouts and activities in the Territory</i></li> <li>• <i>Number of community / cultural events</i></li> <li>• <i>Number of well-maintained signs in S'malgyax</i></li> <li>• <i>Percentage of members desiring mentorship who are participating in a mentorship program</i></li> </ul>
Health and well-being	<ul style="list-style-type: none"> <li>• <i>Area of Territory available for spiritual/cultural use (peaceful enjoyment)</i></li> <li>• <i>Fish return numbers</i></li> <li>• <i>Land and water area protected for ecosystem health</i></li> <li>• <i>Number of campouts and activities in the Territory</i></li> <li>• <i>Number of chronic illnesses reported by members</i></li> <li>• <i>Number of community / cultural events</i></li> <li>• <i>Number of knowledge holders / elders as a percentage of the community</i></li> <li>• <i>Percentage of members operating a business / self-employed</i></li> <li>• <i>Percentage of children able to attend childcare if their families wish them to</i></li> <li>• <i>Percentage of members able to understand, read, write, speak S'malgyax</i></li> <li>• <i>Percentage of members desiring mentorship who are participating in a mentorship program</i></li> <li>• <i>Percentage of members gainfully employed</i></li> <li>• <i>Percentage of members over 18 with a degree, diploma, certificate, or accreditation</i></li> <li>• <i>Percentage of members over 18 with a Dogwood Certificate / GED</i></li> <li>• <i>Percentage of households involved in community volunteer programs</i></li> <li>• <i>Percentage of households needing mental health services whose needs are met locally</i></li> <li>• <i>Percentage of members with access to safe and reliable transportation</i></li> <li>• <i>Percentage of members who know their hereditary affiliations</i></li> <li>• <i>Percentage of households who report feeling safe in their neighbourhood/community</i></li> <li>• <i>Percentage of youth participating in Kitselas youth programs</i></li> <li>• <i>Percentage of youth reporting "strong" connection with one or more elders</i></li> <li>• <i>Percentage of households with too little income to meet basic needs</i></li> <li>• <i>Percentage of households with needs unmet by local health services</i></li> </ul>
Access and travel	<ul style="list-style-type: none"> <li>• <i>Area of Territory available for spiritual/cultural use (peaceful enjoyment)</i></li> <li>• <i>Number of campouts and activities in the Territory</i></li> <li>• <i>Percentage of members operating a business / self-employed</i></li> <li>• <i>Number of well-maintained signs in S'malgyax</i></li> <li>• <i>Percentage of households practicing traditional resource-based activities at desired rate</i></li> <li>• <i>Percentage of members who know how to hunt/gather/process traditional foods</i></li> <li>• <i>Percentage of members with access to safe and reliable transportation</i></li> <li>• <i>Percentage of households who report feeling safe in their neighbourhood/community</i></li> </ul>

As noted in [section 17.4.7](#), the nature of potentially positive impacts are benefits provided in the context of the western monetary economy, the potential negative impacts are to Kitselas people and lands, and most metrics of importance to Kitselas remain unaffected either way.

### 17.4.9. Kitselas' Determination

Based on the prediction of impacts above, Kitselas has characterized the potential impacts expected From Ksi Lisims.

#### 17.4.9.1. Kitselas' Determination Framework for Impacts to Values

The basis for Kitselas' evaluation of potential impacts is identified in Table 24, below.

Table 24: Kitselas Assessment - Effects Determination Scale

	History	Future	Lands	Authority	Community
Respect	Historical wrongs are righted	Members are involved in sustainable traditional and financial economies	The land will flourish for neighbours and future generations	Kitselas is a partner in projects in its Territory	Kitselas community is healthy and flourishing
Tolerance	Some negative trends are reversed	Some participation in financial and traditional economies	Land is mostly ecologically and spiritually healthy	Kitselas has meaningful influence on projects in its Territory	Community engagement is strong but some concerns remain
Ambivalence	Historical wrongs are acknowledged	Mixed opportunities for work and/or partial traditional economy	The land has what it needs for Kitselas to survive	Kitselas has a say in projects in its Territory	Some pride in community but little overall unity
Disregard	Cumulative effects are worsened	Some opportunities but they often clash with community	Relationships with the lands and species on the land are threatened	Kitselas is consulted but has no meaningful say	Low or declining pride in the community and turnout at community events
Disrespect	Traditional and historical knowledge of Kitselas is lost or ignored	Available jobs clash with Kitselas values, and/or no meaningful traditional economy	Species on the land and relationships with the land are lost	Kitselas is ignored	Community is unhealthy and unsupportive of each other

Kitselas semi quantitative evaluation of the effects of the Ksi Lisims LNG Project on its selected measurable parameters, and the resulting potential impacts on Values are identified in Table 25, below.

#### 17.4.9.2. Kitselas' Determination Regarding Potential Impacts To Values

Based on the above analysis, Kitselas' assessment of the Project's impacts on its Values is provided below.

The determination is made considering the mitigations offered by the proponent and the various Conditions being proposed by both federal and provincial regulators who are charged with upholding the Crown's honour in respect of treatment of Kitselas.

For the EAO's analysis of the way in which Crown conditions and mitigations speak to ensuring respect of Kitselas values, please see [Kitselas Appendix A](#).

Table 25: Kitselas Assessment - Impacts Analysis

Respect for:	Table 10 – Impacts Analysis	Determination of Respect	Means to improve	EAO Inputs
Kitselas’ History	<p>Demonstrating respect for Kitselas’ History is intimately connected to acknowledging and reversing historical wrongs that harmed people, attempted to extinguish culture, disregarded indigenous practices for stewardship, and removed authority and agency from Kitselas.</p> <p>The Ksi Lisims Project is expected to have little impact, either positive or negative, on the parameters associated with this Value.</p>	<p>In Kitselas’ view, the Ksi Lisims project represents <b>Ambivalence</b> for Kitselas History. (3/5)</p>		
Kitselas’ Future	<p>Demonstrating respect for Kitselas’ Future requires that equitable opportunities to participate in the colonial economy exist. It also requires that conditions be established or deepened that allow for Kitselas’ youth to engage with Kitselas’ culture and regain pride in the Kitselas Way.</p> <p>Based on the measurable parameters selected, the project has the potential to benefit members economic future. Unless carbon management and territorial protection and restoration are conditions of the project, however, the project also has the potential to compromise Kitselas’ values.</p>	<p>In Kitselas’ view, the Ksi Lisims project represents <b>Ambivalence</b> for Kitselas History. (3/5)</p>		
Kitselas’ Lands	<p>Demonstrating respect for Kitselas’ Lands means actively stewarding the land and its resources for future generations in a manner consistent with Kitselas’ ways.</p> <p>Based on Kitselas’ measurable parameters, potential impacts to Kitselas Values are, on balance, predicted to be somewhat negative. These impacts are expected, with mitigation, to be relatively small.</p>	<p>In Kitselas’ view, the Ksi Lisims project represents <b>Ambivalence</b> where Kitselas ways with respect to our lands are concerned. (2/5)</p>		
Kitselas’ Authority	<p>Demonstrating respect for Kitselas Authority is intimately linked to demonstrating respect for the other values: a project that helps heal and build the community is one that represents respect for Kitselas’ aspirations for the future.</p> <p>Based on Kitselas’ measurable parameters, economic benefits to Kitselas may be realized</p>	<p>Provided that specific benefits to Kitselas are realized, Kitselas is of the view that the Project represents <b>Tolerance</b> of Kitselas’ Authority. (4/5)</p>		
Kitselas’ Community	<p>Demonstrating respect for Kitselas’ Community is intimately linked to demonstrating respect for the other values: a project that helps heal and build the community is one that represents respect for Kitselas’ aspirations for the future.</p>	<p>In Kitselas’ view, the Ksi Lisims project represents <b>Ambivalence</b></p>		

Respect for:	Table 10 – Impacts Analysis	Determination of Respect	Means to improve	EAO Inputs
	The number of parameters that speak to Respect for Community is large; this reflects the centrality of community to Kitselas’ identity. Few of the parameters that speak to respect for community are likely to be influenced by the project.	Kitselas aspirations regarding Community. (3/5)		

#### 17.4.10. Potential Cumulative effects

Cumulative effects are the residual effects of multiple projects on an appropriately scoped Valued Components. In general, the best Impact Assessment practices suggest that “appropriate scoping” should be defined functionally. In the case of the Kitselas Values, the overall temporal boundary should be one defined that at least reflects an understanding that Kitselas’ Values are all currently compromised compared to the desired state. For Kitselas, the appropriate temporal ‘baseline’ for the Ksi Lisims LNG Project should be defined as a point in time prior to the establishment of Kitimat as a shipping hub.

An appropriately ‘functional’ spatial boundary for Kitselas is that provided by the Assessment Report.

Kitselas believes that cumulative effects are generally underestimated by the EAO. We understand that this is the unfortunate result of the legislation as written which requires that the EAO consider the project’s contributions to cumulative effects rather than the overall cumulative effects themselves.

While it is true that the Ksi Lisims project will contribute an additional fraction of the overall total vessel traffic anticipated to be calling at Kitimat, the idea of a fractional contribution is only meaningful if there is some well-understood limit beyond which additional fractions of impact are deemed to be “too much.”

In this regard, Kitselas is of the view that Crown must undertake a strategic effects assessment of marine traffic on B.C.’s north coast before it allows future projects with components that include marine traffic. Without this, the Crown does not have the requisite information to make a well-informed decision. As it stands, it may be allowing a project to proceed that does not, in itself, have a significant effect, but when added to the overall total effect, will push the environment beyond its limits. This, after all, is the true definition of cumulative impacts and, by providing good information, is the effect that assessment is endeavouring to prevent.

This is all the more critical given that, unlike other projects exporting through existing North Coast hubs at Kitimat and Prince Rupert, the Project’s location will create a new shipping hub that will serve as a catalyst for further development in a heretofore previously undeveloped area. Without an understanding of the regional carrying capacity and in the face of climate change, this region may reach an unacceptable shipping threshold without the realization that it has happened.



## Kitselas Appendix A – Crown Conditions and Mitigations Applicable to Kitselas Values

### Respect for Kitselas' History

#### Proposed Provincial Conditions

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, acidification and eutrophication monitoring in aquatic and terrestrial environments, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 17 (Socioeconomic Management Plan), which will minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty but off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and
- Condition 18 (Road Transportation Management Plan), which will include adaptive management procedures to address transportation effects to First Nations related to road traffic, emergency response plan, restriction of workers use of personal vehicles to access the Project-related transportation routes;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in and a regional social and economic management and monitoring committee, if one is created; and
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

#### Proposed Federal Key Mitigation Measures

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;

- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to navigate safely in the presence of marine mammals to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, toxicity, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;
- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

## Respect for Kitselas' Future

### Proposed Provincial Conditions

- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Report), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse; and
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and

economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

#### Proposed Federal Key Mitigation Measures

- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping;
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

#### Respect for Kitselas' Lands

##### Proposed Provincial Conditions

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, acidification and eutrophication monitoring in aquatic and terrestrial environments, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisim's LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty off-work hours;
- Condition 18 (Road Transportation Management Plan), which will include adaptive management procedures to address transportation effects to First Nations related to road traffic, emergency response plan, restriction of workers use of personal vehicles to access the Project-related transportation routes;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application;
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate; and

- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

#### Proposed Federal Key Mitigation Measures

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to navigate safely in the presence of marine mammals follow speed profiles to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, toxicity, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;
- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

## Respect for Kitselas Authority

### Proposed Provincial Conditions

- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Report), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use; and
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

### Proposed Federal Key Mitigation Measures

- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping;
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples;

## Respect for the Kitselas Community

### Proposed Provincial Conditions

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse;
- Condition 16 (Worker Health and Wellness), which will require Ksi Lisims LNG to provide medical services within the worker accommodation;

- Condition 17 (Socioeconomic Management Plan), which will minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty but off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created.

#### Proposed Federal Key Mitigation Measures

- Health and medical services plan to mitigate impacts on local health services used by First Nations; and
- Measures to promote safe, respectful, and inclusive conduct in the workplace and community, including a workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-specific processes, including sexual harassment counseling and confidential, culturally sensitive care; and cross-cultural awareness training developed with First Nations.

## 17.5. Kitsumkalum First Nation

### 17.5.1. Community Profile

Kitsumkalum First Nation (Kitsumkalum) is one of the original Galts'ap (community) who form the broader Tsimshian Nation. The main reserve lands are located where the mouth of the Skeena and Kalum Rivers meet. The Kitsumkalum territory covers approximately 5,941 km<sup>2</sup>, including the Kitsumkalum and Zymacord watersheds, Lakelse Lake, as well as the Skeena River and the Prince Rupert coast, spanning in the north from Portland Inlet, through Chatham Sound to the south in Grenville Channel. The majority of Kitsumkalum members live in Terrace and 25% live on-reserve, in IR-1, at the mouth of the Kitsumkalum River. Numerous members also live in Port Edward and Prince Rupert. As of February 2022, Kitsumkalum had a registered population of 809.

### 17.5.2. Kitsumkalum Involvement in the Consultation Process

During the Early Engagement Phase, Kitsumkalum identified as a participating Indigenous nation, which afforded Kitsumkalum certain procedural rights under the Act, as outlined in [section 6.4](#): Participating Indigenous Nations.

The EAO worked collaboratively with Kitsumkalum throughout the assessment process.

As part of the Technical Advisory Committee, Kitsumkalum participated in technical meetings throughout the environmental assessment for Ksi Lisims LNG. Kitsumkalum and the EAO worked together through joint work planning, consensus-seeking and collaborative drafting of this section of the EAO's Assessment Report. Kitsumkalum and the EAO held biweekly calls throughout the environmental assessment to discuss concerns related to Ksi Lisims LNG and to understand, address and resolve, where possible, issues as they came up. The EAO and the Agency provided funding to support Kitsumkalum's engagement in the environmental assessment process. Through discussions with Kitsumkalum during the Process Planning phase, it was agreed upon that the EAO would conduct an assessment of project effects on Kitsumkalum's Indigenous Interests with input and iterative review from Kitsumkalum as outlined in Table 4 of the [Process Order Assessment Plan](#).

The EAO used the following sources in drafting the assessment of Ksi Lisims LNG effects on Kitsumkalum's Indigenous Interests:

- The Proponents' Revised Application
- Information submitted during environmental assessment by the Proponents and Kitsumkalum
- Conclusions from the EAO's assessment of Valued Components
- The Proponents' Indigenous Consultation Report
- Kitsumkalum Highway 113 Risk Assessment Report - June 20, 2022
- Kitsumkalum Socio-Economic and Well-Being Report – Nov. 18, 2022
- Kitsumkalum Indigenous Land and Marine Use Study – July 3, 2023

A summary of the Proponents' engagement with Kitsumkalum is provided in [Section 14](#) of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

### 17.5.3. Assessment Boundaries

Spatial boundaries for the project assessment are divided into project footprint, marine shipping route, an open water assessment area, as well as a transmission line assessment area. All of these assessment boundaries, (project footprint, marine shipping route, transmission line Assessment Area, open water Assessment Area) are located within, or intersect with Kitsumkalum's territory. The spatial assessment boundaries for each Indigenous interest were identified based on the local assessment area and regional assessment area for Valued Components and Kitsumkalum's territory. All of the determined Valued Component local Assessment Areas and regional Assessment Areas intersect with Kitsumkalum territory.

### 17.5.4. Regional Context

Kitsumkalum has been affected by industrial development and physical activities in the region that have already resulted in cumulative effects on Kitsumkalum's Indigenous interests. Kitsumkalum members have been dispossessed from areas throughout their territory from factors such as industrial development.

For thousands of years Kitsumkalum have occupied their traditional territory (laxyuup). The laxyuup provides resources to the community. Connections between families, social ties, passing down cultural knowledge and oral historical knowledge between generation is tied to the laxyuup. Spiritually, the laxyuup is marked by the history of their Waap and Galts'ap (community) and provides gathering places, burial places, ceremonial sites, story places, medicinal and sacred plant gathering sites and teaching areas.

Industrial and colonial developments have resulted in negative effects on Kitsumkalum seasonal rounds, including the Grand Trunk Pacific Railway extending to Casey Point (1908 to 1914) destroying or forcing relocation and depopulation of multiple nearby Kitsumkalum village sites, as well as affecting heritage sites and harvesting areas. Kitsumkalum voiced multiple concerns regarding regional conditions in their traditional territory. These included:

- Fairview Container Phase 1 and 2A Project, and connector road, destroying and cutting off access to Casey Point;
- Potential changes to land use, population, pollution, access and social stressors and increased homelessness affecting human health, infrastructure and services and employment and economy in the region;
- Changes to infrastructure and services resulting in increased trail use, recreation and hobbies (e.g., sportfishing) of people associated with projects, putting pressure on resources;
- Changes in employment and economy resulting in changes to access and time available for seasonal rounds and cultural activities; and
- Other industrial developments that have had lasting effects (e.g., Rio Tinto Alcan and Eurocan) such as water pollution, ground pollution, air quality and changes to water quality, vegetation and human health.

Throughout the EA process, Kitsumkalum has expressed concerns about the lack of characterization of effects related to the third-party owned components of the Project, including the natural gas pipeline required to deliver product to the Project and the two hydroelectric transmission lines required to service the Project. Development of Ksi Lisims LNG is contingent upon the development of these three third-party owned (separate) projects. However, Kitsumkalum is of the view that each project component (LNG plant, pipeline, provincially-owned transmission line, and private transmission line) is being or has been assessed for effects in isolation, and that this does not enable a fulsome evaluation of the Ksi Lisims project in its entirety, nor does it fully capture the cumulative impacts of the entire project (to include the third-party owned components) on Kitsumkalum Rights and Title.



### 17.5.5. Indigenous Interests

The Proponents of Ksi Lisims LNG identified Kitsumkalum’s Indigenous interests to be assessed in the Application through:

- Engaging with Kitsumkalum to understand their Indigenous rights;
- Identifying Valued Components in relation to the Application, by identifying Kitsumkalum’s priority values related to community well-being, cultural expression, and the preferred ways of exercising their rights;
- Collaboratively establishing clear criteria with Kitsumkalum on how to characterize effects;
- Establishing an iterative two-way dialogue; and
- Maintaining ongoing engagement throughout the environmental assessment process.

This included the Proponents:

- Providing notifications of Project steps and processes as well as draft documents for review;
- Providing a copy of the preliminary list of potential effects and preliminary list of information sources for review and comment;
- Signing an Environmental Assessment and Regulatory Process Funding Agreement that provides funding for Kitsumkalum; and
- Online or phone-based consultation opportunities, alongside in-person meetings, open houses, and virtual information sessions.

The Proponents of Ksi Lisims LNG identified effects to the following Indigenous interests:

- Changes to Kitsumkalum marine harvest and consumption;
- Changes to Kitsumkalum terrestrial harvest and consumption;
- Changes to Kitsumkalum governance;
- Changes to Kitsumkalum social and economic conditions;
- Changes to Kitsumkalum sacred places and heritage sites;
- Changes to Kitsumkalum health and well-being;
- Changes to Kitsumkalum transmission of knowledge;
- Changes to Kitsumkalum access and travel.

Based on the Proponent’s Application, and through discussion with Kitsumkalum, the following Indigenous interests have been identified as having the potential to be affected by Ksi Lisims LNG:

- Harvesting Rights;
- Use and Integrity of sacred and culturally important sites and landscape features;
- First Nation governance;
- Health and wellbeing (including socioeconomic).

### 17.5.6. Harvesting Rights

#### Background

Harvesting rights was selected as an Indigenous interest given that these Aboriginal rights are fundamental to describing potential effects of proposed projects.

#### Existing Conditions

Kitsumkalum have harvested land and marine resources and fished marine resources from their territory for consumption, economic, subsistence and trade purposes for millennia, and continue to do so today. Movement between important cultural and harvesting sites is possible using their extensive trails and water routes. The Application identified that Kitsumkalum's seasonal routes have been adversely affected by industrial and colonial developments. Kitsumkalum utilize a variety of terrestrial and aquatic plant species present throughout the alpine to intertidal and marine areas of their territory. Some of the important species harvested for subsistence purposes include moose, mountain goat, deer, bear, five species of salmon (sockeye, chinook, chum, pink and coho), cod, trout, oolichan, crab, halibut, Pacific herring and herring eggs, rockfish, clams, algae, eelgrass, red laver, cockles, mussels, geoducks, scallops, abalone, crabs, chitons, seaweeds, water parsley, water parsnip, blueberries, black currant, gooseberries, soapberries, crabapples, and high-bush cranberries. Important sites that hold cultural, spiritual, landscape, wildlife, subsistence, transportation and commercial value for Kitsumkalum are located within and in proximity to the Ksi Lisims LNG local Assessment Areas and regional Assessment Areas. Kitsumkalum rely on unhindered access to marine resources such as salmon, halibut, groundfish, and kelp harvesting sites to support the commercial livelihood of Kitsumkalum fishermen, as well as the traditional food fishery for community gatherings and events related to governance, and for distribution to Elders and others in the community who are unable to get out on the water. Kitsumkalum harvest marine resources in proximity to the Marine Shipping Route.

Kitsumkalum identified the following key concerns related to harvesting:

- Potential interruptions to country food fishing and harvesting activities outside and throughout Portland Canal and on north Pearse Island;
- Harvesters direct or perceived loss of a safe anchorage location in Whiskey Bay;
- A loss of Indigenous knowledge transmission as a result of interruptions to harvesting activities;
- Potential interactions between long lines set for halibut within Portland Canal and transiting LNG carriers, as well as the potential interaction of Kitsumkalum bottom contact fisheries and the underwater pipeline and transmission line that will transect Portland Canal;
- Potential effects on harvest species;
- Potential effects to marine resources from increased shipping, with a particular focus on marine mammals and marine fisheries;
- Potential accidents and malfunctions with the potential to affect environmental health; and
- Potential effects on water, wildlife, fish, and birds within and beyond the Project's assessment areas.

Kitsumkalum also reported harvesting areas and terrestrial values which require access from Highway 113/Nisga'a Highway, including critical moose and goat habitat, trapping areas, and over 70 moose, goat, bear, ptarmigan, grouse, and deer hunting areas, food and medicinal plants gathering areas, and berry harvesting areas. Kitsumkalum raised concerns regarding increased traffic on Highway 113/ Nisga'a Highway, affecting access to harvesting sites, increased recreational use resulting in increased hunting and fishing, as well as increased risk for wildlife collisions, noise and disturbance, and

human safety. Highway 113/Nisga’a Highway is within the Employment and Economy local Assessment Area (see [chapter 18.12](#)) and wildlife and wildlife habitat regional Assessment Area (see [chapter 18.7](#)).

### Potential Project Effects

The EAO identified residual effects to Valued Components included in [Appendix 6](#), which would remain following the application of mitigation measures, that could potentially affect Kitsumkalum’s harvesting rights. These potential effects include:

- Interactions between project-related vessels and Indigenous fishing activities may create a disturbance resulting in lost fishing time and the temporary (or permanent) displacement of fishers ([chapter 18.9](#): marine use).
- Wake waves generated by project-related vessels may pose a risk to fishers, shoreline harvesters, and other Kitsumkalum marine uses ([chapter 18.9](#): marine use).
- Underwater noise produced during in-water construction activities has the potential to cause injury or disturbance to marine fish and marine mammals ([chapter 18.5](#): marine resources).
- Operation of the seawater intake may cause injury or mortality through impingement or entrainment of fish ([chapter 18.5](#): marine resources).
- During construction, operation, and decommissioning phases, vessel strikes from Project-related vessel traffic (e.g., LNG carriers or escort tugs) have the potential to injure or kill marine mammals. ([chapter 18.9](#): marine use).
- Indirect change in habitat effectiveness because of sensory disturbance (e.g., noise, vibration, light, human presence) during each Project phase along the Marine Shipping Route ([chapter 18.7](#): wildlife and wildlife habitat)
- Wildlife mortality risk from increased traffic on Highway 113, ([chapter 18.7](#): wildlife and wildlife habitat)

Cumulative effects of additional users in the Kitsumkalum Valley and the effects to wildlife, including increased access, recreation and hunting ([chapter 18.7](#): wildlife and wildlife habitat)The EAO identified the following potential effects to Kitsumkalum’s harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased road traffic on Highway 113 and marine vessel traffic within the Marine Shipping Route with the associated sensory disturbances (i.e., noise and light increase) in local population (associated with Ksi Lisims LNG and in conjunction with other projects) and potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest and fish and marine resources, as well as wildlife, during seasonal rounds;
- **Time:** Time may be lost when harvesting, including when harvesting for Elders and/or redistribution to other Kitsumkalum members from the increase in marine vessel traffic in the Marine Shipping Route, and potential for interference with Kitsumkalum fishing vessels engaged in and equipment used for harvesting salmon and halibut;
- **Access:** Access to preferred harvesting locations may be lost or altered from an increase in traffic on Highway 113 and marine vessel traffic in the Marine Shipping Route, type of vessels, and the potential for accidents and malfunctions in the Marine Shipping Route, affecting Kitsumkalum community access to resources;
- **Experience:** Harvesting experiences may be altered from an increase in vessel traffic and type of vessels, wake waves, real or perceived sensory disturbances along the Marine Shipping Route, and associated change in noise, light, and air quality and a loss of Indigenous knowledge transmission as a result of interruptions to harvesting activities; and
- **Subsistence-based livelihoods and trade:** Alteration of both subsistence-based livelihoods and trade relationships with neighbouring First Nations may occur from disruption of marine bird movement due to marine vessel traffic,

change in marine mammal and fish behaviour and increased risk of marine fish, marine bird, marine mammal mortality due to potentially fatal strikes with marine vessels, displacement of marine users due to an increase in vessel traffic and type of vessels and wake waves within the Marine Shipping Route and the potential for accidents and malfunctions, and terrestrial mammal mortality due to vehicle collisions.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on harvesting rights:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### EAO's Analysis and Conclusions

This section presents EAO's analysis and conclusions on the potential residual effects to Kitsumkalum from Ksi Lisims LNG on Harvesting Rights

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, acidification and eutrophication monitoring in aquatic and terrestrial environments, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisim's LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty off-work hours;
- Condition 18 (Road Transportation Management Plan), which will include adaptive management procedures to address transportation effects to First Nations related to road traffic, emergency response plan, restriction of workers use of personal vehicles to access the Project-related transportation routes;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation,

aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and

- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate.
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to Harvesting Rights:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Conduct all in-water construction activities within the window of least risk for the Lower Nass River area;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to navigate safely in the presence of marine mammals to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;
- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping; and

- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

After consideration of the Mitigation Measures and potential effects, described above, the EAO and Kitsumkalum identified the following residual effects:

- Methods, locations and opportunities;
- Time;
- Access;
- Experience; and
- Subsistence-based livelihoods and trade.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on Harvesting Rights are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 26: Summary of residual effects on Kitsumkalum and its Harvesting Rights

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>Harvesting Rights</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversable Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Kitsumkalum users along the Marine Shipping Route and Highway 113 are considered moderately resilient to impacts based on existing conditions and existing effects to marine and terrestrial harvesting. Impacts to marine harvesting are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred harvesting locations. Impacts to terrestrial harvesting are within a broader regional extent at regular intervals with an increase in traffic and disturbance, resulting in impacts to experience and methods for hunting and gathering. Impacts are partially reversable following decommissioning. Impacts may disproportionately affect Kitsumkalum members who rely heavily on marine and terrestrial resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Kitsumkalum members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

Potential cumulative effects on both marine navigation and marine fisheries may occur during the construction of the Prince Rupert Gas Transmission and West Coast Gas Transmission projects and transmission line within the Portland Canal, with this infrastructure being laid directly on the seabed. Potential cumulative effects on both marine navigation and marine fisheries may occur along the Marine Shipping Route from the interaction of vessels with overlapping routes

or increasing shipping traffic interfering with access to sites or activities (e.g., fishing and shoreline harvesting). Ksi Lisims LNG would contribute up to 140 to 160 LNG carriers and 8 to 12 natural gas liquid product carriers annually, representing a 6 percent increase in existing and future large commercial vessel traffic intersecting at the Triple Island Pilot Boarding Station. When the vessels are in Portland Canal, there is a low magnitude of cumulative interaction between the Project and the other projects given the remote location of the Project in Portland Canal and the existing limited presence of industrial or residential marine projects.

The increase in large vessel movements within the Marine Shipping Route from these potential cumulative effects attributable to Ksi Lisims LNG has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to Kitsumkalum members based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the transmission lines and the Prince Rupert Gas Transmission projects associated with Ksi Lisims LNG could happen concurrently with the construction of the associated pipeline and transmission line. This additional concurrent activity could amplify the cumulative effects by adding vehicles and activity to the Highway 113 corridor, effect harvesting activities, as well as increasing construction activities of underwater infrastructure in the project area.

The increase in local population associated with Ksi Lisims LNG workforce, in conjunction with other projects, has the potential for cumulative effects on wildlife and fish due to effects including increases in recreational hunting and fishing along the Highway 113 corridor affecting access to harvesting sites, as well as increased risk for wildlife collisions, noise and disturbance.

Cumulative effects from Ksi Lisims LNG may be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

## Conclusion

In consideration of the available information, the EAO's engagement with Kitsumkalum, Kitsumkalum's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a minor effect on Kitsumkalum's Harvesting Rights.

## 17.5.7. Use and Integrity of sacred and culturally important sites and landscape features

### Background

The Application stated that according to Kitsumkalum, sense of place and sense of attachment reflect the bond that people have with a place; it is intrinsically linked to individual and cultural identity and the relationship people share with the lands and waters of their territory. For First Nations the meaning is often expressed through the connection and dissemination of knowledge to/of the land. This knowledge can encompass place names, cultural practices, historical/archaeological areas, and many other considerations.

Kitsumkalum identified the following key concerns related to use and integrity of sacred and culturally important sites and landscape features:

- Potential disruption to knowledge and cultural transference, and ability of families to engage in harvesting and other activities on or around Pearse Island, and identification of alternative areas for harvesting within a Nations territory;

- Potential effects of the proposed shipping routes, including potential effects to safety of Nations travelling on the water due to the potential for marine accidents and the generation of unpredictable wakes; and
- Potential cumulative effects from increased marine vessel traffic and increase project-generated terrestrial traffic through Kitsumkalum territory.

### Existing Conditions

Kitsumkalum have significant interaction with their history (e.g., heritage sites, spiritual sites), exercise self-determination, govern, and enrich the future of their members through ongoing connection, use, and access to the waters and lands of their territory. Kitsumkalum connect with their families, maintain social ties, teach children how to behave, and exchange cultural knowledge and oral historical information about their ancestors when interacting on their territory. Kitsumkalum have established extensive travel and access routes (e.g., trails and water routes) to access important cultural and harvesting sites in their territory. Industrial and colonial developments have had adverse effects on Kitsumkalum seasonal rounds and their ability to access sacred and culturally important sites and landscape features in their territory. This includes cutting off access to a Kitsumkalum village site, changes in employment and economy, and changes in time available for Kitsumkalum to practice their seasonal rounds and other cultural activities.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Kitsumkalum's use and integrity of sacred and culturally important sites and landscape features:

- Increase in project vessels transiting the Marine Shipping Route interfering with vessel passage and a change in access to sacred places and heritage sites ([chapter 18.9](#): marine use)
- Effects on use of sacred and cultural important sites and landscape features from elevated sensory disturbances from increased traffic and users on the land and waters within Kitsumkalum traditional territory ([chapter 18.1](#); Acoustic; [chapter 18.2](#): air quality)
- Wake waves generated by project vessels transiting the Marine Shipping Route have the potential to result in effect to use and integrity of sacred and culturally important sites and landscape features based on the increase in risk to Kitsumkalum marine users ([chapter 18.9](#): marine use);

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to the use and integrity of sacred and culturally important sites and landscape features Indigenous interest, the EAO identified the following potential effects to Kitsumkalum's use and integrity of sacred and culturally important sites and landscape features due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Access and use:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, real or perceived sensory disturbances and potential for accidents and malfunctions;
- **Traditional knowledge:** Loss or alteration of ability to share traditional knowledge at sacred and culturally important sites and landscape features due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and due to increased traffic on Highway 113, increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances, change in air quality and potential for accidents and malfunctions; and



- **Experience:** Reduced quality of experience at sacred and culturally important sites and landscape features as a result of sensory disturbance due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and due to increased highway traffic, marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances and change in air quality

### Mitigation Measures

The following Valued Component sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on the use and Integrity of sacred and culturally important sites and landscape features:

- Air Quality
- Acoustic
- Marine Use
- Human Health
- Archaeological and Heritage Resources

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in Appendix A of the Proponents' Revised Application.

### EAO's Analysis and Conclusions

This section presents the EAO's analysis and conclusions on the potential residual effects to Kitsumkalum from Ksi Lisims LNG on use and integrity of sacred and culturally important sites and landscape features

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on use and integrity of sacred and culturally important sites and landscape features:

- Condition 9 (Construction Environmental Management Plan), as described in [section 17.5.9](#), including a requirement for a chance find procedure for heritage resources;
- Condition 11 (Community Feedback Process), as described in [section 17.5.9](#);
- Condition 13 (Marine Transportation Communication Plan), as described in [section 17.5.9](#);
- Condition 17 (Socioeconomic Management Plan), as described in [section 17.5.9](#);
- Condition 18 (Transportation management plan), as described in [section 17.5.9](#); and
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments of archaeology and heritage sites, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to use and integrity of sacred and culturally important sites and landscape feature

- Marine Transportation Communication Plan, as described in [section 17.5.9](#);
- Community feedback protocol as described in [section 17.5.9](#);
- Chance find protocol for heritage resources during construction;
- Progressive reclamation of temporarily disturbed areas to establish self-sustaining vegetation, using plant species of interest to First Nations in consultation with First Nations; and

- Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [section 17.5.9](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Access and use;
- Traditional knowledge; and
- Experience.

The EAO’s characterization of the residual effects of Ksi Lisims on use and integrity of sacred and culturally important sites and landscape feature are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 27: Summary of residual effects on Kitsumkalum and its use and integrity of sacred and culturally important sites and landscape feature

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>Use and integrity of sacred and culturally important sites and landscape features</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Kitsumkalum members use of sacred and culturally important sites and landscape features are expected to have moderate resiliency to impacts as there are other anthropogenic influences in the area and additional pressures on the use of the area from the local population and industrial development. Impacts to sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route and regular intervals along Highway 113, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Kitsumkalum members who rely heavily on culturally important sites and landscape features. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Kitsumkalum members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features include those related to marine navigation and road transportation due to interaction with vessels and increasing shipping traffic and the increase in traffic on Highway 113, which are described in [section 17.5.3](#).

The cumulative effects from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features may be alleviated by the Mitigation Measures described in [section 17.5.3](#).

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on access and the sense of peace and enjoyment of sacred and culturally important sites and landscape features due to a greater number of people accessing the land base in the region.

The cumulative effects associated with Ksi Lisims LNG workforces may be alleviated by the Mitigation Measures described in [section 17.5.4](#).

### Conclusion

In consideration of the available information, the EAO's engagement with Kitsumkalum, Kitsumkalum's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a minor effect on Kitsumkalum's use of and the integrity of sacred and culturally important sites and landscape feature.

## 17.5.8. First Nation Governance

### Background

Kitsumkalum are governed by both a traditional hereditary governance system as well as a contemporary elected Chief and Council system (Kitsumkalum Indian Band Government). The hereditary government system follows the ayaawx (laws of traditional Tsimshian governance), necessary for proper and long-term management of Kitsumkalum lands, waters, and resources.

### Existing Conditions

The elected Kitsumkalum Indian Band Government is responsible for providing direction for Kitsumkalum and its administration (i.e., development of infrastructure and services, including education, employment, housing, and health, on-reserve to support Kitsumkalum members). However, the aspects of Kitsumkalum socio-economic structure remain tied to their traditional Tsimshian governance system. The Kitsumkalum Indian Band Government offers several opportunities to members including educational services, training and assistance securing employment.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Kitsumkalum's First Nation Governance:

- Effects from increase in marine shipping along the Marine Shipping Route are anticipated to interfere with vessel passage during all Project phases in a proportion of navigable waters; ([chapter 18.9](#): marine use)
- Effects from increase in terrestrial project-related traffic (including traffic generated by Ksi Lisims component projects) on Kitsumkalum traditional territory is anticipated to interfere with Kitsumkalum use and enjoyment of the land, resource harvesting, and safety while travelling;
- Effects from increase of local population on resource harvesting for use in feast and other governance related ceremonies and events, and on knowledge transference, the ability for teaching and sharing governance traditions; ([chapter 18.11](#): community health and wellness) and
- Positive or negative effects to regional employment and income that are moderate in magnitude given the workforce estimates ([chapter 18.12](#): employment and economy)

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to First Nation Governance, the EAO identified the following potential effects to Kitsumkalum's First Nation Governance due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Use and Occupation:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased traffic on Highway 113, increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Decision making:** Changes in Kitsumkalum’s ability to make decisions regarding land and marine use may occur due to increased population land uses and marine vessel traffic along the Marine Shipping Route;
- **Employment and economy:** Positive and negative effects may be experienced due to changes in regional employment that may occur through increased demand for labour and employment opportunities as well as inability for certain sub-populations to participate equitably in employment and/or the economy such as through procurement and business opportunities. There is also the potential for wage inflation, labour drawdown, increased cost of living and increased cost of housing and accommodations.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on First Nations Governance:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Employment and Economy
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents’ Revised Application.

### The EAO’s Analysis and Conclusions

This section presents the EAO’s analysis and conclusions on the potential residual effects to Kitsumkalum from Ksi Lisims LNG on First Nation Governance

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on First Nation Governance:

- Condition 11 (Community Feedback Process), as described in [Section 17.5.9](#);
- Condition 13 (Marine Transportation Communication Report), as described in [Section 17.5.9](#); and
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to First Nation Governance:

- Marine Transportation Communication Plan, as described in [Section 17.5.9](#);
- Community feedback protocol as described in [Section 17.5.9](#);
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [Section 17.5.9](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Use and Occupation;
- Decision making; and
- Employment and economy.

The EAO’s characterization of the residual effects of Ksi Lisims on First Nation Governance are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 28: Summary of residual effects on Kitsumkalum and its First Nation Governance

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>First Nation Governance</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Kitsumkalum’s First Nation’s governance has a medium resilience based on the stress that Kitsumkalum has experienced from increased population land uses and marine vessel traffic in the region. Impacts to governance is considered within a broader regional extent and may alter Kitsumkalum’s roles or functions on use and decision making. Kitsumkalum member’s employment may experience a combination of positive effects through an increase in local employment opportunities, and negative effects due to inequitable ability for subpopulations to participate in these employment opportunities and economies. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate overall based on the uncertainty regarding employment and economy and decision-making including volume of employment and business procurement throughout the Project’s lifetime.

\* Note: Criteria and assessment ratings are defined in [Appendix 3 - Residual Effects Characterization Definitions](#)

## Cumulative Effects

The potential cumulative effects resulting from Ksi Lisims LNG on Indigenous governance include the those related to more non-local population accessing the land base and related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [Section 17.5.6](#). Cumulative effects on employment and economy were not identified due to the regional nature of the assessment of the Employment and Economy valued component.

Although no cumulative effects to governance were identified, any potential cumulative effects from Ksi Lisims LNG on Indigenous governance may be alleviated by the Mitigation Measures described in [Section 17.5.6](#).

## Conclusion

In consideration of the available information, the EAO's engagement with Kitsumkalum, Kitsumkalum's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a minor negative and minor positive effect on Kitsumkalum's Governance.

### 17.5.9. Health and wellbeing (including socioeconomic)

#### Background

Kitsumkalum has previously expressed that assessing health and wellbeing requires a holistic approach, reviewing not only physical health, but also access to health resources, land, and ability to engage with the land and share cultural traditions.

#### Existing Conditions

Kitsumkalum raised concerns regarding industrial activities associated with Ksi Lisims LNG construction and operations, and indirect activities and effects as a result of the industrial activities, having the potential to amplify effects on Kitsumkalum health and well-being that was already being experienced as a result pre-existing projects. Past projects that have occurred in the area have had adverse effects on Kitsumkalum's seasonal rounds and caused housing and wage disparity issues. Current projects have suggested similar mitigation to Ksi Lisims LNG such as 'local first' hiring, but it has remained challenging for Kitsumkalum to participate in business opportunities associated with project construction, as the available jobs are often not aligned with the skills and knowledge of members of Kitsumkalum, or are underpaid and/or short term. There are also concerns regarding the health and safety of community members given the increase in out-of-town populations correlating with increased drug and alcohol addictions, gender-based violence and demand for sex work.

Kitsumkalum identified the following key concerns related health and wellbeing:

- Potential effects to air quality with a focus on air emissions and greenhouse gas emissions;
- Resource quality and abundance, which impact health and wellbeing;
- Potential adverse interactions between the non-local workforce and local community members, resulting in regional socio-economic issues, including but not limited to increase in drugs and alcohol prevalence, addictions, homelessness, and violence;
- Potential increases in the cost of living, including increases in housing and rental costs;
- Potential decrease in availability, quality, and access to traditional food sources, affecting food security and cultural knowledge transference; and
- Potential effects on access to and health of sacred and heritage sites.

## Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Kitsumkalum’s Indigenous health and wellbeing:

- Positive or negative effects on regional employment and income ([chapter 18.12](#): employment and economy);
- Positive effects may be unevenly distributed and not benefit groups that are under-represented, including First Nation peoples and women ([chapter 18.11](#): community health and wellness);
- Negative effects on housing availability and costs ([chapter 18.13](#): infrastructure and services);
- Increases in cost of living and affordability of market foods ([chapter 18.11](#): community health and wellness);
- Potential negative effects on utilities and waste management, emergency services and transportation infrastructure ([chapter 18.13](#): infrastructure and services, [chapter 18.11](#): community health and wellness);
- Decrease in access to health, medical and social infrastructure and services ([chapter 18.11](#): community health and wellness)
- Effects to mental health and well-being from erosion of culture, identity, sense of place and language ([chapter 18.11](#): Community Health and Wellness);
- Increase substance abuse, crime rates, violence against women and girls, domestic violence, strain on family relationships, and erosion of community cohesion in communities, which disproportionately affects Indigenous communities, women, children and youth ([chapter 18.11](#): community health and wellness)
- Increase in rates of communicable diseases, injuries, and suicides, and changes in mental health outcomes ([chapter 18.11](#): community health and wellness);
- Change in harvesting and avoidance of consumption of country foods due to real or perceived sensory disturbances of harvesting areas and changes in quality of country foods, which could further affect knowledge transfer and cultural dissociation for children and youth ([chapter 18.11](#): community health and wellness); and
- Effects to safe access between communities and families in Terrace and the Nass Valley via the highway due to increased traffic and construction vehicles.
- Real or perceived negative effect on community members safety from increased regional socioeconomic issues, including homelessness, addictions, and violence.

Considering the EAO’s conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to harvesting rights, the EAO identified the following potential effects to Kitsumkalum’s harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Human health:** Changes in human health (e.g., mental and physical) due to outside stressors and loss of culture may occur through increased local population pressures on the land base and increased marine vessel traffic, associated sensory disturbances, changes in air quality, and potential for accidents and malfunctions along the Marine Shipping Route;
- **Social Determinants of Health:** Positive or negative effects through changes in employment that contribute to community well-being. Negative effects through changes in the social, health and culture effects that contribute to changes in human and community well-being (i.e., social determinants of health) of Kitsumkalum may occur due to effects of Ksi Lisims LNG on: culture, population growth, education, governance, health (including food

security, access to healthcare and holistic mental health supports), infrastructure and housing (including increased homelessness), social stressors and availability and access to lands and resources.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on health and wellbeing:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use
- Infrastructure and Services
- Community Health and Well-being
- Human Health
- Employment and Economy

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in Appendix A of the Proponents' Revised Application.

### The EAO's Analysis and Conclusions

This section presents the EAO's analysis and conclusions on the potential residual effects to Kitsumkalum from Ksi Lisims LNG on Health and Wellbeing.

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on health and wellbeing:

- Condition 9 (Construction Environmental Management Plan, as described in [section 17.5.9](#);
- Condition 11 (Community Feedback Process), as described in [section 17.5.9](#);
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse;
- Condition 16 (Worker Health and Wellness), which will require Ksi Lisims LNG to provide medical services within the worker accommodation;
- Condition 17 (Socioeconomic Management Plan), which will minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement



a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and

- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to Health and Wellbeing:

- Health and medical services plan to mitigate impacts on local health services used by First Nations; and
- Measures to promote safe, respectful, and inclusive conduct in the workplace and community, including a workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-specific processes, including sexual harassment counseling and confidential, culturally sensitive care; and cross-cultural awareness training developed with First Nations.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Human health; and
- Social determinants of health.

The EAO’s characterization of the residual effects of Ksi Lisims on Health and Wellbeing are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table A: Summary of residual effects on Kitsumkalum and its Health and Wellbeing

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>Health and Wellbeing</b>	Context (resilience): Low resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Continuous Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Kitsumkalum’s Indigenous health and well-being has a low resilience based on the current conditions in the region that do not allow for Kitsumkalum’s Indigenous health and well-being to easily adapt to additional residual effects. Impacts to health and wellbeing may be experienced in some manner by Kitsumkalum members residing throughout the region. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Kitsumkalum members will respond to impacts that influence human health, as well as other external factors that may influence social determinants of health.

\* Note: Criteria and assessment ratings are defined in [Appendix 3 - Residual Effects Characterization Definitions](#)

### Cumulative Effects

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for adverse cumulative effects on Kitsumkalum members receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources.

The cumulative effects from Ksi Lisims LNG on Indigenous health and well-being may be alleviated by the Mitigation Measures described in [Section 17.5.9](#).

### Conclusion

In consideration of the available information, the EAO's engagement with Kitsumkalum, Kitsumkalum's engagement with the Proponents, Ksi Lisims' commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a minor effect on Kitsumkalum's Health and Wellbeing.

#### 17.5.10. Positive Effects of Ksi Lisims LNG

Direct positive effects on Kitsumkalum interests are anticipated to be limited. However, the Proponents note the following as potential positive residual effects for the region:

- Addition of aids to navigation assisting marine users in determining their position and course, warning marine users of other dangers or obstructions, and advising marine users of the location of the best or preferred route ([Section 7.09](#));
- Regional gains in employment and income; and
- Improvements to municipal services, housing, utilities, and transportation infrastructure.

#### 17.5.11. Conclusions

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal Mitigation Measures, the EAO concludes that Ksi Lisims LNG would have the following effects on Kitsumkalum's Indigenous interests:

- Minor on harvesting;
- Minor on use and integrity of sacred and culturally important sites and landscape features;
- Minor negative impact and minor positive impact on First Nations governance; and
- Minor impact on health and wellbeing.

## 17.6. Lax Kw'alaams Nation

### 17.6.1. Community Profile

Lax Kw'alaams is the Island of Wild Roses. Lax Kw'alaams is a band as defined in the Indian Act and has approximately 4,000 members. The members of Lax Kw'alaams are the present-day descendants of nine Indigenous tribes that were originally organized before contact with Europeans into nine distinct political groups. These nine tribes are collectively known as the Allied Tsimshian Tribes or the Nine Tribes, whose names are the Gitwilgyoots, Gitzax'laaḷ, Gits'iis, Ginax'angiik, Gitnadoixs, Gitandoa, Gispaxlo'ots, Gilutz'aaḡ, and Gitlaan. Following British Columbia's entry into Confederation in 1871, the Nine Tribes were combined to constitute a "band" under the *Indian Act* called the Port Simpson Band, which is now known as Lax Kw'alaams. Today Lax Kw'alaams is the legal representative under the *Indian Act* of the Nine Tribes and is the lawful holder of the collective Aboriginal rights and title of that group.

Lax Kw'alaams continues to assert and exercise jurisdiction over its traditional territory, including through the traditional Ayaawx (laws) and Adaawx kept by its members and the Nation's own land use planning processes that have been developed in response to increased development pressure in the Lax Kw'alaams' traditional territory.

### 17.6.2. Lax Kw'alaams Involvement in the Consultation Process

During the Early Engagement Phase, Lax Kw'alaams identified as a participating Indigenous nation, which afforded Lax Kw'alaams certain procedural rights under the Act, as outlined in Section X: Participating Indigenous Nations.

The EAO worked collaboratively with Lax Kw'alaams throughout the assessment process. As part of the Technical Advisory Committee, Lax Kw'alaams participated in technical meetings throughout the environmental assessment for Ksi Lisims LNG. Lax Kw'alaams and the EAO worked together through joint work planning, consensus-seeking and collaborative drafting of this section of the EAO's Assessment Report. Lax Kw'alaams and the EAO held biweekly calls throughout the environmental assessment to discuss concerns related to Ksi Lisims LNG and to understand, address and resolve issues as they came up. The EAO and the Agency provided funding to support Lax Kw'alaams' engagement in the environmental assessment process. Through discussions with Lax Kw'alaams during the Process Planning phase, it was agreed upon that the EAO would conduct an assessment of project effects on Lax Kw'alaams' Indigenous interests with input and iterative review from Lax Kw'alaams, as captured in Appendix C of the [Assessment Plan](#).

The EAO used the following sources in drafting the assessment of Ksi Lisims LNG effects on Lax Kw'alaams' Indigenous interests:

- The Proponents' Revised Application
- Information submitted during the environmental assessment by the Proponents and Lax Kw'alaams
- Conclusions from the EAO's assessment of Valued Components
- The Proponents' Indigenous Consultation Report

A summary of the Proponents' engagement with Lax Kw'alaams is provided in [Section 12](#) of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

### 17.6.3. Assessment Boundaries

Spatial boundaries for the project assessment are divided into project footprint, marine shipping route, an open water assessment area, as well as a transmission line assessment area. All of these assessment boundaries, (project footprint, marine shipping route, transmission line Assessment Area, open water Assessment Area) are located within, or intersect with Lax Kw'alaams' territory. The spatial assessment boundaries for each Indigenous interest were identified based on

the local assessment area and regional assessment area for Valued Components and Lax Kw'alaams' territory. All of the determined valued component local Assessment Areas and regional Assessment Areas intersect with Lax Kw'alaams' territory.

#### 17.6.4. Regional Context

Areas impacted by the Project have been important sources of Lax Kw'alaams rights since time before contact with Europeans and continue to be relied upon by Lax Kw'alaams members for the exercise of rights, including self-governance and knowledge transmission to new generations.

Lax Kw'alaams has faced, and is facing, significant industrial development in the lands and waters of its traditional territory. The cumulative effects of existing and proposed industrial developments on the environment is already impacting the ability of where and how Lax Kw'alaams members practice their rights.

#### 17.6.5. Indigenous Interests

The Proponents of Ksi Lisims LNG identified Lax Kw'alaams' Indigenous interests to be assessed in the Application through:

- Identifying the appropriate contacts and engaging with Lax Kw'alaams to understand the nature and content of the Nation's Indigenous rights
- Identifying guiding values and "Valued Components" by developing an understanding of Lax Kw'alaams priority values, topic, and rights.
- Collaboratively establishing a clear criterion with Lax Kw'alaams on how to characterize impact
- Establishing an iterative two-way dialogue
- Maintaining ongoing engagement throughout the environmental assessment process

The Proponents of Ksi Lisims LNG identified the following interests:

- Changes to Lax Kw'alaams marine harvest and consumption
- Changes to Lax Kw'alaams terrestrial harvest and consumption
- Changes to Lax Kw'alaams governance
- Changes to Lax Kw'alaams social and economic conditions
- Changes to Lax Kw'alaams sacred places and heritage sites
- Changes to Lax Kw'alaams health, and well-being, and cultural well-being
- Changes to Lax Kw'alaams cultural identity
- Changes to Lax Kw'alaams access and travel

Based on the Application and through discussion with Lax Kw'alaams the following Indigenous interests have been identified as having the potential to be affected by Ksi Lisims LNG:

- Harvesting Rights;
- Use and Integrity of sacred and culturally important sites and landscape features;
- First Nation governance;

- Health and wellbeing (including socioeconomic).

### 17.6.6. Harvesting

#### Background

Lax Kw'alaams stated that for generations, and continuing today, Lax Kw'alaams members have relied on numerous shellfish, aquatic plant species, and other marine life to sustain themselves and they remain central to Lax Kw'alaams' culture and way of life. Seafood is critical for the winter food supply and for a healthy diet. Shellfish is eaten fresh and preserved by smoking, salting, and bottling, and fish are also smoked or canned. Gathering marine plants is also important to Lax Kw'alaams, for example seaweed is widely used for dietary and medicinal benefits and abalone shells have been important for crafting regalia.

Lax Kw'alaams stated that they rely on all kinds of marine life, including the following species: butter clams (*sa'max*), horse clams (*loon*), manila clams (*ts'a'a*), cockles (*Gaboox'*), freshwater mussels (*Ghyels*), giant mussels (*hagwn*), goose barnacles (*ts'maay*), prawn (*Weelum Boowel*), shrimp (*gasgos*), dungeness crab (*Galmoos*), king crab (*K'almoo sgmlaxsga'niis*), snow crab (*k'almoo*), octopus (*Hats'al*), sea cucumber (*gyenti*), sea urchins (*Dzugwiits*), herring spawn on kelp and many varieties of sea weed, including bull kelp (*mook*), feather boa kelp (*gadzakeew*), giant kelp (*gyoos*), rockweed (*p'aatsah*), splendid iridescent seaweed (*gida'aaw*), winged kelp (*daayts*), and harbour seal (*üüla*), stellar sea lion (*t'iibn*), otter (*ploon*).

Lax Kw'alaams stated that, since time immemorial, Lax Kw'alaams has relied on fishing to sustain our people, and the practice remains an essential aspect of Lax Kw'alaams' identity. Seafood is critical for the winter food supply and for a healthy diet. Lax Kw'alaams has always fished a wide variety of fish species, including salmon (sockeye (*misoo*), coho (*üüx*), and chinook (*yee*)), eulachon (*ha'limootk*) – for which Lax Kw'alaams has a proven aboriginal right<sup>25</sup> – black cod (*hadanii*), ling cod (*wat'ukw*), red cod (*ts'mhoon*), halibut (*txaw*), herring (*tsgah*), and cutthroat trout (*laaw*).

Lax Kw'alaams stated that terrestrial harvesting of wildlife and plants is an important component of Lax Kw'alaams' traditional seasonal round through the traditional territory. The most commonly hunted species are white tailed deer (*wan*), black tailed deer (*wan*), and moose (*Wudzii*), with black bear (*t'u'utsgm ol*), and mountain goat (*mati*) also identified as important big game species. Lax Kw'alaams members also trap animals like beaver (*sts'ool*), rabbit, porcupine, fisher (*yeni*), marten (*yeni*) and mink. Maintaining the harvest of forest and terrestrial plants, including for medicinal, cultural, and spiritual purposes, is a high priority for Lax Kw'alaams members – this includes the importance of passing traditional knowledge about this harvest (location, plants, uses, etc.) to future generations. Many regions in Lax Kw'alaams territory have shown upwards of 50% of sampled areas covered by Lax Kw'alaams' valued species for food, social, and ceremonial purposes.

#### Existing Conditions

The Revised Application stated that the species listed above are harvested throughout Lax Kw'alaams Band territory for food, social, ceremonial and commercial purposes. Lax Kw'alaams Band members practice foreshore harvesting seasonally and throughout the year, depending on species, to support family-wide food security and contribute towards winter food stores. Some foreshore resources, such as seaweed, are required in large amounts, to ensure there is enough to share with family and extended relations for the year, and to ensure use for long-standing historical trading relationships with neighbouring communities. Lax Kw'alaams Band members harvest for marine and terrestrial resources throughout the spatial boundaries of the environmental assessment of Ksi Lisims LING. Hunting and trapping practices were reported to be multi-generational activities that have occurred for millennia and continue to be practiced in the present day; many Lax Kw'alaams Band members are introduced to hunting and trapping activities at a young age and receive instruction from older and/or more experienced members of their family which highlight the social and cultural aspects of these practices.

Lax Kw'alaams stated that the environment and ecosystems throughout Lax Kw'alaams' territory are already experiencing disturbances that make harvesting fish (including eulachon, to which Lax Kw'alaams has a proven section 35 aboriginal right), hunting deer and moose, and passing on cultural knowledge and laws on the land more difficult. The Ksi Lisims facility, its related infrastructure, and the significant increase in LNG shipping that will be required to service it, are all being proposed in an environment already subject to the dual pressure of existing development and climate change.

### Potential Project Effects

The EAO identified residual effects to Valued Components included in [Appendix 6](#) which would remain following the application of mitigation measures, that could potentially affect Lax Kw'alaams harvesting rights. These potential effects include:

- Interactions between project-related vessels and First Nations fishing activities may create a disturbance resulting in lost fishing time and the temporary displacement of fishers. ([chapter 18.9](#): marine use; [chapter 18.5](#): marine resources)
- Wake waves generated by project-related vessels may pose a risk to fishers, shoreline harvesters, and other Lax Kw'alaams marine users ([chapter 18.9](#): marine use)
- Underwater noise produced during in-water construction activities has the potential to cause injury or disturbance to marine fish and marine mammals. ([chapter 18.9](#): marine use)
- Operation of the seawater intake may cause injury or mortality through impingement or entrainment of fish. ([chapter 18.9](#): marine use)
- During construction, operation, and decommissioning phases, vessel strikes from Project-related vessel traffic (e.g., LNG carriers or escort tugs) have the potential to injure or kill marine mammals. ([chapter 18.9](#): marine use)
- Concentrations of TSS can result in adverse effects on marine organisms, particularly fish and invertebrates, including injury to fish through gill abrasion, feeding impediment, and avoidance of impacted areas. ([chapter 18.9](#): marine use)
- Indirect change in habitat effectiveness because of sensory disturbance (e.g., noise, vibration, light, human presence) during each Project phase. ([chapter 18.6](#): freshwater fish and fish habitat; [chapter 18.7](#): wildlife and wildlife habitat)
- Changes to fish habitat resulting in a decline in freshwater fish ([chapter 18.6](#): freshwater fish and fish habitat)

The EAO identified the following potential effects to Lax Kw'alaams harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased marine vessel traffic within the marine shipping route with the associated sensory disturbances (i.e., noise and light increase in local population (associated with Ksi Lisims LNG and in conjunction with other projects) and potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest and fish and marine resources, as well as wildlife, during seasonal rounds;
- **Time:** Time may be lost when harvesting, including when harvesting for Elders and/or redistribution to other Lax Kw'alaams members from the increase in marine vessel traffic in the marine shipping route, and potential for interference with Lax Kw'alaams' fishing vessels engaged in and equipment used for harvesting salmon and halibut;

- **Access:** Access to preferred harvesting locations may be lost or altered from an increase in marine vessel traffic in the marine shipping route, type of vessels, and the potential for accidents and malfunctions in the Marine Shipping Route;
- **Experience:** Harvesting experiences may be altered from an increase in vessel traffic and type of vessels, wake waves, real or perceived sensory disturbances along the marine shipping route, and associated change in noise, light, and air quality and a loss of Indigenous knowledge transmission as a result of interruptions to harvesting activities; and
- **Subsistence-based livelihoods and trade:** Alteration of both subsistence-based livelihoods and trade relationships with neighbouring First Nations may occur from disruption of marine bird movement due to marine vessel traffic, change in marine mammal and fish behaviour and increased risk of marine fish, marine bird, marine mammal mortality due to potentially fatal strikes with marine vessels, displacement of marine users due to an increase in vessel traffic and type of vessels and wake waves within the MSR and the potential for accidents and malfunctions.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on harvesting rights:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### The EAO's Analysis and Conclusions

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on Harvesting.

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, acidification and eutrophication monitoring in aquatic and terrestrial environments, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisim's LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;

- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty off-work hours;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG’s mitigation measures in Appendix A of the Revised Application; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate.
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to harvesting:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to navigate safely in the presence of marine mammals to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;



- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects resulting from the Designated Project and associated marine shipping.
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Methods, locations and opportunities;
- Time;
- Access;
- Experience; and
- Subsistence-based livelihoods and trade.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on harvesting are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 29: Summary of residual effects on Lax Kw’alaams and its Harvesting Rights

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Harvesting Rights</b>	Context (resilience): Medium resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversable Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Lax Kw’alaams members along the Marine Shipping Route are considered moderately resilient to impacts based on existing conditions and existing effects to marine and terrestrial harvesting. Impacts to marine and terrestrial harvesting are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred harvesting locations. Impacts are partially reversable following decommissioning. Impacts may disproportionately affect Lax Kw’alaams members who rely heavily on marine resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Lax Kw’alaams members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

Cumulative Effects

Potential cumulative effects on both marine navigation and marine fisheries may occur along the Marine Shipping Route from the interaction of vessels with overlapping routes or increasing shipping traffic interfering with access to sites or

activities (e.g., fishing and shoreline harvesting). Ksi Lisims LNG would contribute up to 140 to 160 LNG carriers and 8 to 12 natural gas liquid product carriers annually, representing a 6 percent increase in existing and future large commercial vessel traffic intersecting at the Triple Island Pilot Boarding Station. When the vessels are in Portland Canal, there is a low magnitude of cumulative interaction between the Project and the other projects given the remote location of the Project in Portland Canal and the existing limited presence of industrial or residential marine projects.

The increase in large vessel movements within the Marine Shipping Route from these potential cumulative effects attributable to Ksi Lisims LNG has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to Lax Kw'alaams members based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the projects associated with Ksi Lisims LNG could happen concurrently with the construction of the associated pipeline and transmission line. This additional concurrent activity could amplify the cumulative effects by increasing construction activities of underwater infrastructure in the project area.

Cumulative effects from Ksi Lisims LNG may be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [Section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

## Conclusion

In consideration of the available information, the EAO's engagement with Lax Kw'alaams, Lax Kw'alaams' engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Lax Kw'alaams' ability to harvest.

### 17.6.7. Use and Integrity of sacred and culturally important sites and landscape features

#### Background

The Revised Application stated that Lax Kw'alaams Band reported that cultural continuity includes activities, practices, and locations which enable and support its members' abilities to pass cultural teachings on to future generations as well as its sense of place, heritage, identity, spirituality, and habitation and travel on the water and land. Lax Kw'alaams Band's sense of place is tied to histories, knowledge and stories, connections with ancestors, cultural practices, and geographical features and place names which have been developed over time through individual and collective experiences on the land and water.

The Revised Application stated that the Nine Tribes have occupied and utilised Lax Kw'alaams Band's territory over at least the last 10,000 years. Hundreds of culturally significant sites have been identified throughout Lax Kw'alaams Band's territory, some of which are confidential to Lax Kw'alaams members, including various petroglyphs and pictographs, burials, death sites, named places, and other archaeological sites within its territory.

#### Existing Conditions

The Revised Application stated that within Lax Kw'alaams Band's territory, archaeological sites have been identified in, but not limited to, Lelu Island, Port Edward, Ridley Island (including culturally modified trees), and Chatham Sound. One of many examples demonstrating the Lax Kw'alaams Band's occupation of its territory is Dundas Island, with clear historic, continuous, and recent occupation of the Dundas Islands including culturally modified trees, and fishing and seaweed collecting cabins used by Coast Tsimshian members who reside on the mainland. Ridley Island, Port Edward, and Lelu Islands are located south of the MSR. Dundas Island is located north of the MSR. Lax Kw'alaams members reported burial sites, ceremonial and spiritual areas, and heritage sites (including places of war and conflict prior to colonial settlement) at locations such as Finlayson Island, Ten Mile Point, Metlakatla, and other areas on the coast.

Lax Kw'alaams stated that the significant amount of industrial development in Lax Kw'alaams' territory has meant that many important village and gathering sites, burial sites, and other culturally important locations have been disturbed through erosion, intentional or unintentional destruction by human activity, as well as through loss of access. These sites are, among other things, key evidence necessary to support Lax Kw'alaams' aboriginal rights and title interests. Lax Kw'alaams stated that based on information that has been collected, areas used by Lax Kw'alaams in its territory around the Nass River include 25 domestic use areas and 9 documented archeological sites.

Lax Kw'alaams stated that youth and children who have yet to come will have a reduced ability to identify with the land and the transmission of Lax Kw'alaams rights practices and culture is diminished when important areas, previously used, become less accessible for members. Lax Kw'alaams is already experiencing these impacts from development in many parts of its territory, including around Prince Rupert and the village of Lax Kw'alaams (Port Simpson). The transfer of *Adaawx* requires access to the specific places associated with those histories; that access, and the knowledge transmission from which it flows, will be obstructed by the development of this Project.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Lax Kw'alaams' use and Integrity of sacred and culturally important sites and landscape features:

- Increase in project vessels transiting the Marine Shipping Route interfering with vessel passage and a change in access to sacred places and heritage sites ([chapter 18.9](#): Marine Use)
- Effects on use of sacred and cultural important sites and landscape features from elevated sensory disturbances from increased traffic and users on the land and waters within Lax Kw'alaams traditional territory ([chapter 18.1](#): Acoustic; [chapter 18.2](#): Air Quality)
- Wake waves generated by project vessels transiting the Marine Shipping Route have the potential to result in effect to use and integrity of sacred and culturally important sites and landscape features based on the increase in risk to Lax Kw'alaams marine users ([chapter 18.9](#): Marine Use);

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to the use and integrity of sacred and culturally important sites and landscape features Indigenous interest, the EAO identified the following potential effects to Lax Kw'alaams' use and integrity of sacred and culturally important sites and landscape features due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Access and use:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, real or perceived sensory disturbances and potential for accidents and malfunctions;
- **Traditional knowledge:** Loss or alteration of ability to share traditional knowledge at sacred and culturally important sites and landscape features due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects; increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances, change in air quality and potential for accidents and malfunctions; and
- **Experience:** Reduced quality of experience at sacred and culturally important sites and landscape features as a result of sensory disturbance due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and due to increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances and change in air quality.

## Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on the use and Integrity of sacred and culturally important sites and landscape features:

- Air Quality
- Acoustic
- Marine Use
- Human Health
- Archaeological and Heritage Resources

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in Appendix A of the Proponents' Revised Application.

## The EAO's Analysis and Conclusions

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on sacred and culturally important sites and landscape features.

### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan), as described in [Section 17.6.6](#), including a requirement for a chance find procedure for heritage resources;
- Condition 11 (Community Feedback Process), as described in [Section 17.6.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [Section 17.6.6](#);
- Condition 17 (Socioeconomic Management Plan), as described in [Section 17.6.6](#); and
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments of archaeology and heritage sites, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to sacred and culturally important sites and landscape features:

- Marine Transportation Communication Plan, as described in [Section 17.6.6](#);
- Community feedback protocol as described in [Section 17.6.6](#);
- Chance find protocol for heritage resources during construction;
- Progressive reclamation of temporarily disturbed areas to establish self-sustaining vegetation, using plant species of interest to First Nations in consultation with First Nations;
- Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [Section 17.6.6](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Access and use;
- Traditional knowledge; and
- Experience.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on sacred and culturally important sites and landscape features are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 30: Summary of residual effects on Lax Kw’alaams and its use and integrity of sacred and culturally important sites and landscape features

Indigenous Interest	Assessment Rating*	Impact and Rationale
<p><i>Lax Kw’alaams’ use and integrity of sacred and culturally important sites and landscape features</i></p>	<p>Context (resilience): Medium resilience                      Magnitude: Medium                      Extent: Regional                      Duration: Long-term                      Frequency: Irregular to regular                      Reversibility: Irreversible                      Affected Populations: Disproportionate                      Potential Effect: Minor                      Uncertainty: Moderate</p>	<p>Lax Kw’alaams members use of sacred and culturally important sites and landscape features are expected to have moderate resiliency to impacts as there are other anthropogenic influences in the area and additional pressures on the use of the area from the local population and industrial development. Impacts to sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Lax Kw’alaams members who rely heavily on culturally important sites and landscape features. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Lax Kw’alaams members will make in response to real and perceived impacts.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features include those related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [Section 17.6.3](#).

The cumulative effects from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features may be alleviated by the Mitigation Measures described in [Section 17.6.3](#).

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on access and the sense of peace and enjoyment of sacred and culturally important sites and landscape features due to a greater number of people accessing the land base in the region.

The cumulative effects associated with Ksi Lisims LNG workforces may be alleviated by the mitigation measures described in [Section 17.6.4](#).

## Conclusion

In consideration of the available information, the EAO's engagement with Lax Kw'alaams, Lax Kw'alaams' engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Lax Kw'alaams' ability to sacred and culturally important sites and landscape features.

### 17.6.8. Lax Kw'alaams Governance

#### Background

The Revised Application stated that house groups are determined by regions and land accessibility of community members, which are communally owned and managed by each house group. In accordance with *Ayaawx* (oral law), *Waap* (house) or *Wuwaap* (house group) territories determine how hunting and trapping occur, as each *Wuwaap* has access to a specific territory and resources that are passed down. Each *Waap* leader is responsible for stewardship and control of the resources passed down, and permission must be obtained prior to accessing the resources of a specific *Waap* territory.

#### Existing Conditions

The Revised Application stated that Hereditary Chiefs play an important role within each house group, to lead stewardship practices associated with the rights and title of the house groups (e.g., decision-making) to which they are affiliated and acquired through matrilineal inheritance. Lax Kw'alaams Band governance currently operates under a custom electoral system which elects a mayor and twelve councilors every four years.

Lax Kw'alaams stated that they assert title and rights to a significant portion of the areas directly impacted by Ksi Lisims and its related facilities. Lax Kw'alaams' position is that its aboriginal rights and title preserve access to the use of resources in the traditional territory for economic purposes. Impacts to Lax Kw'alaams' interests without consensus being achieved between the Crown and Lax Kw'alaams diminishes our right of self-determination, including the management of the traditional territory and its resources in a manner consistent with Tsimshian laws. For example, the community of Lax Kw'alaams has a large portion of members that exclusively rely on the economic opportunity that fishing brings. The entire coastline from Lax Kw'alaams to Klusums and Fishery Bay is actively used for food fishing by the band and its members, as well as for commercial fishing opportunities that frequently employ tribal and band members. Many of these members fear that they will lose their livelihoods and will not be able to work either from pollution, changes in regulations for shipping, or impacts to fish stocks.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Lax Kw'alaams Governance:

- Effects from increase in marine shipping along the Marine Shipping Route are anticipated to interfere with vessel passage during all Project phases in a proportion of navigable waters; ([chapter 18.9](#): marine use)
- Effects from increase of local population on resource harvesting for use in feast and other governance related ceremonies and events, and on knowledge transference, the ability for teaching and sharing governance traditions; ([chapter 18.11](#): community health and wellness) and
- Positive or negative effects to regional employment and income that are moderate in magnitude given the workforce estimates ([chapter 18.12](#): employment and economy)

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to First Nation Governance, the EAO identified the following

potential effects to Lax Kw'alaams' First Nation Governance due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Use and Occupation:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the marine shipping route, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Decision making:** Changes in Lax Kw'alaams' ability to make decisions regarding land and marine use may occur due to increased population land uses and marine vessel traffic along the marine shipping route;
- **Employment and economy:** Positive and negative effects may be experienced due to changes in regional employment that may occur through increased demand for labour and employment opportunities as well as inability for certain sub-populations to participate equitably in employment and/or the economy such as through procurement and business opportunities. There is also the potential for wage inflation, labour drawdown, increased cost of living and increased cost of housing and accommodations.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on First Nations Governance:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Employment and Economy
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### Lax Kw'alaams and the EAO's Analysis and Conclusions

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on Lax Kw'alaams' Governance.

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on First Nation Governance:

- Condition 11 (Community Feedback Process), as described in [Section 17.6.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [Section 17.6.6](#); and
- Condition 16 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG

and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to First Nation Governance:

- Marine Transportation Communication Plan, as described in [Section 17.6.6](#);
- Community feedback protocol as described in [Section 17.6.6](#);
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [Section 17.6.6](#).

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Use and Occupation;
- Decision making; and
- Employment and economy.

The EAO’s characterization of the residual effects of Ksi Lisims on First Nation Governance are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 31: Summary of residual effects on Lax Kw’alaams’ Governance

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Lax Kw’alaams’ Governance</b>	Context (resilience): Medium resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Lax Kw’alaams’ First Nation’s governance has a medium resilience based on the stress that Lax Kw’alaams has experienced from increased population land uses and marine vessel traffic in the region. Impacts to governance is considered within a broader regional extent and may alter Lax Kw’alaams’ roles or functions on use and decision making. Lax Kw’alaams member’s employment may experience a combination of positive effects through an increase in local employment opportunities, and negative effects due to inequitable ability for subpopulations to participate in these employment opportunities. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate overall based on the uncertainty regarding employment and economy and decision-making including volume of employment and business procurement throughout the Project’s lifetime.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

Cumulative Effects

The potential cumulative effects resulting from Ksi Lisims LNG on Lax Kw’alaams’ governance include the those related to more non-local population accessing the land base and related to marine navigation due to interaction with vessels and



increasing shipping traffic, which are described in [Section 17.6.3](#). Cumulative effects on employment and economy were not identified due to the regional nature of this effect.

Although no cumulative effects to governance were identified, any potential cumulative effects from Ksi Lisims LNG on Indigenous governance may be alleviated by the mitigation measures described in [Section 17.6.3](#).

### Conclusion

In consideration of the available information, the EAO's engagement with Lax Kw'alaams, Lax Kw'alaams' engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Lax Kw'alaams' governance.

## 17.6.9. Health and wellbeing, including socioeconomic

### Background

The Revised Application states that for millennia, members of Lax Kw'alaams Band have relied heavily on the marine environment and its marine resources for cultural prosperity, economic, and subsistence purposes. Commercial fishing (seining and gillnetting) up and down the coast is an important activity for Lax Kw'alaams Band members as it provides a source of income, and often occurs alongside food fishing, which contributes to food security. Historical family food fishing locations were also emphasised as being important culturally and contemporarily for procuring fish.

### Existing Conditions

The Revised Application stated that within the community of Lax Kw'alaams, the Band office offers several services to community members including housing, education, income assistance, recreation, and healthcare services. The objective of the services provided to Lax Kw'alaams Band members is to improve the quality of life and provide assistance to individuals and families. Lax Kw'alaams Band Housing Department manages homes on reserve that are owned by the band and collects rent, oversees construction projects and offers support for community members wanting to improve their homes with the help of the Lax Kw'alaams Band Trust and Income Assistance Program. Recreational facilities on reserve include the Lax Kw'alaams Band Recreation Centre, which offers several recreational activities for community members of all ages. Short- and long-term funding is offered to Lax Kw'alaams Band members wanting to attend post-secondary education, as well for youth wanting to attend secondary school in Prince Rupert or requiring funding for educational programs within the community.

The Revised Application stated that there are several regional employment opportunities for Lax Kw'alaams members; the most common include agriculture, education, fishing, forestry, healthcare, hunting, manufacturing, and public administration. The majority of Lax Kw'alaams members earn less than the median average in BC of \$37,504 a year (after taxes), however the community of Lax Kw'alaams is known as the economic powerhouse of the northwest coast. Lax Kw'alaams Band has several business operations in both forestry and fisheries, including the Coast Tsimshian Seafood and Law Kw'alaams Fishing Enterprises.

### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially impact Lax Kw'alaams' health and wellbeing:

- Positive or negative effects to regional employment and income ([chapter 18.12](#): Employment and Economy);
- Positive effects may be unevenly distributed and not benefit groups that are under-represented, including First Nation peoples and women ([chapter 18.11](#): Community Health and Wellness);

- Negative effects on housing availability and costs ([chapter 18.13](#): Infrastructure and Services);
- Increases in cost of living and affordability of market foods ([chapter 18.11](#): Community Health and Wellness);
- Potential negative effects on utilities and waste management, emergency services and transportation infrastructure ([chapter 18.13](#): Infrastructure and Services, [chapter 18.11](#): Community Health and Wellness);
- Decrease in access to health, medical and social infrastructure and services ([chapter 18.11](#): Community Health and Wellness)
- Effects to mental health and well-being from erosion of culture, identity, sense of place and language ([chapter 18.11](#): Community Health and Wellness);
- Increase substance abuse, crime rates, violence against women and girls, domestic violence, strain on family relationships, and erosion of community cohesion in communities, which disproportionately affects Indigenous communities, women, children and youth ([chapter 18.11](#): Community Health and Wellness)
- Increase in rates of communicable diseases, injuries, and suicides, and changes in mental health outcomes ([chapter 18.11](#): Community Health and Wellness);
- Change in harvesting and avoidance of consumption of country foods due to real or perceived sensory disturbances of harvesting areas and changes in quality of country foods, which could further affect knowledge transfer and cultural dissociation for children and youth ([chapter 18.11](#): Community Health and Wellness);
- Potential negative effects on physical health with decreased air quality along shipping routes ([chapter 18.2](#): Air Quality)

Considering the EAO’s conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to changes to Lax Kw’alaams social and economic conditions, the EAO identified the following potential effects to Lax Kw’alaams’ health and wellbeing due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Human health:** Changes in human health (e.g., mental and physical) due to outside stressors and loss of culture may occur through increased local population pressures on the land base and increased marine vessel traffic, associated sensory disturbances, changes in air quality, and potential for accidents and malfunctions along the Marine Shipping Route;
- **Social Determinants of Health:** Positive or negative effects through changes in employment that contribute to community well-being. Negative effects through changes in the social, health and culture effects that contribute to changes in human and community well-being (i.e., social determinants of health) of Kitsumkalum may occur due to effects of Ksi Lisims LNG on: culture, population growth, education, governance, health (including food security, access to healthcare and holistic mental health supports), infrastructure and housing (including increased homelessness), social stressors and availability and access to lands and resources.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on health and wellbeing:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat

- Marine Resources
- Marine Use
- Infrastructure and Services
- Community Health and Well-being
- Human Health
- Employment and Economy

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### **Lax Kw'alaams and the EAO's Analysis and Conclusions**

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on health and wellbeing.

#### **Analysis**

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on health and wellbeing. The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan, as described in [Section 17.6.6](#);
- Condition 11 (Community Feedback Process), as described in [Section 17.6.6](#);
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse;
- Condition 16 (Worker Health and Wellness), which will require Ksi Lisims LNG to provide medical services within the worker accommodation;
- Condition 17 (Socioeconomic Management Plan), which will minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty but off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to health and wellbeing:

- Health and medical services plan to mitigate impacts on local health services used by First Nations; and
- Measures to promote safe, respectful, and inclusive conduct in the workplace and community, including a workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-

specific processes, including sexual harassment counseling and confidential, culturally sensitive care; and cross-cultural awareness training developed with First Nations.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Human health; and
- Social determinants of health.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on health and wellbeing are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 32: Summary of residual effects on Lax Kw’alaams and its health and wellbeing

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Health and Wellbeing</b>	Context (resilience): Low resilience Magnitude: Medium Extent: Regional Duration: Long-term Frequency: Continuous Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Lax Kw’alaams’ Indigenous health and well-being has a low resilience based on the current conditions in the region that do not allow for Lax Kw’alaams’ Indigenous health and well-being to easily adapt to additional residual effects. Impacts to health and wellbeing may be experienced in some manner by Lax Kw’alaams members residing throughout the region. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Lax Kw’alaams members will respond to impacts that influence human health, as well as other external factors that may influence social determinants of health.

\* Note: Criteria and assessment ratings are defined in [Appendix 3 - Residual Effects Characterization Definitions](#)

**Cumulative Effects**

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for adverse cumulative effects on Lax Kw’alaams members receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources.

The cumulative effects from Ksi Lisims LNG on Indigenous health and well-being may be alleviated by the mitigation measures described in [Section 17.6.6](#).

**Conclusion**

In consideration of the available information, the EAO’s engagement with Lax Kw’alaams, Lax Kw’alaams’ engagement with the Proponents, Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Lax Kw’alaams’ ability to health and wellbeing.

#### 17.6.10. Positive Effects of Ksi Lisims LNG

The Proponents noted that increased employment opportunities in the employment and economy local Assessment Area (see [chapter 18.12](#)) may have positive effects on Lax Kw'alaams unemployment rates, increase income levels for Lax Kw'alaams individuals (and families) who secure employment with the Project and provide experience that may be leveraged by workers to secure employment with other projects/employers following completion of project-related work.

Direct positive effects to Lax Kw'alaams interests will be limited when compared to existing conditions.

#### 17.6.11. Conclusions

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal Mitigation Measures, the EAO concludes that Ksi Lisims LNG would have the following effects on Lax Kw'alaams' Indigenous interests:

- Minor on harvesting;
- Minor on use and integrity of sacred and culturally important sites and landscape features;
- Minor negative impact and minor positive impact on First Nations governance; and
- Minor impact on health and wellbeing.

## 17.7. Haida Nation

### 17.7.1. Community Profile

Haida Nation (Haida) territories comprise the entire Haida Gwaii archipelago, approximately 10,000 square km of land as well as their adjacent territorial waters. Haida Gwaii is comprised of two main islands, with Graham Island in the north and Moresby Island in the south as well as 200 smaller islands.

Haida Gwaii is located approximately 85 kilometres west of Prince Rupert. Haida territorial waters include the entire Dixon Entrance, half of the Hecate Strait, halfway to Vancouver Island and westward into the abyssal ocean depths.

The Council of the Haida Nation (CHN) is the governing body for the Haida Nation, as determined in the Haida Constitution. As of 2023, the registered population of Haida citizens is approximately 4,953.

### 17.7.2. CHN Involvement in the Consultation Process

The EAO discussed the opportunity for Haida to become a participating Indigenous nation, based on concerns raised regarding LNG carriers in Haida's traditional territory. Haida, represented by CHN, chose not to identify as a participating Indigenous nation in the Ksi Lisims LNG EA. The EAO engaged collaboratively with CHN as described below and also outlined in the roles and responsibilities tables of the [Assessment Plan](#). As part of the Technical Advisory Committee, CHN participated in technical meetings throughout the environmental assessment for Ksi Lisims LNG.

Through discussions with CHN during the Process Planning phase, it was agreed upon that the EAO would conduct an assessment of project effects on Haida's Indigenous Interests with input and iterative review from CHN as outlined in Table 4 of the [Assessment Plan](#).

The EAO used the following sources in drafting the assessment of Ksi Lisims LNG effects on Haida's Indigenous Interests:

- The Proponents' Revised Application
- Information submitted during environmental assessment by the Proponents and CHN
- Conclusions from the EAO's assessment of Valued Components
- The Proponents' Indigenous Consultation Report

A summary of the Proponents' engagement with CHN is provided in [Section 18](#) of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

### 17.7.3. Assessment Boundaries

The open water Assessment Area is the area that the Proponents used to assess the effects to Haida in [Section 18](#) of the Revised Application. The open water Assessment Area for Ksi Lisims LNG included the open water marine shipping route between the 12 nautical mile limit of Canada's territorial sea and the BC Coast Pilots boarding location at or near Triple Island Pilot Boarding Station. The open water Assessment Area intersects with the northern extent of Haida territories as identified by Haida and documented in [GayGahlda "Changing Tide" Framework for Reconciliation Agreement<sup>12</sup>](#). The Project footprint, the Marine Shipping Route (defined as the area extending from the Project footprint to Triple Island), and Transmission Line Assessment Areas do not intersect with Haida territories. Air Quality, Acoustic, Wildlife and Wildlife Habitat, Marine Resources, Marine Use, and Community Health and Wellness valued components were assessed by the

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<sup>12</sup> [https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/gaygahlda\\_changing\\_tide\\_framework\\_agreement.pdf](https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/gaygahlda_changing_tide_framework_agreement.pdf)

Proponent in the open water Assessment Area. Haida recommended that the open water Assessment Area include McIntyre Bay to the south of the open water Assessment Area and SGáan Kínghlas-Bowie Seamount Marine Protected Areas (further discussion below).

#### 17.7.4. Regional Context

Dixon Entrance is located at the north end of the Haida Gwaii archipelago. The bathymetry of Dixon Entrance, along with the influence of freshwater from the mainland (eg, Skeena and Nass Rivers) and strong tidal flows, creates a distinctive set of currents, which delineate Dixon Entrance from the Pacific Ocean on the west coast of Graham Island and Hecate Strait to the east. Dixon Entrance contains some prominent geophysical features including Learmonth (or Learmouth) Bank, Naden Harbour, McIntyre Bay, Langara Island and Rose Spit. These varied and unique features create an area of high productivity and diverse habitats.

Dixon Entrance has provided for the Haida for thousands of years, and the area is still used for traditional and other commercial activities. Over the past half-century there have been significant trawl and longline fisheries in the deeper waters of Dixon Entrance. Currently, there are active Dungeness Crab fisheries in McIntyre Bay and Naden Harbour. A number of recreational fishing lodges and charter companies also operate in the area, which in the past has led to conflicts between users, particularly in the area between Masset, Naden Harbour and Langara Island.

Dixon Entrance is an important transportation corridor and has been so for generations. Learmouth Bank is located on the “Haida highway” from Haida Gwaii to Alaska and features in Haida oral traditions. Today, large container ships travel through the area, transiting from the ports of Prince Rupert and Kitimat en route to Asian markets. Ships are observed anchoring in the vicinity of McIntyre Bay preceding their arrival in port or their departure to the open Pacific. Despite the *Oil Tanker Moratorium Act*, proposed and recently operating industrial projects in mainland ports have resulted in an increase in tanker traffic over the last few years, while cruise ships regularly transit through Dixon Entrance from Prince Rupert to Alaska. Increasing vessel traffic from these and other vessel types is raising concerns about the cumulative effects of marine shipping, increased use of McIntyre Bay as a place for vessels to loiter and anchor, and increased risk of environmental incidents (e.g. oil, fuel, or cargo spills) and near-misses that require emergency response. The ecological significance of the area is notable on a coast-wide scale, particularly around Langara Island, which supports many seabird colonies, diverse nearshore habitats and abundant marine mammals. There are many culturally significant areas in Dixon Entrance, including places that are important for Haida seaweed harvesting and fishing, as well as villages, shell middens, caves, burial sites, culturally modified trees, and rock shelters. Haida Watchmen camps, located in former village sites in Naden Harbour and at Kiusta, are used as bases for the CHN Fisheries Program to monitor recreational fishing activities in the area.

Dixon Entrance includes fish biomass and diversity hotspots, invertebrate biomass and diversity hotspots, Dungeness crab locations and sacred and culturally important areas, among others. Northern shorelines of Graham Island also include clam, cockle, and geoduck areas, as well as bull kelp and giant kelp distribution and biobands that could potentially be affected by marine vessel wake and changes in marine water or sediment quality. These marine resources are important to the maintenance of Haida Rights and Title.

Dixon Entrance includes areas that are subject to new legal protections in McIntyre Bay (located south of the proposed shipping route), at Learmonth Bank (located less than 5km south of the proposed shipping route and north of Langara Island) and Offshore Celestial Reef (located immediately north of the proposed shipping route). McIntyre Bay is a Haida Heritage Site and proposed marine National Wildlife Area, while Learmonth Bank and Offshore Celestial Reef are proposed *Oceans Act* Marine Protected Areas (MPAs) intended to achieve several proposed conservation objectives outlined in the MPA Network Action Plan, including the two below related to marine mammals and birds:

- Conserving areas of high biological diversity including species assemblages that include whales (Minke, Blue, Fin, and Northern Resident Killer Whale) and
- Contribute to protection of rare, unique, threatened, and/or endangered species (Albatross, Storm Petrel, Puffins, Shearwaters and Fulmars, small Alcids).

In addition, Duu Guusd Haida Heritage Site and BC Conservancy is an established protected area encompassing a large portion of the northwest coast of Haida Gwaii, including a marine component in Dixon Entrance extending nearly 3km north of Langara Island.

#### 17.7.5. Indigenous Interests

The Proponents of Ksi Lisims LNG identified Haida’s Indigenous Interests to be assessed in the Application through:

- Identifying “Valued Components” by identifying Haida’s priority values and topics associated with community well-being, cultural expression, and the preferred means of exercising its and rights;
- Consulting with Haida on the Proponents’ development of how to characterize impacts; and
- Provided ongoing engagement opportunities throughout the environmental assessment process.

The Proponents of Ksi Lisims LNG identified effects to the following Indigenous Interests:

- Changes to Haida Nation marine harvest and consumption;
- Changes to Haida Nation governance and social and economic conditions;
- Changes to Haida Nation sacred places and heritage sites; and
- Changes to Haida Nation access and travel.

Throughout application review, CHN noted a range of concerns regarding marine vessel traffic, which are summarized below and discussed in more detail throughout this chapter:

- Increasing greenhouse gas emissions impacting air quality and climate change;
- Increasing risk of vessel strikes on marine mammals;
- Increasing risk of accidents and malfunctions;
- Increasing impact on sensitive habitats and features that may be negatively impacted by large commercial vessels;
- Increasing pressure on ability to implement protection measures are currently in place or proposed, subject to Haida, federal, and provincial protection law and regulations;
- Increasing impact on Haida commercial and traditional fisheries, and tourism/recreational economic opportunities;
- Increasing impact on marine birds and distribution of forage fish species, and the resulting impacts to Haida’s ability to practice fishing rights in the area;
- Change in sense of place through increasing noise and visual changes that may affect Haida’s harvesting practices;
- Increased conflict on the water between existing marine users due to decrease in total space available for use and competing interests;



- Increasing underwater noise, creating disruptions to marine birds, fish and marine mammals; and
- Impacts to the ability of CHN to travel by marine vessel to access off island services.

CHN also noted concerns regarding the increased risk of accidents and malfunctions (such as an oil or fuel spill, drift-grounding, or LNG explosion) as vessel traffic increases in Dixon Entrance, noting that current mitigations are insufficient and requests reduced speed limits, a traffic separation scheme, commitments to participating in the existing voluntary protection zone measure, and more substantial plans for addressing accidents and malfunctions.

Based on the Application, and comments and concerns submitted by CHN, the following Indigenous Interests have been identified as having the potential to be affected by Ksi Lisims LNG:

- Harvesting Rights;
- Use and Integrity of sacred places and cultural heritage sites; and
- Haida governance.

### 17.7.6. Harvesting Rights

#### Background

Haida’s knowledge of the land and ocean has ensured their continued success through generations by the passing of intergenerational knowledge of fishing grounds and harvesting methods always underlying the message of respect and recognition of Haida responsibility and maintaining a balance in the natural world. Many citizens of the Haida recall early memories of digging for shellfish, gathering seaweed, learning to spear octopus, and helping to prepare and preserve fish. Haida’s long-term reliance on and management of marine, coastal, and inland environments is supported by the archaeological record of Haida Gwaii, which documents a minimum 10,500-year-old cultural history.

#### Existing Conditions

There has been a dramatic decline of northern abalone in Dixon Entrance and many Haida citizens have not harvested northern abalone in ten years. Haida and DFO have reported that important shellfish populations have declined, including razor clam<sup>13</sup>, and Dungeness crab (and important cultural and commercially fished species) are under the new threat of green crab which competes for the same food and habitat and was first observed in Haida Gwaii in 2019. Haida is concerned this is due to overharvesting, proximity to sewage outflow, and other reasons. Haida has also reported a consistent decline in abundance and size for culturally important species, particularly salmon and pacific herring. In addition, Haida has previously reported that environmental changes causing increased winds and weather patterns have made it more challenging to fish. Haida is therefore concerned about potential impacts to harvesting, including access, quality and quantity of harvested species.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of mitigation measures, that could potentially impact Haida’s harvesting rights:

- Disturbance and mortality risk for marine birds because of the presence of LNG carriers and associated lighting ([chapter 18.7](#): Wildlife and Wildlife Habitat);

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<sup>13</sup> The Haida-DFO 2023 stock assessment indicates biomass estimates are in the “critical zone”, which has resulted in closures to the Haida commercial razor clam fishery which is important to the Haida economy: <https://www.pac.dfo-mpo.gc.ca/fm-gp/mplans/razorclam-couteaux-ifmp-paip-sm-eng.html>

- Noise generated from shipping activities may impact the marine environment and marine life ([chapter 18.1](#): Acoustic);
- Displacement of fish and marine mammals due to vessel transit ([chapter 18.5](#): Marine Resources);
- Increased potential for marine mammal vessel strikes ([chapter 18.5](#): Marine Resources);
- Interactions between project-related vessels and Haida fishing activities may create a disturbance resulting in lost fishing time and the temporary displacement of fishers ([chapter 18.5](#): Marine Resources);
- Wake waves generated by project-related vessels may pose a safety risk to fishers, shoreline harvesters, and other Haida marine uses ([chapter 18.9](#): Marine Use);
- During construction, operation, and decommissioning phases, vessel strikes from Project-related vessel traffic (e.g., LNG carriers) have the potential to injure or kill marine mammals ([chapter 18.5](#): Marine Resources);
- Change in harvesting and avoidance of consumption of country foods due to real or perceived sensory disturbances of harvesting areas and changes in quality of country foods, which could further affect knowledge transfer and cultural dissociation for children and youth ([chapter 18.11](#): community health and wellness);
- Increased vessel traffic may reduce or restrict Haida citizens marine access and use, including perceived risk resulting in changes to behaviour of local marine vessels ([chapter 18.9](#): Marine Use); and
- Effects on Marine Resources in the event of an accident, malfunction, or fuel spill ([Appendix 7](#): Malfunctions and Accidents).

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to harvesting rights, the EAO identified the following potential effects to Haida's harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased marine vessel traffic within the open water Assessment Area with the associated sensory disturbances (i.e., noise and light increases from shipping) and potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest and fish and marine resources, as well as wildlife, including quality and quantity of resources, during seasonal rounds;
- **Interference:** Time may be lost when harvesting, including when harvesting for Elders and/or redistribution to other Haida citizens, from the increase in marine vessel traffic in the open water Assessment Area, and potential for interference with Haida fishing vessels engaged in and equipment used for harvesting salmon, halibut, crab and other species;
- **Access:** Access to preferred harvesting locations may be lost or altered from an increase in LNG tanker traffic in the open water Assessment Area, and the potential for accidents and malfunctions in the open water Assessment Area;
- **Experience:** Harvesting experiences may be altered from an increase in LNG tanker traffic, wake waves, sensory disturbances along the open water Assessment Area, and associated change in noise, light, and air quality; and
- **Subsistence-based livelihoods and trade:** Alteration of both subsistence-based livelihoods and trade relationships with neighbouring Indigenous nations may occur from disruption of marine bird movement due to marine vessel traffic, change in marine mammal and fish behaviour and increased risk of marine fish, marine bird, and marine mammal mortality due to potentially fatal strikes with marine vessels, and displacement of marine users due to

an increase in vessel traffic and type of vessels and wake waves within the open water Assessment Area and the potential for accidents and malfunctions. Additionally, avoidance of certain areas and species from perceived contamination due to normal operations of shipping.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on harvesting rights:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### The EAO's Analysis and Conclusions

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on harvesting rights.

#### Analysis

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on harvesting rights. The EAO identified the following proposed provincial conditions that have the potential to mitigate potential effects on harvesting rights:

- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Plan), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate.

The EAO identified the following federal mitigation measures and Follow-up Programs under the IAA that would mitigate potential effects to harvesting rights:

- Requirement of LNG vessels to follow speed profiles to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;
- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;

- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects.

From CHN's view, the above conditions seek to (a) monitor or collect information on likely effects, (b) set up follow-up programs to evaluate predictions, and (c) establish communications mechanisms. While some of these conditions *may* eventually lead to development of measures that may reduce the magnitude or duration or geographic extent of an effect, none of them will lead to these outcomes as they are currently designed. As such, CHN's view is that these conditions are too broad to mitigate any potential effects on harvesting rights. CHN continues to seek out measures to address ongoing cumulative and to avoid potential project-specific effects. Maintaining healthy marine resources is a shared commitment by the CHN and the governments of Canada and BC who have all made clear commitments to protect several areas in the vicinity of the shipping route, as described in Section XXX Regional Context (e.g. existing BC Conservancy at Duu Guusd, Haida Heritage Site and proposed marine National Wildlife Area in McIntyre Bay, and *Oceans Act* MPAs at Learmonth Bank and Offshore Celestial Reef). Protecting these areas are important to maintaining Haida Rights and Title.

After consideration of the mitigation measures and potential effects, described above, the EAO identified the following residual effects:

- Methods, locations and opportunities;
- Interference;
- Access;
- Experience; and
- Subsistence-based livelihoods and trade.

The EAO's characterization of the residual effects of Ksi Lisims LNG on harvesting rights are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 33: Summary of residual effects on Haida and its harvesting rights

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Harvesting Rights</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversable	Haida users along the Marine Shipping Route are considered moderately resilient to impacts based on existing conditions and existing effects to marine harvesting. Impacts to marine harvesting are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred harvesting locations. Impacts are partially reversable following decommissioning. Impacts may disproportionately affect Haida members who rely heavily on marine resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be

	Affected Populations: Disproportionate  Potential Effect: Minor  Uncertainty: Moderate	moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Haida members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### Cumulative Effects

Potential cumulative effects on both marine navigation and marine fisheries may occur along the marine shipping route from the interaction of vessels with overlapping routes or increasing shipping traffic interfering with access to sites or activities (e.g., fishing and shoreline harvesting). Ksi Lisims LNG would contribute up to 140 to 160 LNG carriers and 8 to 12 natural gas liquid product carriers annually, representing a 6 percent increase in existing and future large commercial vessel traffic intersecting at the Triple Island Pilot Boarding Station. This increase is in addition to the overall increase in shipping activity observed in Dixon Entrance in recent years. For example, LPG vessels increased over 20-fold between 2017 (6 vessel transits through Dixon Entrance) and 2022 (129 vessel transits through Dixon Entrance) according to information available on Transport Canada’s Enhanced Maritime Situational Awareness system. As such, the likely cumulative effects already acting on existing Harvesting Rights from this increase are not yet known.

The increase in large vessel movements within the marine shipping route from these potential cumulative effects in combination with Ksi Lisims LNG has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to Haida members based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes. CHN expressed concern that there is the potential for permanent displacement resulting from cumulative effects due to various perceived effects. These perceived effects include safety tied to risk of encountering an LNG tanker on the water, safety tied to shift in where marine users congregate to avoid LNG traffic route and associated perception of safety tied to being close to recreational fishing marine users already in conflict. Other effects that could result in displacement are perceived contamination of marine resources from shipping and sense of enjoyment on the beach when harvesting. The likelihood of accidents and malfunctions may also increase and has the potential to lead to small or large environmental incidents that could impact the quality and quantity of marine resources available to marine harvesters.

CHN also expressed concerns regarding the residual cumulative effects on the behaviour and other changes in fish and marine mammals.

Cumulative effects from Ksi Lisims LNG may be partially alleviated by government-led initiatives with respect to cumulative effects on marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

### Conclusion

In consideration of the available information, the EAO’s engagement with CHN, CHN’s engagement with the Proponents Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal mitigation measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Haida’s harvesting rights.

### 17.7.7. Use and Integrity of sacred places and cultural heritage sites

#### Background

Uninterrupted use of and access to Haida’s sacred places and cultural heritage sites are important for Haida citizens’ physical and mental health, community well-being, cultural identity, cultural practices, and governance. Haida shares cultural knowledge and gains experience through direct interaction with their territories and through intergenerational knowledge transfer at sacred places and heritage sites. Harvesting places are sacred and these places and heritage sites are often visited when Haida are harvesting resources, travelling to visit neighboring communities, and in preparation for community events such as, feasts, potlatches, and other ceremonies. The “Haida Highway” in Dixon Entrance allows for Haida citizens to travel between the Haida community in Alaska, crossing the Dixon Entrance via Learmonth Bank.

#### Existing Conditions

Based on information from past environmental assessments and input from CHN, it is understood that basking shark, leatherback sea turtle, northern abalone, sea otters, and marbled murrelets are a few of the at risk species that occur in Dixon Entrance. During application review, CHN expressed concerns about cumulative effects of marine shipping on marine wildlife, marine harvesting and access and travel. CHN also indicated concerns about any oil spill or other vessel incident causing interference with traditional use of a resource or site, and the existing capabilities for emergency response.

There has been past conflict between users of Dixon entrance, particularly in the area between Masset, Naden Harbour, and Langara Island as a result of the introduction and increase of recreational fishing lodges and charter companies.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of mitigation measures, that could potentially impact Haida’s use and integrity of sacred places and cultural heritage sites:

- Increase in project vessels transiting the open water Assessment Area interfering with vessel passage and a change in access to sacred places and heritage sites ([chapter 18.9](#): marine use);
- Effects on use of sacred places and cultural heritage sites from elevated sensory disturbances from changes in air quality and noise levels within the open water Assessment Area ([chapter 18.1](#): acoustic; [chapter 18.2](#): air quality); and
- Wake waves generated by project vessels transiting the open water Assessment Area have the potential to result in impact to use and integrity of sacred places and cultural heritage sites based on the increase in risk to Haida marine users ([chapter 18.9](#): marine use).
- Risk of hazardous materials spills affecting access to cultural heritage sites and increased capacity strain on Haida Gwaii emergency responders ([Appendix 7](#): malfunctions and accidents).

Considering the EAO’s conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG, the EAO identified the following potential effects to Haida’s use and integrity of sacred places and cultural heritage sites due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Access and use:** Loss or alteration of use or access to sacred places and cultural heritage sites due to increased marine vessel traffic within the open water Assessment Area, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Traditional knowledge:** Loss or alteration of ability to share traditional knowledge at sacred places and cultural heritage sites due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and

due to increased marine vessel traffic within the open water Assessment Area, including associated wake waves, sensory disturbances, change in air quality and potential for accidents and malfunctions;

- **Experience:** Reduced quality of experience at sacred places and cultural heritage sites as a result of sensory disturbance due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and marine vessel traffic within the open water Assessment Area, including associated wake waves, sensory disturbances and change in air quality; and
- **Human health:** Changes in human health (e.g., mental and physical) due to outside stressors and loss of culture may occur through increased marine vessel traffic, associated sensory disturbances, changes in air quality, and potential for accidents and malfunctions, along the open water Assessment Area. This could result in avoidance of these areas and, in turn, result in loss of knowledge, connection to these places, and adverse impacts on identity and well-being.

### Mitigation Measures

The Application includes a summary of relevant mitigation measures identified that The Proponents have proposed in response to potential Ksi Lisims LNG related effects on use and integrity of sacred places and cultural heritage sites. These include the following:

- Air Quality
- Acoustic
- Marine Use

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### EAO's Analysis and Conclusions

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on use and integrity of sacred and culturally important sites and landscape features. The EAO identified the following proposed provincial conditions that would mitigate potential effects on use and integrity of sacred places and cultural heritage sites.

#### Analysis

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on use and integrity of sacred and culturally important sites and landscape features. The EAO identified the following proposed provincial conditions that would mitigate potential effects on use and integrity of sacred places and cultural heritage sites:

- Condition 11 (Community Feedback Process), as described in [Section 17.7.6](#); and
- Condition 13 (Marine Transportation Communication Plan), as described in [Section 17.7.6](#);

The EAO identified the following federal mitigation measures and Follow-up Programs under the IAA that would mitigate potential effects to use and integrity of sacred and culturally important sites and landscape features:

- Marine Transportation Communication Plan, as described in [Section 17.7.6](#); and
- Community feedback protocol as described in [Section 17.7.6](#);

From CHN's view, the above conditions seek to establish communications mechanisms. While improving communications *may* eventually lead to development of measures that may reduce the magnitude or duration or geographic extent of an effect, none of them will lead to these outcomes as they are currently designed. As such, CHN's view is that these

conditions are too broad to mitigate any potential effects on sacred places and cultural sites. CHN continues to seek out measures to address ongoing cumulative and to avoid potential project-specific effects. Maintaining healthy marine resources is a shared commitment by the CHN and the governments of Canada and BC who have all made clear commitments to protect several areas in the vicinity of the shipping route, as described in [Section 3.0](#), Regional Context (e.g. existing BC Conservancy at Duu Guusd, Haida Heritage Site and proposed marine National Wildlife Area in McIntyre Bay, and proposed *Oceans Act* MPAs at Learmonth Bank and Offshore Celestial Reef). Protecting these areas are important to maintaining Haida Rights and Title.

After consideration of the mitigation measures and potential effects, described above, the EAO identified the following residual effects:

- Access and use;
- Traditional knowledge;
- Experience; and
- Human Health

The EAO’s characterization of the residual effects of Ksi Lisims LNG on use and integrity of sacred places and cultural heritage sites are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 34: Summary of residual effects on Haida’s sacred places and cultural heritage sites

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Use and integrity of sacred places and cultural heritage sites</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	Haida members use of sacred places and cultural heritage sites are expected to have moderate resiliency to impacts as there are other anthropogenic influences in the area and additional pressures on the use of the area from the local population and industrial development. Impacts to sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred places and cultural heritage sites due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Haida members who rely heavily on sacred places and cultural heritage sites. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Haida members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### Cumulative Effects

The potential cumulative effects resulting from Ksi Lisims LNG on the use and integrity of sacred heritage sites include those related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [Section 17.7.6](#).

The cumulative effects from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features may be partially alleviated by the mitigation measures described in [Section 17.7.6](#).



## Conclusion

In consideration of the available information, the EAO's engagement with CHN, CHN's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal mitigation measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Haida's ability to use and integrity of sacred places and cultural heritage sites.

### 17.7.8. Haida Governance

#### Background

The [Constitution of the Haida Nation](#) outlines the overarching governance structure that is adopted by the Haida Nation today. Haida Gwaii is the homeland of the Haida Nation and, in accordance with Haida laws, and in accordance with Haida laws and ways of life, the Haida Nation has governed and vigorously protected its interests in respect of Haida Gwaii, Haida Title and Rights, and Haida culture from colonial exploitation. The Haida Nation has never ceded, sold, released, surrendered or transferred title to Haida Gwaii.

Haida has concerns regarding the ability to have decisions recognized and respected regarding marine use, whether that is related to shipping, fishing, navigation, or otherwise. Haida currently offers eco and cultural tourism experiences and throughout the application process had expressed interest in ongoing and future development of ecotourism and cultural tourism and have concerns regarding the ability to make decisions about future economic use of areas. During application review, CHN expressed concern about citizen health and wellbeing and ability to access off-island services. Haida also expressed concern about the ability to effectively implement decisions to protect specific features and habitats designated as protected and impacts to citizens sense of place.

#### Existing Conditions

Haida is governed by the CHN, formed in 1974, which consists of 14 elected representatives. In addition to the elected representatives, Old Massett Village Council and Skidegate Band Council will each appoint a councillor to the CHN. Hereditary Chiefs assemble as the Hereditary Chiefs Council to address issues of the Haida and attend sittings of the CHN. The Council of the Haida strives for full independence, sovereignty, and self-sufficiency of the Haida while perpetuating Haida heritage and cultural identity. B.C. has formally recognized Haida Aboriginal title throughout Haida Gwaii, meaning that provincial Crown land on Haida Gwaii is formally recognized as Haida Aboriginal title lands.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of mitigation measures, that could potentially impact Haida governance:

- Effects from increase in marine shipping along the open water Assessment Area are anticipated to interfere with vessel passage during all Project phases in navigable waters ([chapter 18.9](#): marine use);
- Change in production of foods in the open water Assessment Area; ([chapter 18.5](#): marine resources);
- Positive or negative effects to regional employment and income that are moderate in magnitude given the workforce estimates ([chapter 18.12](#): employment and economy); and
- Increased local population may impact Haida's access to emergency services ([chapter 18.13](#): infrastructure and services).

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to Haida governance, the EAO identified the following

potential effects to Haida’s governance due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Use and Occupation:** Loss or alteration of use or access to sacred places and cultural heritage sites due to increased marine vessel traffic within the open water Assessment Area, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Decision making:** Changes in Haida’s ability to make decisions regarding land and marine use, species protection and future economic use of areas may occur due to increased marine vessel traffic along the open water Assessment Area; and
- **Employment and economy:** Positive and negative effects may be experienced due to changes in regional employment that may occur through increased demand for labour and employment opportunities as well as inability for certain sub-populations to participate equitably in employment. There is also the potential for wage inflation, labour drawdown, increased cost of living and increased cost of housing and accommodations.

### Mitigation Measures

The following Valued Components sections of the Revised Application includes a summary of relevant mitigation measures that are identified by the Proponents in response to potential Ksi Lisims LNG-related effects on First Nations Governance:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use

The Revised Application states that the Proponents will continue engaging with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents’ Revised Application.

### EAO’s Analysis and Conclusions

This section presents Haida’s and the EAO’s analysis and conclusions on the potential residual effects from Ksi Lisims LNG on Haida governance.

#### Analysis

This section presents the EAO’s conclusions on the potential residual effects from Ksi Lisims LNG on Haida governance. The EAO and CHN identified the following proposed provincial conditions that would mitigate potential effects on Haida governance.

- Condition 11 (Community Feedback Process), as described in [Section 17.7.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [Section 17.7.6](#); and
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG

and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors.

The EAO and CHN identified the following federal mitigation measures and Follow-up Programs under the IAA that would mitigate potential effects to Haida governance.

- Marine Transportation Communication Plan, as described in [Section 17.7.6](#);
- Community feedback protocol as described in [Section 17.7.6](#);
- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, as described in [Section 17.7.6](#).

From CHN's view, the above conditions that seek to establish communications mechanisms (Conditions 11 and 13, and the Marine Communication Plan and Community feedback protocol federal conditions) only. While they *may* eventually lead to development of measures that may reduce the magnitude or duration or geographic extent of an effect, none of them will lead to these outcomes as they are currently designed. As such, CHN's view is that these conditions are too broad to mitigate any potential effects on sacred places and cultural sites. CHN continues to seek out measures to address ongoing cumulative and to avoid potential project-specific effects. Maintaining healthy marine resources is a shared commitment by the CHN and the governments of Canada and B.C. who have all made clear commitments to protect several areas in the vicinity of the shipping route, as described in [Section 3.0](#), Regional Context (e.g. existing BC Conservancy at Duu Guusd, Haida Heritage Site and proposed marine National Wildlife Area in McIntyre Bay, and proposed *Oceans Act* MPAs at Learmonth Bank and Offshore Celestial Reef). Protecting these areas are important to maintaining Haida Rights and Title.

From CHN's view, the socio-economic measures (Condition 16 and Training and Employment Plan and Measures to increase employment and business opportunities for First Nations federal conditions) will not be as readily available to Haida citizens particularly those living in Haida Gwaii given the costs and time for travel to the proposed Project site.

After consideration of the mitigation measures and potential effects, described above, the EAO and CHN identified the following residual effects:

- Use and Occupation;
- Decision making; and
- Employment and economy

The EAO's characterization of the residual effects of Ksi Lisims LNG on Haida governance are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table C: Summary of residual effects on Haida governance

Indigenous Interest	Assessment Rating*	Impact and Rationale
<b>Haida governance</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional	Haida's First Nation's governance has a medium resilience based on the stress that Haida has experienced from increased population land uses and marine vessel traffic in the region. Impacts to governance is considered within a broader regional extent and may alter Haida's roles or functions on use and decision making., and negative effects due to inequitable ability for subpopulations to participate in these

Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Minor Uncertainty: Moderate	employment opportunities. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate overall based on the uncertainty regarding employment and economy and decision-making including volume of employment and business procurement throughout the Project's lifetime.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>	

### Cumulative Effects

The potential cumulative effects resulting from Ksi Lisims LNG on Haida's governance include the those related to more non-local population accessing the land base and related to marine navigation due to interaction with vessels and increasing shipping traffic, which are described in [Section 17.7.3](#). Cumulative effects on employment and economy were not identified due to the regional nature of this effect.

Although no cumulative effects to governance were identified, any potential cumulative effects from Ksi Lisims LNG on Indigenous governance may be partially alleviated by the mitigation measures described in [Section 17.7.3](#).

### Conclusion

In consideration of the available information, the EAO's engagement with CHN, CHN's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal mitigation measures, the Ksi Lisims LNG is anticipated to result in a minor impact on Haida governance.

#### 17.7.9. Positive Effects of Ksi Lisims LNG

No direct positive residual effects to Haida Nation interests are predicted when compared to existing conditions.

#### 17.7.10. Haida's Views on Ksi Lisims LNG

The Haida Nation does not consent to Ksi Lisims LNG vessel traffic entering Haida Territorial Waters. The Haida Nation is in active legal discussions with BC and Canada regarding Haida Title to Haida Territorial Waters. Increases in marine transportation on the Pacific North Coast are a critical concern for the Haida Nation due to potential environmental impacts, including spills, which are detrimental to Haida Gwaii ecosystems and marine resources.

While the Haida Nation was engaged during the development of this Chapter, the conclusions presented herein do not reflect Haida Nation opinions or views on the anticipated impacts on the Haida Nation associated with the proposed Ksi Lisims LNG Project. The EAO's public record for the proposed Ksi Lisims LNG Project must not be relied upon as an accurate source of information about the Haida Nation.

CHN disagrees with the EAO's conclusions on impacts and views the potential impacts to be of a higher magnitude than that concluded by the EAO. CHN continues to seek out measures to address ongoing cumulative and to avoid potential project-specific effects. Maintaining healthy marine resources is a shared commitment by the CHN and the governments of Canada and BC who have all made clear commitments to protect several areas in the vicinity of the shipping route, as described in [Section 3.0](#), Regional Context (e.g. existing BC Conservancy at Duu Guusd, proposed marine National Wildlife Area in McIntyre Bay, and proposed *Oceans Act* MPAs at Learmonth Bank and Offshore Celestial Reef). For CHN, protecting these areas are important to maintaining Haida Rights and Title.

### 17.7.11. Conclusions

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal Mitigation Measures, the EAO concludes that Ksi Lisims LNG would have the following effects on Haida's Indigenous interests:

- Minor on harvesting;
- Minor on use and integrity of sacred places and cultural heritage sites; and
- Minor negative impact and minor positive impact on Haida governance.

## 17.8. Gitxsan Simogyet Denimget

### 17.8.1. Community Profile

The Gitxsan Nation's territory occupies 33,000 square km of land encompassing mountains, forests and large rivers, including the Babine, Bulkley, Kispiox and Skeena in Northwest British Columbia, which is divided into 9 Laxyips (Watersheds). All Gitxsan belong to one of over sixty huwilp (houses), an organizational unit for social, economic and political purposes, each with its own territory. Each wilp (house) belongs to one of the four clans: Lax Gibuu (Wolf), Lax Seel/Ganeda (Frog), Giskaast (Fireweed) and Lax Skiik (Eagle) and are based on a matrilineal system, with house members tracing lineage through their mother's side.

The Gitxsan Nation specifies that their land ownership follows their historical traditional structure which has existed before colonial times and before the *Indian Act*. This structure gives each Head Hereditary Chief autonomy to make decisions for their laxyip (territory). This governance structure focuses on Hereditary Chief land ownership and not on following one that transfers traditional lands to Band and Council, which is considered colonial and still under the *Indian Act*. The Hereditary Chief system holds Section 35 Rights at the Hereditary Chief level, where *Indian Act* Bands in Gitxsan territory have federal jurisdiction and do not assert Section 35 Rights independently but defer to Hereditary Chiefs.

Gitxsan Simogyet Denimget's Tsihl Gwellii Laxwiiyip (territory) extends to the outer edge of Gitxsan Nation lands, running along and paralleling Highway 113 from outside Rosswood, B.C. to the end of Sand Lake. As outlined in the [Process Order](#), the EAO included the road transportation between Terrace and Gingolx for personnel and goods and materials as part of the scope for the Ksi Lisims LNG environmental assessment. The road transportation component of the Ksi Lisims LNG project overlaps with Wilp Denimget territory for approximately 20 km.

### 17.8.2. Gitxsan Simogyet Denimget's Involvement in the Consultation Process

On June 6, 2023, the EAO notified Gitxsan Simogyet Denimget of the overlap with Tsihl Gwellii Laxwiiyip and the Ksi Lisims LNG road transportation route along Highway 113. The letter notified Wilp Denimget of the opportunity to participate in the environmental assessment for Ksi Lisims LNG regarding potential effects to Wilp Denimget along the overlapping portion of Highway 113.

Following the initial correspondence, the EAO provided notifications to Wilp Denimget at key milestones throughout the EA, including:

- Issuing of the Process Order under Section 19(2) of the Act on July 13, 2023,
- Receipt of the Proponents' Application for an EAC under Section 27 of the Act on October 20, 2023;
- [Notice Regarding Application Review](#) on April 10, 2024;
- Public comment periods required by Sections 27(2)(a) and 28(2)(b) of the Act;
- Acceptance of any revised Application, if applicable, under Section 27(4) of the Act;
- The EAO's assessment of project effects on Wilp Denimget Interests for review and comment during the public comment period in the Effects Assessment phase;
- Referral to Ministers for decision on an EAC under Section 29 of the Act; and,
- Issuance of any legal orders issued under the Act in relation to Ksi Lisims LNG.

### 17.8.3. Assessment Boundaries

The spatial boundaries for Indigenous Interests were identified based on local assessment areas and regional assessment areas for Valued Components and Gitxsan Simogyet Denimget territory. The regional Assessment Areas for the wildlife and wildlife habitat and the local assessment areas and regional Assessment Areas for infrastructure and services and malfunctions and accidents intersect Gitxsan Simogyet Denimget traditional territory.

### 17.8.4. Potential effects of Ksi Lisims LNG to Gitxsan Simogyet Denimget Aboriginal rights and other interests

Effects to Gitxsan Simogyet Denimget were assessed for the approximately 20 km overlap with Wilp Denimget traditional territory and the use of Highway 113 for Ksi Lisims LNG. The EAO identified two potential effects to Wilp Denimget's Aboriginal Rights and interests:

- Harvesting rights; and
- Health and Well-being.

### 17.8.5. Harvesting Rights

#### Background

Harvesting rights were selected as an Indigenous interest given that Aboriginal rights are fundamental to describing the potential effects of proposed projects. The Highway 113 corridor is populated with a diverse range of wildlife including ungulates, bear, several species of birds of prey, waterfowl, shorebirds, grouse, migratory birds, amphibians and bats and grey wolf.

#### Existing Conditions

The northern end of Gitxsan Simogyet Denimget's traditional territory runs along the eastern side of the Anhluut'ukwsim Laxmihl Anwinga'asanakwhl Nisga'a Provincial Park which features old growth forest and several lava flow features. Wildlife known to occur in the park include moose, goats, marmots, and black and grizzly bears.

Most of the Highway 113 corridor intersects low-quality moose habitat, however an ungulate winter range runs along Highway 113 throughout the overlap with Gitxsan Simogyet Denimget's territory with additional records of mountain goat presence in late winter and summer.

Highway 113 also overlaps with three Grizzly Bear Population Units ranging from low to negligible in conservation ranking with one vehicle mortality record for grizzly bear out of a total of five vehicle mortalities of bear along the highway.

#### Potential Project Effects

Increased traffic along Highway 113 due to Ksi Lisims LNG may increase the likelihood of vehicle collisions with wildlife, which may increase wildlife mortality and has the potential for damaged vehicles releasing chemicals to the environment. Wildlife-vehicle collisions could result in minor to moderate consequences depending on the wildlife species where effects could be limited to one breeding season or result in longer-term loss for species with lower reproductive and survival rates. Ongoing loss of species with lower reproductive and survival rates has potential to impact population sustainability. After considering the application of mitigation measures to potentially impacted Valued Components, the EAO identified the following effects to Gitxsan Simogyet Denimget's rights and interests:

- Wildlife mortality risk from increased traffic on Highway 113; and
- Real or perceived impacts to wildlife harvested for human consumption changing harvesting and causing avoidance of consumption of country foods due to spills released to the environment.

The EAO identified the following potential effects to Gitksan Simogyet Denimget’s harvesting rights due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased road traffic on Highway 113, with the associated sensory disturbances (i.e., noise and light increase) and the potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest wildlife, during seasonal rounds.

### Mitigation Measures

The Application includes a summary of relevant mitigation measures identified that the Proponents has proposed in response to potential Ksi Lisims LNG-related effects on harvesting rights. These include the following:

- Air quality
- Acoustic
- Wildlife and wildlife habitat

### EAO’s Analysis and Conclusions

The EAO’s and analysis and conclusions on the potential residual effects from Ksi Lisims LNG on harvesting rights.

#### Analysis

This section presents the EAO’s conclusions on the potential residual effects from Ksi Lisims LNG on harvesting rights. The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisims LNG report based on questions received;
- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty but off-work hours; and
- Condition 18 (Road Transportation Management Plan), which will include adaptive management procedures to address transportation effects to First Nations related to road traffic, emergency response plan, restriction of workers use of personal vehicles to access the Project-related transportation routes.

The EAO identified the following federal mitigation measures and Follow-up Programs under the IAA that would mitigate potential effects to harvesting rights:

- Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project.

After consideration of the mitigation measures and potential effects, described above, the EAO identified the following residual effects:

- Methods, locations and opportunities

EAO’s characterization of the residual effects of Ksi Lisims LNG on Harvesting Rights are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.



Table 35: Summary of residual effects on Gitxsan Simogyet Denimget and its Harvesting Rights

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>Harvesting Rights</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversable Affected Populations: Disproportionate Potential Effect: Negligible Uncertainty: Moderate	Gitxsan Simogyet Denimget users along Highway 113 are considered moderately resilient to impacts based on existing conditions and existing effects to terrestrial harvesting. Impacts to terrestrial harvesting are within a broader regional extent at regular intervals with an increase in traffic and disturbance, resulting in impacts to experience and methods for hunting and gathering. Impacts are partially reversable following decommissioning. Impacts may disproportionately affect Gitxsan Simogyet Denimget members who rely heavily on terrestrial resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Gitxsan Simogyet Denimget members will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the projects associated with Ksi Lisims LNG could happen concurrently with the construction of the associated pipeline and transmission line. This additional concurrent activity could amplify the cumulative effects by adding vehicles and activity to the Highway 113 corridor, as well as increasing construction activities of underwater infrastructure in the project area.

The increase in local population associated with Ksi Lisims LNG workforce, in conjunction with other projects, has the potential for cumulative effects on wildlife due to effects including increases in recreational hunting and fishing along the Highway 113 corridor affecting access to harvesting sites, as well as increased risk for wildlife collisions, noise and disturbance.

Cumulative effects from Ksi Lisims LNG may be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

**Conclusion**

In consideration of the available information, the EAO’s engagement with Gitxsan Simogyet Denimget, Gitxsan Simogyet Denimget’s engagement with the Proponents, Ksi Lisims LNG commitments, cumulative effects, the EAO’s recommended conditions, and federal mitigation measures, the Ksi Lisims is anticipated to result in a negligible impact on Gitxsan Simogyet Denimget’s ability to harvest.

## 17.8.6. Health and Well-being

### Background

Health and well-being was selected as an Indigenous Interest as the construction and operation of Ksi Lisims LNG and using Highway 113 as a transportation route may have potential adverse effects to Gitxsan Simogyet Denimget including increasing travel times, safety and access to necessary infrastructure and services.

### Existing Conditions

Both traffic and total number of car crashes along Highway 113 are considered relatively low with accidents increasing from 24 in 2017 to 34 in 2020. In recent years, traffic counts along the highway have decreased by 9% from 2014 to 2017 and 22% from 2017 to 2022, indicating capacity for additional traffic. Additionally, in 2020, upgrades to Highway 113 began with repaving two segments, excluding the stretch of highway overlapping the Gitxsan Simogyet Denimget territory. Despite recent upgrades to the highway, communities in the Infrastructure and Services Local Assessment Area have indicated that road infrastructure within the region is poor and predict that use from past, current and proposed industrial development use will further degrade conditions along Highway 113 and connecting roadways.

### Potential Project Effects

Consequences of a vehicular accident affecting infrastructure and services are insignificant to major, depending on the severity of the accident and the emergency response resources required that would be pulled away from surrounding communities. Consequences of a vehicle accident affecting community health and wellness ranges from negligible to severe, depending on the type of injury sustained, if fatalities are incurred, if highway closures result from the accident or if a spill occurs in the environment near a harvesting location. After considering the application of mitigation measures to potentially impacted Valued Components, the EAO identified the following effects to Gitxsan Simogyet Denimget's rights and interests:

- **Emergency Services:** Reduced access to emergency response services in the event of a large vehicular incident;
- **Access:** Decreased mobility and access to sites of interest, resources and amenities within the region including employment, childcare and food; and
- **Traditional Knowledge:** Change in harvesting and avoidance of consumption of country foods due to real or perceived disturbances of harvesting areas, which could affect knowledge transfer and cultural dissociation for children and youth.

### Mitigation Measures

The Application includes a summary of relevant mitigation measures identified that the Proponents has proposed in response to potential Ksi Lisims LNG-related effects on health and wellbeing. These include the following:

- Infrastructure and services
- Community health and well-being

### EAO's Analysis and Conclusions

The EAO's and analysis and conclusions on the potential residual effects from Ksi Lisims LNG on health and wellbeing.

#### Analysis

This section presents the EAO's conclusions on the potential residual effects from Ksi Lisims LNG on health and wellbeing. The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting rights:

- Condition 9 (Construction Environmental Management Plan, as described in [Section 17.8.5](#);

- Condition 11 (Community Feedback Process), as described in [Section 17.8.5](#);
- Condition 18 (Transportation management plan), as described in [Section 17.8.5](#); and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created.

The EAO did not identify federal mitigation measures and Follow-up Programs under the IAA that would mitigate potential effects to health and wellbeing:

After consideration of the mitigation measures and potential effects, described above, the EAO identified the following residual effects:

- Emergency Services;
- Access; and
- Traditional knowledge.

EAO’s characterization of the residual effects of Ksi Lisims on use and integrity of sacred and culturally important sites and landscape feature are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 36: Summary of residual effects on Gitxsan Simogyet Denimget and its health and wellbeing

Indigenous Interest	Assessment Rating*	Effect and Rationale
<b>Health and wellbeing</b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Negligible Uncertainty: Moderate	Gitxsan Simogyet Denimget Indigenous health and well-being has a low resilience based on the current conditions in the region that do not allow for Gitxsan Simogyet Denimget Indigenous health and wellbeing to easily adapt to additional residual effects. Impacts to health and wellbeing from effects along Highway 113 result in a low magnitude of impacts. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Gitxsan Simogyet Denimget members will respond to impacts that influence health and wellbeing, as well as other external factors that may influence social determinants of health.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on human health and wellbeing include those related to road transportation due to the increase in traffic on Highway 113, which are described in [Section 17.8.5](#).

**Conclusion**

In consideration of the available information, the EAO’s engagement with Gitxsan Simogyet Denimget, Gitxsan Simogyet Denimget’s engagement with the Proponents, Ksi Lisims LNG commitments, cumulative effects, the EAO’s recommended

conditions, and federal mitigation measures, the Ksi Lisims LNG is anticipated to result in a negligible impact on Gitxsan Simogyet Denimget’s health and wellbeing.

#### **17.8.7. Positive Effects of Ksi Lisims LNG**

Direct positive effects on Gitxsan Simogyet Denimget interests are anticipated to be limited. However, the Proponents note the following as potential positive residual effects for the region:

- Improvements to transportation infrastructure.

#### **17.8.8. Conclusions**

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal mitigation measures, the EAO concludes that Ksi Lisims LNG would have the following impacts on Gitxsan Simogyet Denimget’s Indigenous Interests:

- Negligible on harvesting rights
- Negligible on human health and wellbeing

## 17.9. Métis Nation British Columbia

### 17.9.1. Community Profile

Métis people are one of three Aboriginal peoples of Canada within the meaning of Section 35 (2) of the *Constitution Act*, 1982. Métis people are descendants of unions between European men (explorers, fur traders and pioneers) and Aboriginal women that occurred in the eighteenth century. Métis Nation British Columbia (MNBC) is the Métis governing body in B.C. that represents the interests of over 19,000 citizens in 40 Métis Chartered Communities from seven regions in the province. MNBC indicates that it also represents the interests of nearly 90,000 self-identified Métis people in B.C. Since 2003, when the Métis leadership ratified the Métis Nation B.C. Constitution, MNBC has developed laws, regulations, and policies for maintaining, protecting, and furthering the interests of Métis in B.C.

### 17.9.2. MNBC Involvement in the Consultation Process

Following the federal Minister of Environment and Climate Change Strategy's approval of B.C.'s substitution request for Ksi Lisims LNG on April 6, 2023, the EAO has engaged with MNBC as specified in the [Assessment Plan](#). On July 21, 2021, IAAC sent a letter notifying MNBC about receiving an Initial Project Description for Ksi Lisims LNG. The letter also invited MNBC to identify key issues and initial concerns and explained the planning phase of the federal impact assessment process and the potential for substitution to the EAO. The Process Order, issued on July 13, 2023, outlined the EAO's engagement approach with MNBC. This Process Order states that any consultation conducted by B.C. with MNBC or organizations representing MNBC within B.C. under a substituted assessment is understood to be conducted on behalf of the Government of Canada and should not be construed as an acknowledgement by B.C. that it owes a duty of consultation or accommodation to MNBC within B.C. under Section 35 of the *Constitution Act*, 1982.

The EAO used the following sources in drafting the assessment of Ksi Lisims LNG effects on MNBC:

- The Proponents' Revised Application
- Information submitted during environmental assessment by the Proponents
- Conclusions from the EAO's assessment of Valued Components
- The Proponents' Indigenous Engagement Report

A summary of the Proponents' engagement with MNBC is provided in [section 14](#) of the Revised Application and the Proponents' [Indigenous Engagement Report](#).

### 17.9.3. Assessment Boundaries

Spatial boundaries for the Project assessment are divided into the Project footprint, a marine shipping route, an open water Assessment Area, and a transmission line Assessment Area. The spatial assessment boundaries for MNBC were identified based on the assessment of project activities effects on MNBC's interests in the local Assessment Area, regional Assessment Area, and potential MNBC Harvesting Areas for Valued Components.

### 17.9.4. Indigenous Interests

Ksi Lisims LNG identified Métis interests to be assessed in the Revised Application through:

- Identifying appropriate contacts and engaging with MNBC to understand the nature and content of potential harvesting areas;
- Identifying guiding values and valued components for the Revised Application, through the identification of MNBC priority values and topics associated with community well-being, cultural expression, and the preferred means of practicing traditional harvesting activities;

- Establishing clear criteria with input from the MNBC on effect characterizations;
- Establishing an iterative two-way dialogue on measures proposed to address Ksi Lisims LNG effects; and
- Maintaining ongoing engagement throughout the environmental assessment process.

The Proponents identified the following potential MNBC interests:

- Changes to MNBC marine and terrestrial harvest and consumption;
- Changes to MNBC governance and social and economic conditions;
- Changes to MNBC sacred places; and
- Changes to MNBC access and travel.

Based on the Revised Application, the following MNBC interests were identified as having the potential to be affected by Ksi Lisims LNG:

- Harvesting activities;
- Sacred and culturally important sites and landscape features; and
- Social and economic conditions.

#### 17.9.5. Harvesting Activities

##### Background

The Revised Application stated that changes in harvesting may result from loss or alteration of preferred harvesting methods, location or opportunities, loss of time when harvesting, loss or alteration of harvested species, alterations to the harvesting experience, alteration of subsistence-based livelihood and the ability to trade.

##### Potential Project Effects

The EAO identified residual effects to Valued Components included in [Appendix 6](#), which would remain following the application of mitigation measures, that could potentially affect Métis' harvesting activities. These potential effects include:

- Interactions between project-related vessels and Métis fishing activities may create a disturbance resulting in lost fishing time and the temporary displacement of fishers ([chapter 18.9](#): marine use).
- Wake waves generated by project-related vessels may pose a risk to fishers, shoreline harvesters, and other Métis marine uses ([chapter 18.9](#): marine use).
- Underwater noise produced during in-water construction activities has the potential to cause injury or disturbance to marine fish and marine mammals ([chapter 18.5](#): marine resources).
- Operation of the seawater intake may cause injury or mortality through impingement or entrainment of fish ([chapter 18.5](#): marine resources).
- During construction, operation, and decommissioning phases, vessel strikes from Project-related vessel traffic (e.g., LNG carriers or escort tugs) have the potential to injure or kill marine mammals. ([chapter 18.9](#): marine use).
- Indirect change in habitat effectiveness because of sensory disturbance (e.g., noise, vibration, light, human presence) during each Project phase along the Marine Shipping Route ([chapter 18.7](#): wildlife and wildlife habitat)
- Wildlife mortality risk from increased traffic on Highway 113, ([chapter 18.7](#): wildlife and wildlife habitat)

- Cumulative effects of additional activity and the effects to wildlife, including increased access, recreation and hunting ([chapter 18.7](#): wildlife and wildlife habitat)

The EAO identified the following potential effects to Métis' harvesting activities due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Methods, locations and opportunities:** The increased road traffic on Highway 113 and marine vessel traffic within the Marine Shipping Route with the associated sensory disturbances (i.e., noise and light increase in local population (associated with Ksi Lisims LNG and in conjunction with other projects) and potential for accidents and malfunctions, may result in loss or alteration of preferred harvesting methods, locations or opportunities to harvest and fish and marine resources, as well as wildlife, during seasonal rounds;
- **Time:** Time may be lost when harvesting, including when harvesting for Elders and/or redistribution to other Métis from the increase in marine vessel traffic in the marine shipping route, and potential for interference with Métis fishing vessels engaged in and equipment used for recreational harvesting salmon and halibut;
- **Access:** Access to preferred harvesting locations may be lost or altered from an increase in marine vessel traffic in the marine shipping route, type of vessels, and the potential for accidents and malfunctions in the marine shipping route; and
- **Experience:** Harvesting experiences may be altered from an increase in vessel traffic and type of vessels, wake waves, sensory disturbances along the marine shipping route, and associated change in noise, light, and air quality.

### Mitigation Measures

The Application includes a summary of relevant Mitigation Measures identified that the Proponents has proposed in response to potential Ksi Lisims LNG-related effects on potential MNBC harvesting activities. These include the following:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use
- Human Health

The Revised Application states that the Proponents will continue to work with Métis Nation British Columbia to develop a shared understanding of how Ksi Lisims LNG may affect its interests. The Proponents will seek to engage with Métis Nation British Columbia through monthly meetings to discuss Ksi Lisims LNG and its effects, understand concerns that may arise and respond to suggestions and concerns. Meeting frequency may be adjusted to meet the needs of MNBC.

A complete listing of mitigation measures can be found in [Appendix A](#) of the Proponents' Revised Application.

### EAO's Analysis and Conclusions

This section presents the EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on MNBC's harvesting activities.

## Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on harvesting activities:

- Condition 9 (Construction Environmental Management Plan), which includes requirements for air quality, water quality, noise, access management, a wildlife management plan, a marine resource management plan and vegetation mitigation measures;
- Condition 11 (Community Feedback Process), which will allow First Nations to submit questions regarding the Project and review Ksi Lisim's LNG report based on questions received;
- Condition 13 (Marine Transportation Communication Report), which will include communication of project activities that may affect First Nation marine users, a shipping schedule notification process, and a concerns and grievance process for First Nation marine users related to LNG carrier interference with marine use;
- Condition 17 (Socioeconomic Management Plan), which will require Ksi Lisims LNG to implement procedures for restricting non-local contractor personnel from engaging in recreational hunting, fishing or ATV or snowmobile use during on-duty but off-work hours;
- Condition 18 (Road Transportation Management Plan), which will include adaptive management procedures to address transportation effects to First Nations related to road traffic, emergency response plan, restriction of workers use of personal vehicles to access the Project-related transportation routes;
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in relevant provincial or federal multi-stakeholder initiatives related to effects of marine shipping in the region, if industry is invited to participate; and
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to harvesting activities:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Requirement of LNG vessels to follow speed profiles to reduce collision risks with marine mammals, and report any collision with marine mammals and provide First Nations with this information;



- Implement a Marine Transportation Communication Plan developed in consultation with First Nation that will provide information to First Nations about project activities affecting marine access and use, use Canada Coast Guard Marine Communications and Traffic Services (MCTS) to inform mariners of LNG and NGL vessel movements, and have procedures and feedback protocol for First Nations to report adverse effects from the Project on marine use;
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes;
- Implement a follow-up program related to effects of vessel wake on the shoreline and Indigenous shoreline harvesters;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Develop a Terminal Information Guide detailing specific operational procedures for the marine terminal and route toward the marine terminal and provide to First Nations;
- Prohibit employees and contractors associated with the Project from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project;
- Carry out Ksi Lisims LNG that protects and avoids harm to migratory birds, including lighting controls and retaining a buffer around nests;
- Vibration and blasting measures to reduce disturbance to wildlife;
- Implement community feedback protocol in to address adverse federal effects resulting from the Designated Project and associated marine shipping; and
- Participate in regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Methods, locations and opportunities;
- Time;
- Access;
- Experience; and

Subsistence-based livelihoods and trade.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on harvesting activities are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 37: Summary of residual effects on Métis and its Harvesting Activities

Métis Interest	Assessment Rating*	Effect and Rationale
<i>Harvesting</i>	Context (resilience): Medium resilience	Métis users along the Marine Shipping Route and Highway 113 are considered moderately resilient to impacts based on existing conditions and existing effects to marine and terrestrial harvesting. Impacts to marine harvesting are considered

Métis Interest	Assessment Rating*	Effect and Rationale
	Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Partially reversible Affected Populations: Disproportionate Potential Effect: Negligible to minor Uncertainty: Moderate	within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred harvesting locations. Impacts to terrestrial harvesting are within a broader regional extent at regular intervals with an increase in traffic and disturbance, resulting in impacts to experience and methods for hunting and gathering. Impacts are partially reversible following decommissioning. Impacts may disproportionately affect Métis who rely heavily on marine and terrestrial resources for food, social, and ceremonial purposes. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Métis will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

Cumulative Effects

Potential cumulative effects on both marine navigation and marine fisheries may occur along the Marine Shipping Route from the interaction of vessels with overlapping routes or increasing shipping traffic interfering with access to sites or activities (e.g., fishing and shoreline harvesting). Ksi Lisims LNG would contribute up to 140 to 160 LNG carriers and 8 to 12 natural gas liquid product carriers annually, representing a 6 percent increase in existing and future large commercial vessel traffic intersecting at the Triple Island Pilot Boarding Station. When the vessels are in Portland Canal, there is a low magnitude of cumulative interaction between the Project and the other projects given the remote location of the Project in Portland Canal and the existing limited presence of industrial or residential marine projects.

The increase in large vessel movements within the Marine Shipping Route from these potential cumulative effects attributable to Ksi Lisims LNG has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to MNBC members based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the projects associated with Ksi Lisims LNG could happen concurrently with the construction of the associated pipeline and transmission line. This additional concurrent activity could amplify the cumulative effects by adding vehicles and activity to the Highway 113 corridor, as well as increasing construction activities of underwater infrastructure in the project area.

The increase in local population associated with Ksi Lisims LNG workforce, in conjunction with other projects, has the potential for cumulative effects on wildlife and fish due to effects including increases in recreational hunting and fishing along the Highway 113 corridor affecting access to harvesting sites, as well as increased risk for wildlife collisions, noise and disturbance.

Cumulative effects from Ksi Lisims LNG may be alleviated by government-led initiatives with respect to cumulative effects on terrestrial, aquatic, marine navigation, marine fisheries and other uses in the Marine Shipping Route, as described in [section 3.4.2](#) of the Assessment Report and [Section 7.11.2](#) of the Revised Application.

## Conclusion

In consideration of the available information, the EAO's engagement with MNBC, MNBC's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a negligible to minor effect on MNBC's ability to harvest.

### 17.9.6. Sacred and culturally important sites and landscape features

#### Background

The Revised Application stated that changes on sacred places, as well as changes to access and travel, may result from loss or alteration of use or access of sacred places, loss or alteration of ability to share Métis knowledge at sacred places, and reduced quality of experience. The Application also stated that sensory disturbances may result in an alteration of Métis use of preferred harvesting locations, sacred places and heritages sites and access routes.

#### Potential Project Effects

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Métis use and integrity of sacred and culturally important sites and landscape features:

- Increase in project vessels transiting the Marine Shipping Route interfering with vessel passage and a change in access to sacred places and heritage sites ([chapter 18.9](#): marine use)
- Effects on use of sacred and cultural important sites and landscape features from elevated sensory disturbances from changes in air quality and noise levels within the Marine Shipping Route ([chapter 18.1](#): acoustics; [chapter 18.2](#): air quality)
- Wake waves generated by project vessels transiting the Marine Shipping Route have the potential to result in effect to use and integrity of sacred and culturally important sites and landscape features based on the increase in risk to Métis marine users ([chapter 18.9](#): marine use);

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to the use and integrity of sacred and culturally important sites and landscape features, the EAO identified the following potential effects to Métis' use and integrity of sacred and culturally important sites and landscape features due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Access and use:** Loss or alteration of use or access to sacred and culturally important sites and landscape features due to increased marine vessel traffic within the Marine Shipping Route, including associated wake waves, sensory disturbances and potential for accidents and malfunctions;
- **Traditional knowledge:** Loss or alteration of ability to share traditional knowledge at sacred and culturally important sites and landscape features due to increase in population associated with Ksi Lisims LNG, in conjunction with other projects, and due to increased marine vessel traffic within the marine shipping route, including associated wake waves, sensory disturbances, change in air quality and potential for accidents and malfunctions; and
- **Experience:** Reduced quality of experience at sacred and culturally important sites and landscape features as a result of sensory disturbance due to increase in population associated with Ksi Lisims LNG, in conjunction with

other projects, and due to increased highway traffic, marine vessel traffic within the marine shipping route, including associated wake waves, sensory disturbances and change in air quality

### Mitigation Measures

The Application includes a summary of relevant Mitigation Measures identified that the Proponents have proposed in response to potential Ksi Lisims LNG-related effects on use and integrity of sacred and culturally important sites and landscape features. These include the following:

- Air quality
- Acoustic
- Wildlife and wildlife habitat
- Marine resources
- Marine use
- Infrastructure and services
- Community health and well-being
- Human health
- Employment and economy

### The EAO's Analysis and Conclusions

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on use and integrity of sacred and culturally important sites and landscape features.

#### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on use and integrity of sacred and culturally important sites and landscape features:

- Condition 9 (Construction Environmental Management Plan), as described in [Section 17.9.6](#), including a requirement for a chance find procedure for heritage resources;
- Condition 11 (Community Feedback Process), as described in [Section 17.9.6](#);
- Condition 13 (Marine Transportation Communication Report), as described in [Section 17.9.6](#);
- Condition 17 (Socioeconomic Management Plan), as described in [Section 17.9.6](#);
- Condition 18 (Transportation management plan), as described in [Section 17.9.6](#); and
- Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments of archaeology and heritage sites, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to use and integrity of sacred and culturally important sites and landscape features:

- Marine Transportation Communication Plan, as described in [Section 17.9.6](#);
- Community feedback protocol as described in [Section 17.9.6](#)

- Chance find protocol for heritage resources during construction;
- Progressive reclamation of temporarily disturbed areas to establish self-sustaining vegetation, using plant species of interest to First Nations in consultation with First Nations; and
- Prohibit fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with the Project.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Access and use;
- Traditional knowledge; and
- Experience.

The EAO’s characterization of the residual effects of Ksi Lisims LNG on use and integrity of sacred and culturally important sites and landscape feature are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 38: Summary of residual effects on Métis and its use and integrity of sacred and culturally important sites and landscape features

Métis Interest	Assessment Rating*	Effect and Rationale
<b><i>Sacred and culturally important sites and landscape feature</i></b>	Context (resilience): Medium resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Irregular to regular Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Negligible to minor Uncertainty: Moderate	Métis use of sacred and culturally important sites and landscape features are expected to have moderate resiliency to impacts as there are other anthropogenic influences in the area and additional pressures on the use of the area from the local population and industrial development. Impacts to sites and landscape features are considered within a broader regional extent occurring at sporadic intervals, resulting in a low magnitude of impacts on real or perceived sensory experience and access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Métis who rely heavily on culturally important sites and landscape features. The effectiveness of mitigation measures may be moderate; there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Métis will make in response to real and perceived impacts.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

**Cumulative Effects**

The potential cumulative effects resulting from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features include those related to marine navigation and road transportation due to interaction with vessels and increasing shipping traffic and the increase in traffic on Highway 113, which are described in [Section 17.9.5](#).

The cumulative effects from Ksi Lisims LNG on the use and integrity of sacred and culturally important sites and landscape features may be alleviated by the Mitigation Measures described in [Section 17.9.5](#).

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on access and the sense of peace and enjoyment of sacred and culturally important sites and landscape features due to a greater number of people accessing the land base in the region.

The cumulative effects associated with Ksi Lisims LNG workforces may be alleviated by the Mitigation Measures described in [Section 17.9.6](#).

## Conclusion

In consideration of the available information, the EAO's engagement with MNBC, MNBC's engagement with the Proponents, Ksi Lisims LNG's commitments, cumulative effects, the EAO's recommended conditions, and federal Mitigation Measures, Ksi Lisims LNG is anticipated to result in a negligible to minor effect on Métis' use and integrity of sacred and culturally important sites and landscape features.

## 17.9.7. Social and economic conditions

### Background

The Application stated that changes on social and economic conditions may result from loss or alteration in regional employment, business, and economy, loss or alteration in infrastructure, services, accommodation, and transportation, alteration in Métis people's health due to outside stressors and loss of culture, alteration to community cohesion, alteration to the safety of Métis people, loss or alteration to community health and well-being, change in kinship networks and familial ties, and loss or alteration in the production of foods from discrete harvesting areas.

### Potential Project Effects and Proposed Mitigation

The EAO identified the following effects to Valued Components in [Appendix 6](#), following the application of Mitigation Measures, that could potentially affect Métis' social and economic conditions:

- Effects from increase in marine shipping along the Marine Shipping Route are anticipated to interfere with vessel passage during all Project phases in a proportion of navigable waters; ([chapter 18.9](#): marine use);
- Effects from increase of local population on resource harvesting for use in feast and related ceremonies and events, and on knowledge transference, the ability for teaching; ([chapter 18.11](#): community health and wellness);
- Positive or negative effects to regional employment and income that are moderate in magnitude given the workforce estimates ([chapter 18.12](#): employment and economy);
- Positive or negative effects to regional employment and income ([chapter 18.12](#): employment and economy);
- Positive effects may be unevenly distributed and not benefit groups that are under-represented, including Métis peoples and women ([chapter 18.11](#): community health and wellness);
- Negative effects on housing availability and costs ([chapter 18.13](#): infrastructure and services);
- Increases in cost of living and affordability of market foods ([chapter 18.11](#): community health and wellness);
- Potential negative effects on utilities and waste management, emergency services and transportation infrastructure ([chapter 18.13](#): Infrastructure and Services, [chapter 18.11](#): community health and wellness);
- Decrease in access to health, medical and social infrastructure and services ([chapter 18.11](#): community health and wellness);
- Effects to mental health and well-being from erosion of culture, identity, sense of place and language ([chapter 18.11](#): community health and wellness);

- Increase substance abuse, crime rates, violence against women and girls, domestic violence, strain on family relationships, and erosion of community cohesion in communities, which disproportionately affects Métis people, women, children and youth ([chapter 18.11](#): community health and wellness);
- Increase in rates of communicable diseases, injuries, and suicides, and changes in mental health outcomes ([chapter 18.11](#): community health and wellness); and
- Change in harvesting and avoidance of consumption of country foods due to real or perceived sensory disturbances of harvesting areas and changes in quality of country foods, which could further affect knowledge transfer and cultural dissociation for children and youth ([chapter 18.11](#): community health and wellness);

Considering the EAO's conclusions on residual effects to these Valued Components, and the information provided in the Application from Ksi Lisims LNG regarding potential effects to Métis social and economic conditions, the EAO identified the following potential effects to Métis social and economic conditions due to Ksi Lisims LNG during construction, operations and decommissioning including:

- **Employment and economy:** Positive and negative effects may be experienced due to changes in regional employment that may occur through increased demand for labour and employment opportunities as well as inability for certain sub-populations to participate equitably in employment. There is also the potential for wage inflation, labour drawdown, increased cost of living and increased cost of housing and accommodations.
- **Human health:** Changes in human health (e.g., mental and physical) due to outside stressors and loss of culture may occur through increased local population pressures on the land base and increased marine vessel traffic, associated sensory disturbances, changes in air quality, and potential for accidents and malfunctions, along the Marine Shipping Route;
- **Social Determinants of Health:** Positive or negative effects through changes in employment that contribute to community well-being. Negative effects through changes in the social, health and culture effects that contribute to changes in human and community well-being (i.e., social determinants of health) of Métis may occur due to effects of Ksi Lisims LNG on: culture, population growth, education, health (including food security, access to healthcare and holistic mental health supports), infrastructure and housing (including increased homelessness), social stressors and availability and access to lands and resources.

## Mitigation Measures

The Application includes a summary of relevant Mitigation Measures identified that the Proponents have proposed in response to potential Ksi Lisims LNG-related effects on Métis social and economic conditions. These include the following:

- Air Quality
- Acoustic
- Wildlife and Wildlife Habitat
- Marine Resources
- Marine Use
- Infrastructure and Services
- Community Health and Well-being
- Human Health
- Employment and Economy

## The EAO's Analysis and Conclusions

The EAO's analysis and conclusions on the potential residual effects from Ksi Lisims LNG on Métis social and economic conditions.

### Analysis

The EAO identified the following proposed provincial conditions that would mitigate potential effects on Métis social and economic conditions:

- Condition 9 (Construction Environmental Management Plan, as described in [Section 17.9.6](#);
- Condition 11 (Community Feedback Process), as described in [Section 17.9.6](#);
- Condition 14 (Health and Medical Services Plan), which will include a plan for addressing communicable diseases and reducing additional burden on local and regional healthcare system, a requirement for Ksi Lisims LNG to provide onsite first-aid station and emergency management program, and consideration of guidance and relevant reports from First Nations' health departments;
- Condition 15 (Gender and Cultural Safety Plan), which will include a gender-based violence prevention program, gender and cultural safety training, violence and sexual harassment/abuse prevention training, addictions awareness training, and a confidential reporting system for reporting incidents of assault, harassment, violence or abuse;
- Condition 16 (Worker Health and Wellness), which will require Ksi Lisims LNG to provide medical services within the worker accommodation;
- Condition 17 (Socioeconomic Management Plan), which requires Ksi Lisims LNG to provide hiring and training measures including local hiring, job training and apprenticeships, measures to inform local residents and First Nations of job and procurement opportunities. This includes working with regional employment agencies and economic development organizations to plan for increased demand in labour, work with regional agencies to increase opportunities for Indigenous peoples to obtain required training, and requirements for Ksi Lisims LNG and its contractors to adopt and implement policies and practices for providing opportunities to regional businesses and contractors. The plan will also minimize or prevent worker use of local housing; restrict recreational land use activities of non-resident workforce during on-duty but off-time hours including no hunting, fishing, ATV or snowmobile use; require training regarding drug and alcohol use; develop and implement a code of ethics, respectful workplace policies and provide cultural awareness training for all workers; and implement gender equity and diversity employment measures and implement mitigation measures for gender-based violence; and
- Condition 21 (Regional Cumulative Effects Initiatives), which will require Ksi Lisims LNG to participate in a regional social and economic management and monitoring committee, if one is created.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to Métis social and economic conditions:

- Training and Employment Plan in consultation with First Nations to increase employment opportunities for Indigenous peoples;
- Health and medical services plan to mitigate impacts on local health services used by First Nations; and
- Measures to promote safe, respectful, and inclusive conduct in the workplace and community, including a workplace anti-harassment, bullying, discrimination, and violence policy with gender-appropriate and gender-



specific processes, including sexual harassment counseling and confidential, culturally sensitive care; and cross-cultural awareness training developed with First Nations.

After consideration of the Mitigation Measures and potential effects, described above, the EAO identified the following residual effects:

- Human health; and

Social determinants of health.

The EAO’s characterization of the residual effects of Ksi Lisims on Métis social and economic conditions are summarized in the table below.

See [Appendix 3 - Residual Effects Characterization Definitions](#) for a description of the considerations in the table below.

Table 39: Summary of residual effects on Métis social and economic conditions

Métis Interest	Assessment Rating*	Effect and Rationale
<b>Métis social and economic conditions</b>	Context (resilience): Low resilience Magnitude: Low Extent: Regional Duration: Long-term Frequency: Continuous Reversibility: Irreversible Affected Populations: Disproportionate Potential Effect: Negligible to minor Uncertainty: Moderate	Métis health and well-being has a low resilience based on the current conditions in the region that do not allow for Métis’ Indigenous health and well-being to easily adapt to additional residual effects. Impacts to health and wellbeing may be experienced in some manner by Métis residing throughout the region. Métis employment may experience a combination of positive effects through an increase in local employment opportunities, and negative effects due to inequitable ability for subpopulations to participate in these employment opportunities. These effects will be irreversible and last throughout the lifetime of the Project. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Métis will respond to impacts that influence employment, business procurement, human health, as well as other external factors that may influence social determinants of health.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### Cumulative Effects

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for adverse cumulative effects on MNBC members receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources. Cumulative effects on employment and economy were not identified due to the regional nature of this effect.

The cumulative effects from Ksi Lisims LNG on employment, business procurement and Indigenous health and well-being may be alleviated by the Mitigation Measures described in [Section 17.9.6](#).

### Conclusion

In consideration of the available information, the EAO’s engagement with MNBC, MNBC’s engagement with the Proponents, Ksi Lisims LNG’s commitments, cumulative effects, the EAO’s recommended conditions, and federal

Mitigation Measures, the Ksi Lisims LNG is anticipated to result in a negligible to minor effect on Métis' social and economic conditions.

#### 17.9.8. Positive Effects of Ksi Lisims LNG

Positive effects are anticipated within Nisga'a villages, Terrace and Prince Rupert (i.e., Infrastructure and Services local Assessment Area and the community health and wellness local Assessment Area) through regional gains in employment and income, business and improvements to municipal services, housing, utilities, and transportation infrastructure. Limited direct positive residual effects to Métis interests are predicted when compared to existing conditions.

#### 17.9.9. Conclusions

Considering the above analyses and the conditions identified in the Project Description, Table of Conditions and the federal Mitigation Measures, the EAO concludes that Ksi Lisims LNG would have the following effects on Métis' interests:

- Negligible to minor on harvesting;
- Negligible to minor on sacred and culturally important sites and landscape features; and
- Negligible to minor impact on health and wellbeing.

# METLAKATLA FIRST NATION: RIGHTS IMPACT ASSESSMENT OF KSI LISIMS LNG

October 18, 2024

**DRAFT**

DRAFT

**Draft Report:** Metlakatla First Nation Rights Impact Assessment of Ksi Lisims LNG

METLAKATLA FIRST NATION: RIGHTS IMPACT ASSESSMENT OF KSI LISIMS LNG

DRAFT REPORT

**Date:**

October 18, 2024

**Prepared and authored by:**

Firelight Research Inc. with the Metlakatla Stewardship Society

**Submitted to:**

British Columbia Environmental Assessment Office

**Disclaimer:**

The information contained in this report is based on preliminary research and analysis conducted by the Metlakatla Stewardship Society and Firelight Research Inc. as well as published academic and community research work. The report may be updated, refined, or changed as new information becomes available. All mapped information is based on interviews with Metlakatla First Nation knowledge holders conducted within constraints of time, budget, and scope and should be considered in that context. The information contained herein should not be construed as to define, limit, or otherwise constrain the Indigenous rights or title of the Metlakatla First Nation or any other First Nations or Indigenous peoples. This report should be considered part of ongoing research, documentation, and consultation efforts.

## **EXECUTIVE SUMMARY**

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This Rights Impact Assessment evaluates the potential impacts of the Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims LNG) on Metlakatla First Nation's (Metlakatla) rights and interests. Grounded in Metlakatla's laws, values, and community knowledge, the assessment has been prepared with a view to ensuring that Metlakatla's perspective is central to the decision-making process. This report presents a holistic assessment of Ksi Lisims LNG's potential impacts on Metlakatla's rights and interests – including harvesting, cultural continuity, community wellbeing, and stewardship and governance - emphasizing the interconnectedness of its rights and the long-term sustainability of its way of life.

The assessment is informed by community-based research, including interviews and focus groups with Metlakatla members, and a detailed review of the proponent's application materials. It evaluates project-specific impacts in the context of cumulative pressures that have shaped Metlakatla's ability to exercise rights over time. The analysis also considers Metlakatla's aspirations for future generations and frames the project's potential impacts in light of Metlakatla's long-term stewardship responsibilities and vision for cultural revitalization.

The following summarizes the key findings of the assessment:

### **Harvesting**

The project is anticipated to impact Metlakatla's ability to practice harvesting rights, with a focus on marine areas where increased shipping traffic is expected to disrupt access and travel to key harvesting locations and cause disruptions to certain key locations themselves. Areas such as Triple Island and areas throughout Portland Inlet and beyond are predicted to see reduced access, affecting the practice of fishing and gathering marine resources, spiritual connections to those areas, and reduced or disrupted access to areas used for terrestrial harvesting and camping, including camping enroute. Resource sufficiency, including the abundance and availability of harvestable species, is expected to be impacted due to environmental disturbances affecting species distribution and ecosystem health.

### **Cultural Continuity**

The project is anticipated to negatively affect Metlakatla's ability to maintain cultural practices, identity, and knowledge transmission. Increased industrial activities, including marine shipping and infrastructure development, are predicted to disrupt key cultural landscapes and sensory experiences that are integral to Metlakatla's cultural identity. Impacts on the transmission of traditional knowledge and cultural keystone species are expected, as environmental degradation and reduced access to important cultural areas limit the community's ability to engage in traditional practices.

### **Community Well-being**

Project-related activities are anticipated to place additional strain on the social, economic, and health conditions of Metlakatla members. While it is possible that the project may bring some economic benefits, any potential benefits are expected to be outweighed by

negative effects on social cohesion, personal safety, and access to essential services. Increased stress and anxiety are likely to result from heightened concerns about environmental contamination, food security, and the disruption of community life due to the influx of workers and industrial activity.

### **Stewardship and Governance**

Metlakatla's stewardship and governance rights are predicted to be adversely affected by the project. Metlakatla's ability to exercise traditional authority, manage resources, and engage in governance-related decisions is expected to be undermined by the cumulative pressures of the project. Project-related marine shipping, infrastructure development, and regulatory processes that fail to fully recognize Indigenous decision-making would reduce Metlakatla's control over its lands and waters. Disruptions to marine stewardship practices and constraints on decision-making authority are anticipated to affect the long-term sustainability of Metlakatla's stewardship activities.

### **Severity Determination**

[Placeholder.]

### **Conclusions**

[Placeholder.]

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**TABLE OF CONTENTS**

---

**Executive Summary ..... ii**

**Table of Contents ..... iv**

**List of Figures ..... vii**

**List of Tables ..... viii**

**Acronyms and Abbreviations ..... ix**

**1. Introduction ..... 1**

    1.1 Overview of the Rights Impact Assessment ..... 1

    1.2 Overview of Ksi Lisims LNG ..... 2

    1.3 Structure of the Report ..... 3

    1.4 Limitations ..... 4

**2. Background ..... 5**

    2.1 Metlakatla First Nation People and Their Relationship to the Land ..... 5

    2.2 Seasonal Rounds ..... 5

    2.3 Governance and Socio-Political Organization ..... 6

**3. Methodology ..... 7**

    3.1 Community Engagement ..... 7

    3.2 Data Collection ..... 8

    3.3 Analytical Framework ..... 8

    3.4 Impact Assessment ..... 8

    3.5 Holistic Approach to Severity Determination ..... 9

**4. Current Conditions and Cumulative Pressures ..... 9**

    4.1 Current Conditions ..... 9

        4.1.1 Harvesting ..... 9

        4.1.2 Cultural Continuity ..... 10

        4.1.3 Community Well-being ..... 11

4.1.4	Stewardship and Governance .....	11
4.2	Cumulative Pressures.....	11
4.3	Preferred Future Conditions.....	12
<b>5.</b>	<b>Project Impacts.....</b>	<b>12</b>
5.1	Harvesting .....	13
5.1.1	Access to Harvesting Areas .....	13
5.1.2	Safety while Harvesting .....	15
5.1.3	Resource Sufficiency .....	17
5.1.4	Confidence in Harvested Foods .....	20
5.1.5	Connections to Other Values.....	21
5.2	Cultural Continuity .....	22
5.2.1	Sense of Place.....	22
5.2.2	Knowledge Transmission.....	24
5.2.3	Cultural Keystone Species.....	25
5.2.4	Identity .....	27
5.2.5	Connections to Other Values.....	28
5.3	Community Wellbeing.....	29
5.3.1	Physical Health .....	29
5.3.2	Mental and Emotional Health .....	30
5.3.3	Social Cohesion and Support .....	32
5.3.4	Personal Safety and Security .....	33
5.3.5	Livelihood and Economic Development .....	34
5.3.6	Connections to Other Values.....	36
5.4	Stewardship and governance .....	37
5.4.1	Protecting and Sustaining Metlakatla Lands, Waters and Resources .....	37
5.4.2	Exercising Traditional Authority .....	40
5.4.3	Connections to Other Values.....	41



<b>6. Evaluation of Proposed Mitigation Measures</b> .....	<b>43</b>
6.1 Harvesting .....	43
6.2 Cultural Continuity .....	44
6.3 Community Well-being.....	44
6.4 Stewardship and Governance.....	44
<b>7. Residual Impacts</b> .....	<b>45</b>
7.1 Harvesting .....	45
7.1.1 Residual Impacts on Harvesting.....	45
7.1.2 Risk and Uncertainty.....	47
7.2 Cultural continuity .....	48
7.2.1 Residual Impacts on Cultural Continuity.....	48
7.2.2 Risk and Uncertainty.....	50
7.3 Community Wellbeing.....	51
7.3.1 Residual Impacts on Community Wellbeing.....	51
7.3.2 Risk and Uncertainty.....	53
7.4 Stewardship and governance .....	54
7.4.1 Residual Impacts on Stewardship and Governance .....	54
7.4.2 Risk and Uncertainty.....	55
<b>8. Impact Severity</b> .....	<b>57</b>
<b>9. Conclusions</b> .....	<b>58</b>
<b>Citations</b> .....	<b>59</b>
<b>Interview Citations</b> .....	<b>65</b>
<b>Appendix A: Methodology for the Metlakatla Rights Impact Assessment of Ksi Lisims LNG</b> .....	<b>67</b>
<b>Appendix B: Community-Based Research Materials</b> .....	<b>81</b>
<b>Appendix C: Past, Present and Reasonably Foreseeable Projects and Physical Activities</b> .....	<b>137</b>
<b>Appendix D: Past, Present and Future Conditions</b> .....	<b>140</b>

---

**LIST OF FIGURES**

---

FIGURE 1 STEPS IN THE METLAKATLA ASSESSMENT.....68

FIGURE 2 METLAKATLA FIRST NATION’S RIGHTS CONSIDERED IN THE ASSESSMENT .....70

FIGURE 3 STUDY AREA BOUNDARIES .....74

DRAFT

---

**LIST OF TABLES**

---

TABLE 1 RESIDUAL IMPACTS ON HARVESTING.....47

TABLE 2 RISK RANKINGS FOR HARVESTING. ....47

TABLE 3 RESIDUAL IMPACTS ON CULTURAL CONTINUITY .....50

TABLE 4 RISK RANKINGS FOR CULTURAL CONTINUITY.....50

TABLE 5 RESIDUAL IMPACTS ON COMMUNITY WELLBEING .....52

TABLE 6 RISK RANKINGS FOR COMMUNITY WELLBEING .....53

TABLE 7 RESIDUAL IMPACTS ON STEWARDSHIP AND GOVERNANCE.....55

TABLE 8 RISK RANKINGS FOR STEWARDSHIP AND GOVERNANCE .....55

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**ACRONYMS AND ABBREVIATIONS**

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AQOs	Air Quality Objectives
BC Hydro	BC Power and Hydro Authority
CEM	Cumulative Effects Monitoring
CO	Carbon Monoxide
COPC	Chemicals of Potential Concern
DFO	Department of Fisheries and Ocean
DPM <sub>2.5</sub>	Diesel Fine Particulate Matter
EAO	Environmental Assessment Office
EA	Environmental Assessment
EIA	Environmental Impact Assessment
FLNG	Floating Liquefied Natural Gas
FPIC	Free, Prior, and Informed Consent
GHG	Greenhouse Gas
GIS	Geographic Information System
H <sub>2</sub> S	Hydrogen Sulphide
IAAC	Impact Assessment Agency of Canada
LAA	Local Assessment Area
LNG	Liquefied Natural Gas
MDC	Metlakatla Development Corporation
Metlakatla	Metlakatla First Nation
MMH	Mills Memorial Hospital

MMIW	Missing and Murdered Indigenous Women
MSS	Metlakatla Stewardship Society
MTPA	Million Tonnes per Annum
NAAQS	National Ambient Air Quality Standards
NGL	Natural Gas Liquefied
NIMMIWG	National Inquiry into Missing and Murdered Indigenous Women and Girls
NNADAP	National Native Alcohol and Drug Abuse Program
NO <sub>x</sub>	Nitrogen Oxide Compounds
PAH	Polycyclic Aromatic Hydrocarbons
PM <sub>10</sub>	Course Particulate Matter
PM <sub>2.5</sub>	Fine Particulate Matter
PRGT	Prince Rupert Gas Transmission
PRRH	Prince Rupert Regional Hospital
RAA	Regional Assessment Area
REEF	Ridley Island Energy Export Facility
RIA	Rights Impact Assessment
SO <sub>2</sub>	Sulphur Oxide Compounds
TUS	Traditional Use Studies
VC	Valued Component
VOCs	Volatile Organic Compounds

# 1. INTRODUCTION

Metlakatla First Nation (Metlakatla) is a Coast Tsimshian Nation located on the northwest coast of British Columbia, with deep-rooted cultural, spiritual, and governance ties to its traditional lands and waters. Metlakatla's relationship to its lands and waters is enduring, shaped by thousands of years of careful use, intimate knowledge of its rhythms and cycles, and a sacred responsibility to protect and sustain its balance. Guided by *ayaawx*, the traditional legal system governing both social and environmental conduct, and *adaawx*, the oral histories that affirm territorial rights, lineage, and identity, Metlakatla has nurtured a profound connection with its territory. These systems have enabled Metlakatla to maintain a reciprocal relationship with the natural world, fostering a deep understanding of ecosystems and seasonal cycles, while ensuring resources are carefully managed to benefit future generations.

Metlakatla has long faced the compounding pressures of colonization and industrial development, which have disrupted Metlakatla's ability to exercise its rights and maintain its deep relationship with its lands and waters. Over time, activities like port development, logging, and fisheries have strained Metlakatla's stewardship systems, impacting Metlakatla's ability to manage resources and preserve its cultural practices. The Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims LNG) – a proposed LNG processing and marine export facility – represents the latest in this series of developments, adding to the cumulative pressures that have already significantly affected Metlakatla's rights and the well-being of its community. These ongoing impacts highlight the need for a careful and thorough evaluation of Ksi Lisims LNG's potential to exacerbate existing challenges.

This Rights Impact Assessment (RIA) evaluates how Ksi Lisims LNG may affect Metlakatla's rights, grounded in Metlakatla's laws, values, and community knowledge. It reflects Metlakatla's holistic approach to stewardship and governance, acknowledging the deep connection between land, culture, and well-being. By centering the perspectives and experiences of Metlakatla's members, the RIA ensures that Metlakatla's voice and interests are respected in the decision-making process. This assessment exemplifies Metlakatla's enduring commitment to protecting its lands, waters, and cultural heritage for future generations.

## 1.1 OVERVIEW OF THE RIGHTS IMPACT ASSESSMENT

The Metlakatla RIA is an Indigenous-led evaluation designed to assess how Ksi Lisims LNG may impact the rights, lands, and resources of the Metlakatla First Nation. Building on Metlakatla's governance systems, cultural values, and stewardship practices, this RIA offers an in-depth, rights-based assessment that goes beyond conventional environmental and economic evaluations.

RIAs differ from conventional Environmental Assessments (EA) in key ways. Rooted in community-based knowledge and perspectives, RIAs are deeply informed by the lived experiences of Indigenous peoples, with a focus on safeguarding Indigenous rights and cultural practices (MacDonald & O'Faircheallaigh, 2020). They provide a holistic assessment of project impacts by integrating cultural, social, environmental, and economic factors. Furthermore, the Metlakatla RIA situates project-specific impacts within the broader context of cumulative pressures, recognizing the lasting effects of colonization

and industrial development on Metlakatla's ability to exercise its rights (Nishimura-Miller, 2018).

The RIA is grounded in reconciliation, highlighting the need for meaningful commitments from Ksi Lisims LNG proponents and governments to restore and protect Metlakatla's rights. This assessment outlines the conditions required for the meaningful resumption of Metlakatla's governance and stewardship responsibilities, ensuring that any project approvals are aligned with Metlakatla's long-term interests and rights.

The findings of this RIA will be provided to Metlakatla leadership to support a decision on Ksi Lisims LNG, grounded in free, prior, and informed consent as recognized by the *United Nations Declaration on the Rights of Indigenous Peoples*, the *Declaration on the Rights of Indigenous Peoples Act*, SBC 2019, c 44, the *United Nations Declaration on the Rights of Indigenous Peoples Act*, SC 2021, c 14, and consistent with their laws and governance processes. In addition, the RIA will form part of the referral materials provided by the BC Environmental Assessment Office (EAO) to provincial and federal ministers, as set out in the Process Order and in accordance with Metlakatla's decision to conduct the assessment pursuant to section 19(4) of the BC *Environmental Assessment Act*.

## **1.2 OVERVIEW OF KSI LISIMS LNG**

Ksi Lisims LNG is a proposed LNG processing and marine export facility located on the northern tip of Pearse Island in Portland Inlet (Ksi Lisims LNG 2023, Section 1). The facility is designed to process natural gas transported from northeastern British Columbia to the project site via the Prince Rupert Gas Transmission (PRGT) pipeline, with LNG carriers expected to transport the gas to global markets. Ksi Lisims LNG is anticipated to operate for at least 30 years, with production volumes reaching up to 12 million tonnes per annum (MTPA). A significant feature of Ksi Lisims LNG is the electrification of the facility, which is intended to meet provincial and federal net-zero climate emissions requirements, necessitating the construction of a new high-voltage transmission line to connect the facility to BC Hydro's electrical grid (Ksi Lisims LNG 2023, Section 1).

Shipping activities are a critical element of Ksi Lisims LNG, with LNG carriers expected to traverse Metlakatla's territorial waters. Metlakatla members use these waters extensively and intensively for fishing, harvesting, and other cultural practices. Ksi Lisims LNG contemplates up to 140-160 LNG carrier transits annually, transporting liquefied natural gas from the facility to international markets (Ksi Lisims LNG 2023, Section 1). These vessels will navigate along designated shipping routes through Dixon Entrance, Chatham Sound, Portland Inlet and other waters of cultural and ecological significance to Metlakatla. The shipping component involves large LNG carriers, each requiring tugboat escorts for safety, and the presence of these vessels will significantly increase marine traffic in the area.

The transmission line, intended to power the electrified LNG facility, has been included in the regulatory EA as an associated project under the Ksi Lisims LNG EA (Ksi Lisims LNG 2023, Section 1). However, it has been addressed at a high level in the regulatory review, primarily through desktop assessments. Metlakatla has expressed concerns about the adequacy of this review, emphasizing that fieldwork and more detailed studies are necessary to fully understand the potential impacts of the transmission line on the environment and Metlakatla's rights.

Finally, the PRGT pipeline, which would transport natural gas from northeastern British Columbia to the Ksi Lisims LNG facility, has not been directly included in the scope of the RIA. The PRGT pipeline has already undergone a separate environmental assessment process and received an EA Certificate (EAC #E14-06) on November 25, 2014. The PRGT pipeline is currently undergoing an amendment process, with two proposed route amendments including one that would connect it to Ksi Lisims LNG. This proposed route change was not contemplated as part of the original environmental assessment process, which concluded a decade ago under the 2002 *Environmental Assessment Act*. The RIA considers the floating liquefied natural gas production, storage and offloading facility (FLNG), onshore components shipping, transmission line and PRGT pipeline to be a single project. However, given the regulatory reality, the RIA considers impacts from the PRGT pipeline as cumulative impacts that interact with impacts from Ksi Lisims LNG.

Further details on Ksi Lisims LNG's components and phases can be found in the proponent's project overview (Ksi Lisims 2023, Section 1).

### 1.3 STRUCTURE OF THE REPORT

The RIA is organized into the following sections:

- 1) **Introduction:** This section provides an overview of Metlakatla First Nation's deep connection to their lands and waters, the cumulative pressures facing their territory, and the purpose of the RIA in assessing Ksi Lisims LNG's impacts on Metlakatla rights.
- 2) **Background:** This section provides high level overview of the cultural and historical context of the Metlakatla First Nation, describing their longstanding connection to their lands, waters, and resources. It explores pre-contact history, seasonal rounds, governance, and socio-political structures. The section serves as a foundational lens through which the assessment of Ksi Lisims LNG's impacts on Metlakatla's rights is understood.
- 3) **Methodology:** This section outlines the approach used to conduct the RIA, including the community-based research methods, data sources, and analytical framework employed to assess the potential impacts of Ksi Lisims LNG on Metlakatla's rights and interests.
- 4) **Past, Present, and Future Conditions:** This section examines the current and anticipated future conditions of Metlakatla's rights in the context of cumulative effects from past and present developments. It also considers future aspirations for community members and how these align with Metlakatla's long-term stewardship and governance goals.
- 5) **Project Impacts:** This section presents a detailed analysis of Ksi Lisims LNG's potential impacts on Metlakatla's rights, including on harvesting, cultural continuity, community well-being, and stewardship and governance.
- 6) **Evaluation of Proposed Mitigation Measures:** This section evaluates the proponent's proposed mitigation measures, assessing their adequacy in addressing the impacts identified in the previous section.



- 7) **Residual Impacts:** This section focuses on the residual impacts on Metlakatla's rights that are expected to remain after the implementation of the mitigation measures.
- 8) **Impact Severity:** This section evaluates the overall severity of the impacts on Metlakatla's rights, taking into account the extent, duration, and reversibility of the residual impacts.
- 9) **Conclusions:** This section summarizes the findings of the RIA and provides key recommendations for decision-makers to consider in the context of the wider environmental assessment process.

## 1.4 LIMITATIONS

While the RIA evaluates Ksi Lisims LNG's potential impacts on Metlakatla's rights, several limitations should be acknowledged.

First, although the assessment draws extensively from community-based research, focus groups, and interviews, the participant pool was relatively small. Limitations are noted in the data drawn upon and not repeated here. Accordingly, the perspectives captured in this assessment may not fully represent the diversity of experiences within the entire Metlakatla community. Efforts were made to correlate findings with secondary literature and project application materials to ensure robustness, but some gaps in data or data points may remain.

Second, the dynamic nature of demographic and economic changes in the region introduces uncertainty in predicting the long-term impacts of Ksi Lisims LNG on community well-being and governance. While the assessment endeavors to provide a clear analysis based on current data, future changes in population, resource demand, and community capacity could influence the outcomes in ways that are difficult to fully anticipate.

Third, it is important to note that while this RIA addresses both cumulative and project-specific impacts, the focus of the residual effects evaluation remains on project-specific effects. Cumulative impacts, though integrated throughout the analysis, were considered in assessing the overall severity of impacts on Metlakatla's rights.

Fourth, limited information has been provided by the proponent about the transmission line and its potential effects. This limitation has resulted in a significant source of uncertainty regarding the overall project's effects on relevant valued components and on Metlakatla's rights and interests.

Fifth, exclusion of the PRGT pipeline from the scope of the Ksi Lisims LNG EA and the high-level treatment of the transmission line within the EA has presented significant challenges with respect to understanding and evaluating the project in its entirety. In reality, this is a single project consisting of the floating LNG facility and its onshore components, the gas feed pipeline, the transmission line which will electrify the project, and shipping of LNG, condensate and materials.

Finally, this RIA is submitted in draft. It may be updated, refined or changed as new information becomes available.

## 2. BACKGROUND

The Metlakatla First Nation forms a unique culture and community that is intimately tied to the lands and waters of their traditional territory on the northwest coast. A foundational understanding of who Metlakatla are, their history, and the relationships Metlakatla's ancestors maintained with their lands and resources is critical for interpreting the information gathered in this report. The following sections offer a high-level overview of the cultural importance of Ksi Lisims LNG area to the Metlakatla community, based on an understanding of precontact history, relationships to territory, Metlakatla's seasonal round, and governance and socio-political structures.

### 2.1 METLAKATLA FIRST NATION PEOPLE AND THEIR RELATIONSHIP TO THE LAND

Metlakatla is one of two modern First Nations which comprise the Coast Tsimshian, the other being the Lax Kw'alaams (Port Simpson) Band. The Coast Tsimshian are linguistically and culturally related to the Tsimshian-speaking peoples, but distinct from the Nisga'a and Gitksan, who share the same language family but are recognized as separate nations. Archaeological evidence demonstrates the presence of sizeable Coast Tsimshian communities in the area of present-day Prince Rupert Harbour and surrounding environs for at least 10,000 years (MacDonald 2006; Martindale et al. 2017; Martindale 2019).

Metlakatla and Lax Kw'alaams share a collective history as descendants of the Nine Tribes of the Coast Tsimshian, which include Gitwilgyoots, Gispaxlo'ots, Gitando, Giluts'aaw, Gits'iis, Ginaxangiik, Ginadoyks, Gitlaan, and Gitzaxlaał (Martindale and Marsden 2011). Historically known as expert fishers, the Coast Tsimshian relied on a wide variety of fish species, shellfish, mollusks, and other marine resources for their livelihood and sustenance (MacDonald 2006; Martindale et al. 2017).

Historically, the Nine Tribes of the Coast Tsimshian each occupied winter villages in Prince Rupert Harbour, along Metlakatla Pass, and villages on the Skeena River. These communities also used various seasonal villages and camps dating back at least 9,000 years. These areas include seasonal camps and settlements used for eulachon fishing at the mouth of the Nass River. (Marsden 1997, Martindale et al. 2017; MacDonald 2006). The Coast Tsimshian's resource use and occupation followed a seasonal and cyclical pattern, requiring the use, ownership, and management of broad marine, intertidal, and inland areas (Martindale 2006).

Metlakatla's traditional territory extends from Portland Canal and Observatory Inlet in the north, to the headwaters of the Ecstall River in the south, and from Lakelse Lake near Terrace in the east to the coastal islands in eastern Hecate Strait in the west. This diverse landscape encompasses productive marine waters, freshwater rivers and streams, coastal beaches, intertidal zones, temperate rainforests, islands, and mountains that support a wide variety of fish, terrestrial and marine mammals, birds, plants, and medicines (Martindale et al. 2017; MacDonald 2006).

### 2.2 SEASONAL ROUNDS

Metlakatla's traditional annual subsistence pattern revolves around the seasonal abundance of key resources in different ecosystems. This cyclical use of resources

demonstrates Metlakatla's intimate knowledge of their territory and its resources at different times of the year, ensuring the health and abundance of resources for future generations (MacDonald 2006). The seasonal round continues to play a central role in Metlakatla's cultural and economic life, connecting people to the land and water while respecting the reproductive patterns of key species (Martindale et al. 2017).

**Spring:** From February to April, Metlakatla people travel to harvest eulachon at villages in the lower Nass River, especially in the environs of Nass Bay and Fishery Bay. These nutritionally dense fish are consumed fresh, processed into oil, and traded. Seaweed and roe are harvested offshore from Prince Rupert Harbour later in the spring, alongside halibut, flounder, and cod (Marsden 1997; MacDonald 2006; Martindale et al. 2017). Spring is also a time for gathering new growth plants and hunting marine mammals.

**Summer:** From early summer through to October, Metlakatla people focus on salmon harvesting in the Skeena River and its tributaries. This period involves the use of diverse fishing techniques such as gill-netting, seining, and tidal traps. In addition to salmon, summer brings berry harvesting and hunting of terrestrial mammals (MacDonald 2006).

**Fall:** As fall begins, salmon harvesting continues until October, after which communities return to winter villages for ceremonial activities, including feasts to validate new chiefs and marriages. This is also a time for berry harvesting and continued hunting of terrestrial and marine mammals (MacDonald 2006; Kwon and Roberts 2019).

**Winter:** During the winter months, Metlakatla people reside in permanent villages near intertidal zones to harvest marine invertebrates and shellfish. Marine species harvested during the winter include halibut, red snapper, crab, cockles, mussels, prawns, and geoducks. Fur-bearing animals such as mink, beaver, and muskrat are also trapped during the winter (MacDonald 2006; Kwon and Roberts 2019).

### 2.3 GOVERNANCE AND SOCIO-POLITICAL ORGANIZATION

The governance of the Coast Tsimshian, including Metlakatla First Nation, is rooted in a complex socio-political system that reflects deep connections to the land, waters, and natural resources. Central to this complex structure are the matrilineal clans and house groups, which form the fundamental units of Tsimshian society. Each of the Nine Tribes of the Coast Tsimshian is composed of these house groups, which share political, economic, and territorial concerns. The house groups, in turn, are organized into four exogamous matrilineal clans: the Eagle (*Laxskiik*), Raven (*Ganhada*), Killer Whale or Blackfish (*Gisbutwada*), and Wolf (*Laxgibu*) (Martindale and Marsden, 2011).

At the heart of the Tsimshian governance system is the role of the house chief, who is responsible for overseeing the well-being and health of the house, its members, and its territories. Chiefs inherit their titles and authority through the matrilineal line, with leadership responsibilities passed down from generation to generation. The authority of the house chief is bolstered by council members and house matriarchs, who advise the chief on matters related to resource management, territorial rights, and social conduct (MacDonald, 2006; Anderson, 2006). Together, they ensure that decisions affecting the house's territory and resources align with traditional laws and customs.

Tsimshian law, embodied in the *ayaawx* (the traditional legal system), governs social and political conduct, resource stewardship, and relationships within and between house

groups. The *ayaawx* outlines the responsibilities of chiefs and house members, dictating how territories are managed, how resources are distributed, and how disputes are resolved. This legal system is integral to maintaining the balance between human activity and the natural world, ensuring that the land and its resources are cared for according to ancestral laws (Martindale and Marsden, 2011).

In addition to the *ayaawx*, the *adaawx* (oral histories) serve as formal records of key legal and historical events that shape the governance of territories. The *adaawx* is a narrative backbone to the Tsimshian legal system, recounting ancient migrations, territorial battles, alliances, and the establishment, granting, or transfer of rights over specific lands and resources. These stories are recited and validated during public feasts, where witnesses from other clans and tribes bear witness to the legitimacy of territorial claims and decisions (Miller, 1998). The feast system is essential to the social and political life of the Tsimshian, as it enforces the collective memory of legal precedents and ensures the continuity of governance protocols. The Nisga'a Nation operates under a legal system which is common to and capable of interfacing with that of the Coast Tsimshian (Martindale 2019).

The clan system adds to this governance structure by organizing marriages, alliances, and social interactions across house groups and tribes. Marriages typically occur between members of different clans, creating bonds between house groups and tribes, and ensuring a wide network of reciprocal obligations. These alliances are crucial for maintaining peace, resolving disputes, and supporting the distribution of resources during times of scarcity (Martindale and Marsden, 2011).

Despite certain disruptions caused by colonialism, including the imposition of the *Indian Act* and the reserve system, these traditional structures remain resilient within Metlakatla. The Metlakatla Stewardship Society, Guardian Program, and Marine Use Planning initiatives are contemporary manifestations of these traditional governance systems and obligations, continuing to uphold the principles of stewardship, reciprocity, and governance rooted in *ayaawx* and *adaawx*.

### **3. METHODOLOGY**

The methodology for this assessment follows a systematic approach to evaluating the potential impacts of Ksi Lisims LNG on Metlakatla's rights and interests. This section provides a high-level overview of the key components of the methodology, including community engagement, data collection, and the analytical framework used to assess impacts. Detailed information about the assessment methodology is provided in Appendix A.

#### **3.1 COMMUNITY ENGAGEMENT**

Engagement with Metlakatla members was central to the assessment process. Interviews, focus groups, and community workshops were conducted to gather insights on the potential impacts of the project on traditional practices, cultural continuity, and community well-being. Elders, harvesters, and other key knowledge holders were involved to ensure that the assessment reflected the lived experiences and priorities of the community.

## 3.2 DATA COLLECTION

Data for this assessment was collected from a variety of sources:

- **Community-based research:** Interviews, focus groups, and Indigenous Knowledge and Use Studies provided firsthand accounts of Metlakatla members' experiences and concerns.
- **Application materials:** The proponent's application documents were reviewed to identify predicted impacts on the environment and community.
- **Secondary sources:** Published academic and technical reports were consulted to provide additional context and support the analysis.

The integration of Indigenous Knowledge and Western Science ensured that the assessment was comprehensive and reflective of both community perspectives and technical considerations.

## 3.3 ANALYTICAL FRAMEWORK

The assessment followed a rights-based framework that emphasizes the importance of Metlakatla's inherent rights to land, water, resources, and governance. The analysis focused on four key areas: harvesting, cultural continuity, community well-being, and stewardship and governance. Each area was examined in terms of:

- **Trend line conditions:** Understanding the past, present and future state of these rights-based practices as the foundation for assessing project impacts.
- **Cumulative pressures:** Identifying how historical and ongoing stressors contribute to the vulnerability of Metlakatla members to project-specific impacts.
- **Project-specific impacts:** Analyzing how the proposed Ksi Lisims LNG project could exacerbate existing pressures.

## 3.4 IMPACT ASSESSMENT

Residual impacts were assessed based on the following criteria:

- **Vulnerability:** The sensitivity of Metlakatla members, lands, and resources to changes or stressors.
- **Magnitude:** The scale or severity of the impact on Metlakatla's rights and interests.
- **Extent:** The geographic range of the impact, whether it is site-specific, local, or regional.
- **Frequency:** How often the impact occurs (e.g., rare, infrequent, frequent, or continuous).
- **Duration:** The length of time the impact is expected to last (e.g., short-term, medium-term, long-term, or permanent).

- **Reversibility:** Whether the impact can be undone or mitigated over time.
- **Affected populations:** Identifying which groups or individuals within Metlakatla may be most affected by the project's impacts.

### 3.5 HOLISTIC APPROACH TO SEVERITY DETERMINATION

The severity determination for each impact was not assessed in isolation, but through a holistic approach that considers the interconnectedness of Metlakatla's rights, practices, and values. This approach recognizes that impacts on one aspect, such as harvesting, can have cascading effects on cultural continuity, community well-being, and governance. Therefore, the assessment integrates all relevant factors to determine the overall severity of project impacts, considering both tangible and intangible effects. This approach ensures that the cumulative and interrelated nature of impacts on Metlakatla's way of life is fully captured, leading to a more comprehensive understanding of the potential risks and challenges posed by Ksi Lisims LNG.

## 4. CURRENT CONDITIONS AND CUMULATIVE PRESSURES

This section provides a high-level overview of the key conditions and cumulative pressures that influence the Metlakatla's harvesting, cultural continuity, community well-being, and stewardship and governance. It establishes the trend line context against which Ksi Lisims LNG impact will be assessed. Detailed trend line information is presented in Appendix D.

### 4.1 CURRENT CONDITIONS

#### 4.1.1 *Harvesting*

Marine harvesting remains a vital aspect of Metlakatla's traditional practices, particularly fishing for salmon (chinook, chum, coho, pink, and sockeye), which continues to occur in important areas such as Chatham Sound, Triple Island, Dundas Islands, and Observatory Inlet, and throughout the environs of Portland Inlet and Canal, including Somerville Island and Mylor Peninsula. Knowledge of salmon runs and traditional harvesting sites has been passed down through generations, and these activities continue to support both subsistence needs and local economic activity.

In addition to salmon, Metlakatla harvesters rely on a wide variety of marine species including eulachon, halibut, ling, grey and black cod, herring roe, sea cucumbers, sea urchins, rockfish, and shellfish (clams, crabs, and mussels). Fishing camps at the mouth of the Nass River have been relied on for millennia for spring eulachon harvesting and summer and fall salmon harvesting (MacDonald 2006). Other traditional harvesting sites, such as Triple Island, Stevens Island, and areas at Portland Inlet and Portland Canal, and at the mouth of the Nass River, especially Nass Bay and Fishery Bay are highly valued for their abundance of marine resources. However, increased industrial activities and environmental degradation have made certain species, like eulachon, seaweed and abalone, more difficult to harvest, and contamination of nearshore areas has led to restrictions on shellfish harvesting.

Metlakatla members harvest a wide range of terrestrial resources, including berries, medicinal plants, and game. Important species include berries like salmonberries and blueberries, as well as medicinal plants such as Labrador tea and Devil's Club. Members also engage in hunting for species like deer and moose in forested areas, while plants and berries are gathered in clearings and meadows. The areas surrounding the Ksi Lisims LNG project site, along the proposed shipping route, and in areas which require transit through or along the proposed marine shipping route to access such as Mylor Peninsula, the Kwinamass River, and the mouth of the Nass River such as Nass Bay and Fishery Bay, continue to be important for these practices, connecting members to their traditional territories and providing essential resources. These terrestrial harvesting activities are central to maintaining cultural continuity and food security for the Metlakatla people and have been extensively documented in prior studies including in the context of the Ksi Lisims Project, in connection with the proposed PRGT and Westcoast Connector pipelines ( D.M. Cultural Services Ltd., 2014a; D.M. Cultural Services Ltd., 2014b; Metlakatla First Nation, 2022). Despite ongoing challenges, harvesting remains a cornerstone of Metlakatla's cultural identity and food security, although some community members report reduced access to traditional species and harvesting areas due to Crown land conversion, pollution and increased commercial competition.

#### 4.1.2 Cultural Continuity

Cultural continuity in Metlakatla is expressed through a deep connection to the land, waters, and the spiritual and practical activities tied to these areas. Language transmission, spiritual practices, and traditional knowledge-sharing are all fundamental aspects of cultural continuity. Elders play a key role in transmitting knowledge, particularly related to harvesting practices, to younger generations.

Metlakatla members' connection to specific *spanaxnox* (spirit-inhabited sites) plays a central role in their spirituality and connection to the land. *Spanaxnox* are viewed as gateways between the human and spirit worlds and are located throughout the territory, including at key areas directly relevant to the Ksi Lisims LNG project site and proposed marine shipping route like *Lgu'ol* (north Somerville Island), *tsəmsqae'o* (Nasoga Gulf), and *wil'nlabalga s'hoks* (Ten Mile Point) (Marsden, 2002; Martindale, 2021). These areas are associated with important *adawx* that reinforce the community's spiritual relationship with the land. For example, the *adawx* of Nispilax recounts a foundational "double feast" between spirit beings and the ancestors of the Coast Tsimshian that took place at Atkusooxs (Red Bluff), which is not far from the proposed Ksi Lisims LNG site and just one of many sites with spiritual significance to the Coast Tsimshian at the mouth of the Nass River (Marsden, 2002; Martindale, 2021). An ancient *adawx* tells of a powerful spirit being named T'Soode carving a protected travel corridor to the mouth of the Nass River to provide the Coast Tsimshian a protected route to this important area (Martindale 2021). The proposed Ksi Lisims LNG marine shipping route represents a physical disruption to this ancient right of access for the Coast Tsimshian.

Cultural practices are increasingly constrained by the pressures of industrial development and land access restrictions. Community members report difficulties accessing sacred sites for private spiritual ceremonies due to increased marine traffic and environmental degradation.

### 4.1.3 Community Well-being

Community well-being in Metlakatla is closely tied to access to traditional resources, economic stability, and physical and mental health. While social networks within the community remain strong, economic challenges have increased reliance on external job markets, with fewer opportunities for meaningful employment in Metlakatla. Fishing, once a cornerstone of the local economy, has been impacted by regulatory restrictions and overfishing by commercial and recreational fishers, leading to income loss for many community members.

Health services are limited, and access to traditional foods, such as shellfish and certain species of fish, has been reduced due to environmental contamination. Many community members report health concerns linked to environmental degradation, including fears about consuming traditional foods from polluted areas. Housing conditions also pose challenges, with many homes suffering from mold and structural instability.

Despite these pressures, Metlakatla members maintain a resilient sense of community well-being, anchored in their cultural practices and strong social support networks. Nonetheless, the erosion of traditional livelihoods and environmental health poses ongoing risks to the long-term well-being of the community.

### 4.1.4 Stewardship and Governance

Metlakatla has a long history of governance and stewardship, deeply embedded in their traditional laws and customs (*ayaawx*). Stewardship of land and resources is central to the Nation's identity, and modern governance structures, such as the Metlakatla Stewardship Society and the Guardian Program, are extensions of these traditional responsibilities. These programs monitor development projects and develop recommendations to limit impacts on land, waters, and resources within Metlakatla's territory.

Governance within Metlakatla operates under both traditional and contemporary systems, blending the *Wilp* (house group) system with expressions of modern governance frameworks like an *Indian Act* election code and the Metlakatla Land Code. The community also participates in marine use planning and fisheries management, ensuring that traditional knowledge informs modern land and resource management practices.

Metlakatla's ability to fully exercise governance and stewardship rights is increasingly constrained by external pressures. Community members express concerns about the growing presence of industrial projects in their territory, which they feel undermines their ability to manage and protect key areas. While efforts are made to engage in co-management and environmental monitoring, limited capacity and ongoing industrial expansion pose significant challenges.

## 4.2 CUMULATIVE PRESSURES

Metlakatla faces a range of cumulative pressures that affect all four areas discussed above. Industrial development, including port expansions, increased marine traffic, and resource extraction projects, has led to habitat destruction, contamination of key harvesting areas, and the destruction and loss of sacred, cultural and heritage sites. The



cumulative impacts of climate change, pollution, and declining species populations further exacerbate these pressures.

These cumulative pressures are not isolated but compound and interact in ways that heighten the vulnerability of Metlakatla's harvesting practices, cultural continuity, community well-being, and stewardship capacity. For example, increased marine traffic not only disrupts spiritual practices but also impacts the health of marine species that are essential for both food security and cultural identity.

The cumulative nature of these pressures means that even small, incremental changes such as increased vessel speeds can have outsized impacts when layered on top of historical and ongoing stressors. The result is a diminished capacity for Metlakatla to practice their rights and maintain their way of life.

If current pressures continue, Metlakatla's ability to exercise its rights will likely be further constrained. Key marine species may become even scarcer due to industrial activity, and access to traditional harvesting areas may continue to decline. Cultural continuity could be further eroded as sacred sites are disturbed, and the transmission of traditional knowledge becomes more difficult.

Environmental health, already compromised by contamination and habitat loss, will likely continue to deteriorate, impacting community well-being and increasing reliance on external food sources. The strain on Metlakatla's governance systems, particularly in the context of managing resource use and land protection, may intensify as new industrial projects enter the region.

### **4.3 PREFERRED FUTURE CONDITIONS**

Metlakatla's preferred future envisions a territory where traditional harvesting practices can thrive, cultural and heritage sites and spiritual landscapes are protected, and governance authority is strengthened. The community aspires to reclaim control over their lands and waters, ensuring that future generations can engage in the full range of cultural, spiritual, and economic activities tied to their identity.

In this vision, Metlakatla would exercise greater authority over resource management, particularly in protecting key species and areas from industrial encroachment. Governance structures would be supported by increased capacity, allowing Metlakatla to monitor and enforce environmental protections while promoting cultural revitalization and community well-being.

## **5. PROJECT IMPACTS**

This section examines the potential impacts of Ksi Lisims LNG on Metlakatla's rights and interests. It assesses how the project-specific effects interact with the conditions established in the previous section, focusing on harvesting, cultural continuity, community well-being, and stewardship and governance.

By tracing the impact pathways between Ksi Lisims LNG's activities and Metlakatla's rights, this section identifies where and how Ksi Lisims LNG may cause adverse effects. Each impact is considered within the broader context of cumulative pressures, highlighting

the interconnected nature of Metlakatla's rights and the potential for ripple effects across different areas of community life.

While this section evaluates the impacts on each right individually, these rights are deeply interconnected. Impacts on one right may trigger indirect or cascading effects on others, reflecting the holistic nature of Metlakatla's way of life. Each assessment section therefore identifies these cross-cutting effects, which will be carried forward to inform the final determination of the severity. This determination will consider the cumulative impacts of Ksi Lisims LNG on Metlakatla's way of life, viewed in its entirety.

## 5.1 HARVESTING

This section evaluates the predicted impacts of Ksi Lisims LNG on Metlakatla's marine, shoreline, terrestrial, and aquatic rights. The assessment considers how the Project may alter the conditions that support these practices, drawing on both the proponent's application materials and insights gathered through community research. Specifically, the section examines Ksi Lisims LNG's potential impacts on:

- Access to harvesting areas;
- Safety while harvesting;
- Resource sufficiency; and
- Confidence in harvestable resources.

Together, these factors represent the core aspects of Metlakatla's harvesting rights and practices that are most vulnerable to project-related impacts. The following sections will explore each of these areas in detail, assessing the extent of the predicted effects and their implications for Metlakatla's ability to sustain traditional harvesting activities.

### 5.1.1 Access to Harvesting Areas

Ksi Lisims LNG is predicted to adversely impact Metlakatla's access to harvesting areas, affecting terrestrial, aquatic, shoreline, and marine harvesting rights. This assessment evaluates these impacts based on three key indicators: (1) area of temporary and permanent access restriction, (2) zone of influence (effective alienation), and (3) travel time lost due to interference.

#### *Area of Temporary and Permanent Access Restriction*

Metlakatla harvesters are expected to experience restricted access to key harvesting sites, both temporarily and permanently. The proponent's application materials indicate that access to certain terrestrial and marine areas, including the Tree Knob Island group, Portland Inlet, and other key harvesting locations along the marine shipping route, will be affected by project-related activities (Ksi Lisims LNG 2023, Section 13). In addition, Metlakatla Pass – a key Metlakatla marine harvesting site – will be impacted by project-related marine traffic, such as pilot boats (Leadership Meeting, September 18, 2024). The project footprint encompasses 17 identified marine harvesting sites and 30 additional marine sites along the shipping route, which are vital for species such as salmon, halibut, and crab (Ksi Lisims LNG 2023, Section 13). Terrestrial harvesting areas, particularly

islands and coastal zones used for camping, berry picking, plant harvesting, and hunting, may also face disruption due to increased access and construction of infrastructure such as pipelines and transmission lines.

These areas are of high cultural and ecological significance, providing essential resources for Metlakatla members. For example, the Tree Knob Island group and Triple Island are particularly valued for their rich biodiversity and cultural heritage, making them crucial for sustaining traditional practices. The same is true of Mylor Peninsula and its environs, as documented in several prior studies (D.M. Cultural Services Ltd., 2014a). The proponent's materials acknowledge the importance of some of these sites but suggest that restrictions will be temporary and minimal. This may underestimate the significance of even small disruptions to these critical zones (Ksi Lisims LNG 2023, Section 13).

Participants in community-based research emphasized concerns that Ksi Lisims LNG will limit their autonomy to access important areas. One participant noted, "*I know that [the Proponents] say now 'oh, well, you'll still have access.' But it will be limited access and it'll be all up to what they let us have*" (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Temporary restrictions during the construction phase may last for several years, depending on the timeline of activities such as transmission line installations, and marine infrastructure development. The proponent's application outlines that construction activities may span multiple seasons, with peak construction potentially overlapping with peak harvesting periods, raising concerns about the duration of access limitations during critical times (Ksi Lisims LNG 2023, Section 13). Post-construction, some areas may continue to experience long-term restrictions due to the presence of permanent infrastructure like LNG facilities and increased marine traffic.

#### *Zone of Influence (Effective Alienation)*

Harvesters may be alienated from preferred harvesting areas due to Ksi Lisims LNG's 'zone of influence.' This includes avoidance of areas affected by sensory disturbances, such as noise, vibrations, and changes in air and water quality. The increase in LNG carrier traffic—projected at 140-160 transits per year—may influence harvesters' decisions to avoid certain areas. The proponent suggests that vessel traffic will only increase by a small percentage relative to existing levels (Ksi Lisims LNG 2023, Section 13), but for harvesters, even incremental increases in traffic could significantly affect the safety and cultural feel of harvesting areas.

Community members highlighted the importance of sensory experiences in the practice of harvesting. One participant commented, "*LNG carriers, looking at the size of them, seaweed seasons, halibut, and salmon – we're still out on the water hunting, clam digging. We go out in the night to certain areas; we have canoe journeys throughout the summer. It'll completely change the feel and the safety for sure*" (M14, Interview, 20 March 2024).

The proponent does not fully address how harvesters may avoid, or avoid travel to, certain areas due to these disturbances, particularly in regions with high cultural and ecological value to Metlakatla, such as Triple Island, Dundas Islands, Metlakatla Pass, Somerville Island, Mylor Peninsula, and other areas at Portland Inlet and Portland Canal, and at the mouth of the Nass River, especially Nass Bay and Fishery Bay. This underscores the need for careful and culturally-sensitive consideration of the cumulative effects of increased

traffic and other project-related activities on the overall harvesting experience (Ksi Lisims LNG 2023, Section 13).

#### *Travel Time Lost to Interference*

Project-related marine traffic is also expected to interfere with Metlakatla harvesters' travel routes, causing delays and increasing travel times to harvesting areas, including eulachon harvesting sites at the mouth of the Nass River and harvesting and other activities in Portland Inlet, including at and near Mylor Peninsula. The proponent acknowledges potential increases in travel times but suggests that these will not cause widespread disruptions to marine navigation (Ksi Lisims LNG 2023, Section 13).

However, harvesters have already noted difficulties with existing traffic and expect Ksi Lisims LNG to exacerbate these issues. One member stated, *"That's a huge impact, if that tanker comes in July, cause our peak season is the last two weeks in July and the first two weeks in August. So, if they could leave the ship[ping] empty for two months, it'll be really nice and we can catch our fish"* (M04, TUS, 2022). This indicates that the Project may disproportionately impact harvesting success during peak seasons, particularly for key species.

In summary, while the proponent discusses mitigation measures for access-related impacts, evidence from both the project application and community-based research suggests that these impacts may be greater than anticipated, especially in areas of high cultural and ecological significance. The areas at risk, including Triple Island, the Tree Knob Island group, Dundas Islands, Metlakatla Pass, Somerville Island, Mylor Peninsula, and other key marine and terrestrial sites throughout Portland Inlet and Portland Canal, are critical for sustaining traditional practices, and any restrictions, whether short, medium, or long-term, could have significant adverse effects on Metlakatla's harvesting rights.

#### *5.1.2 Safety while Harvesting*

The safety of Metlakatla harvesters is expected to be adversely affected by Ksi Lisims LNG due to increased marine traffic and other project activities. This section evaluates these impacts based on three key indicators: (1) risk of marine collision, (2) risk of vessel wake-related accidents, and (3) perception of safety while harvesting.

##### *Risk of Marine Collision*

Ksi Lisims LNG is expected to increase the risk of collisions between harvesters and marine vessels. The proponent's Navigation Safety Assessment (NSA) estimates that 160 LNG and 12 NGL vessels (inbound and outbound) will traverse the marine shipping route annually from the LNG facility at the northern tip of Pearse Island to the Triple Island Pilot Boarding Station (Ksi Lisims LNG 2023, Appendix E). This will increase marine vessel traffic by 6% in the region, further crowding traditional harvesting areas such as Triple Island, Chatham Sound, Portland Inlet and Portland Canal.

While the NSA outlines extensive safety protocols, including reliance on BC Coast Pilots and navigational aids (Ksi Lisims LNG 2023, Appendix E), community members remain concerned about the risks posed by weather and human error. One participant noted, *"How can you feel safe [on the water] when there's 160 ships going by, and you don't know if the guy is capable of running the ship or not?"* (M10, Marine Harvesting Focus

Group, 11 March 2024). Concerns about ship operators' ability to handle extreme weather were also raised. Although the proponent's NSA asserts that weather impacts have been studied and accounted for, community members with generations of experience navigating these waters voiced their doubts: *"Have they done a study on winter conditions? Pretty strong wind there, even summertime. Blows the Nass highwater, pretty wicked country"* (M01, Interview, 4 April 2024).

The NSA's reliance on simulations and standard navigational assessments lacks sufficient input from Indigenous knowledge holders who are intimately familiar with these conditions. Local harvesters have experienced the risks firsthand, with one participant recalling, *"We had an incident last year when a storm came in November, huge storm, one freighter broke loose from the dock down [...] to Fairview [Prince Rupert container terminal] and got blown to shore there. They're lucky they had big tugboats to get it off the beach otherwise it would probably still be there"* (M01, Interview, 4 April 2024; Ksi Lisims LNG 2023, Appendix E).

While the NSA's safety mechanisms may mitigate some risks, the extent of actual impacts on Metlakatla harvesters, especially in adverse weather, remains uncertain.

#### *Risk of Vessel Wake-Related Accidents*

Participants expressed concerns about large vessel wakes creating safety hazards for small fishing vessels. Harvesters may be at increased risk of collision or capsizing when in proximity to LNG carriers. The NSA identifies speed limits and designated shipping lanes to reduce the impact of vessel wakes (Ksi Lisims LNG 2023, Appendix E). However, community members believe these measures will not be enough, particularly in areas like Triple Island and Chatham Sound, where marine traffic is high, and vessels travel at significant speeds.

One participant described the risk: *"Some of these big tankers that come through, they're doing 24, 25 knots with a swell that's probably five or six feet high, and we're hearing a lot from our members when they are running out to sea. You have to slow right down so that you can roll over their waves or else it'll flip you right over"* (M04, TUS, 2022).

The proponent's NSA asserts that vessel speeds will be regulated, and traffic managed, but it lacks a detailed understanding of how wake-related risks impact harvesters navigating small, sometimes unpowered, vessels (Ksi Lisims LNG 2023, Appendix E). In fact, the large-scale LNG carriers traveling through tight areas near Triple Island and Dundas Islands pose particular risks that are not fully acknowledged in the NSA.

#### *Perception of Safety While Harvesting*

The perception of safety among harvesters is another key concern. As marine traffic increases, participants worry that harvesting will be deterred due to safety concerns, further eroding traditional practices. One participant expressed concerns over how Ksi Lisims LNG might make them feel unwelcome in areas like Triple Island: *"[T]hey'd be telling us 'No, guys, gotta go, you can't be anywhere near here, for your safety.' An environment that was sacred to us is now being decimated and they won't care that we're there to pick a couple of buckets of seaweed to feed 20 families"* (M12, Marine Harvesting Focus Group, 11 March 2024).

The NSA assumes that the perception of safety will improve through the application of its mitigation measures, including consultation with local authorities and the establishment of navigational aid systems (NSA, Section 6, p. 6-10). However, these measures do not fully address the cultural and practical concerns raised by Metlakatla harvesters, who foresee their harvesting activities being curtailed or eliminated in key areas due to perceived safety risks. As one participant explained, *“With huge LNG carriers coming through on a regular basis, people are less likely to be fishing [outside the Lax Kw’alaams village and the Portland Canal]”* (M16, Interview, 13 May 2024).

### 5.1.3 Resource Sufficiency

Project-related activities are predicted to impact Metlakatla’s ability to harvest sufficient resources to meet subsistence, economic, trade, sharing, and ceremonial needs. This assessment evaluates these impacts based on two key indicators: (1) abundance and distribution of harvestable species and (2) harvesting success (including time lost to interference).

#### *Abundance and Distribution of Harvestable Species*

Project-related activities are expected to affect the abundance and distribution of key species traditionally harvested by Metlakatla members. The proponent identifies several pathways through which Ksi Lisims LNG will alter species abundance, including habitat loss, contamination risks, noise pollution, invasive species, wave action, and climate-related impacts. Specifically, changes to vegetation, wildlife habitat, marine ecosystems, and water quality will reduce species availability in Ksi Lisims LNG’s area of influence (Ksi Lisims LNG 2023, Section 7.06, 7.07, 7.08, 7.09).

Ksi Lisims LNG will involve the clearing of approximately 18.1 hectares of old forest, which represents around 5% of the old forest in the Regional Assessment Area (RAA), including 4.8 hectares of ecologically sensitive old forest (Ksi Lisims LNG 2023, Section 7.06). This loss of old forest will reduce critical habitats for species that Metlakatla members rely on for harvesting. In addition, 28,187 square meters of marine riparian vegetation will be removed, which plays a crucial role in maintaining healthy marine ecosystems (Ksi Lisims LNG 2023, Section 7.06, 7.09). Riparian vegetation not only supports biodiversity but also stabilizes the shoreline, helping to prevent erosion and protect fish habitat

Beyond vegetation loss, the impacts of nitrogen deposition are expected to further degrade sensitive ecosystems. Nitrogen deposition in 330.9 hectares of the project area is expected to exceed critical thresholds, posing a high risk to species such as lichens, which are vital indicators of ecosystem health (Ksi Lisims LNG 2023, Section 7.06). This will likely contribute to the degradation of ecosystems that support important plant and animal species.

Metlakatla harvesters have observed that environmental pressures such as overfishing and pollution have already impacted key species, and they expect Ksi Lisims LNG to exacerbate these challenges. For example, one harvester described the vulnerability of herring populations, explaining how the species relies on cold weather and snow for spawning: *“you know when herring are spawning because it’s snowing in April and May. It snows and the ocean works with the sky, so the sky will bring down and that will cool everything off and then the herring are able to spawn”* (M12, Cultural Continuity Focus Group, 12 March 2024). The warming waters and increased shipping traffic resulting from

Ksi Lisims LNG are expected to interfere with this natural cycle, further threatening herring populations in traditional harvesting areas.

Additionally, the introduction of invasive species due to increased marine traffic was identified as a concern by Metlakatla members. The higher traffic in areas such as Portland Canal brings the risk of invasive species that could alter the local ecosystem. As one participant noted: *“They’re expecting to have LNG bulk carriers to come in – things like that haven’t traditionally been up Portland Canal, so you’re looking at the potential to increase the exposure of invasive species”* (M16, Interview, 13 May 2024). The proponent plans to mitigate this risk by adhering to the Ballast Water Regulations under the Canada Shipping Act, which require ballast water exchange at least 200 nautical miles offshore, and by complying with the Ballast Water Management Convention D2 standard by 2024 to limit the number of viable organisms in ballast water discharge. However, while these measures will reduce the risk, they are not foolproof. Some species are highly adaptable and can survive the exchange and treatment processes. Additionally, biofouling (where organisms attach to ships’ hulls) remains another potential pathway for introducing invasive species. Given the cumulative impact of increased shipping traffic and historical challenges in controlling invasive species, Metlakatla members’ concerns are valid. Invasive species could outcompete local species, disrupting harvestable species populations and reducing their availability.

Pipeline construction and operation will introduce long-term impacts by permanently altering the seabed in key harvesting areas, cumulatively impacting harvesting activities together with Ksi Lisims LNG. The installation of the submerged pipeline is expected to have irreversible effects on marine ecosystems, further threatening the habitat of species vital to Metlakatla’s harvesting. One participant noted: *“[The pipeline] is not going to leave it how it found it [...] Regardless if there’s an eruption or not, that is still not going to be the same ecosystem as it was before the pipeline was put in”* (M12, Marine Harvesting Focus Group, 11 March 2024). This ecosystem change is expected to reduce habitat suitability for marine species, ultimately affecting species abundance and distribution in the long term.

In addition to habitat destruction, underwater noise disturbance is predicted to extend up to 28.2 kilometers during LNG carrier transits, with noise levels exceeding 120 dB, which poses a significant risk of behavioral disruption to marine mammals (Ksi Lisims LNG 2023, Section 7.09). For fish species like Pacific herring, which have swim bladders involved in hearing, impulsive underwater noise (e.g., pile driving) poses a high risk of injury, with an injury threshold of 207 dB re 1  $\mu$ Pa (Ksi Lisims LNG 2023, Section 7.09). These noise levels can disrupt migration, feeding, and spawning behaviors, leading to long-term impacts on the availability of these species for harvesters.

Furthermore, noise and wave action caused by shipping and transport vessels is expected to reduce resource availability and contribute to beach erosion, particularly at sensitive foreshore harvest sites. A Metlakatla leader relayed that pilot boats for the LNG carriers are anticipated to interrupt fishing activities at Metlakatla Pass (Leadership Meeting, September 18, 2024). Regarding the foreshore, one harvester explained: *“I know that we do have a lot of problems with our beaches being washed away, so that’s one of the things I was concerned about [...] all the white caps hitting the shores like – taking away our beaches”* (M12, Marine Harvesting Focus Group, 11 March 2024). The proponent acknowledges that vessel wake and wash from LNG carriers and associated tugs could lead to shoreline adjustments, including erosion, scour, and degradation of marine

vegetation and intertidal habitats, particularly in the Marine Terminal and Shipping Regional Assessment Area (Ksi Lisims LNG 2023, Section 7.09). While mitigation measures such as deep-water berthing and the distance from shore are expected to limit these impacts, the proponent recognizes that shoreline erosion could still occur due to vessel-induced waves (Ksi Lisims LNG 2023, Section 7.09). Erosion of beaches and foreshore areas could reduce the suitability of these areas for harvesting species like shellfish, negatively affecting their abundance and availability.

Anchoring by large vessels during storms or emergencies was also identified as a long-term risk, as it could damage the seabed and disrupt harvest areas. One participant explained: *“Whether they say that they’ll anchor or not, even when they do, those anchors are going to cause a lot of damage every time they hit the ocean floor”* (M12, Marine Harvesting Focus Group, 2024). This physical alteration of the seabed could reduce the habitat quality for species critical to Metlakatla’s harvesting practices.

Finally, climate change impacts are a significant concern. Metlakatla harvesters have already observed degradation of species health due to warmer ocean temperatures. For example, seaweed harvesters reported that seaweed used in the herring roe harvest, which used to last for 15 days, now only lasts for three days before it rots due to rising temperatures. Additional warming caused by cumulative effects, including project-related emissions, would further degrade seaweed and marine species populations, making it increasingly difficult for harvesters to access and gather sufficient resources (M09, TUS 2022). The community has expressed strong concerns about Ksi Lisims LNG’s potential to contribute to climate change and feels that there is excessive uncertainty about the timing and availability of electricity to power Ksi Lisims LNG (Leadership Meeting, September 18, 2024).

#### *Harvesting Success (Including Time Lost to Interference)*

The success of Metlakatla’s harvesting practices is predicted to decline due to project-related activities. The proponent outlines several pathways that will interfere with harvesting success, such as habitat degradation, pollution, and behavioral changes in key species (Ksi Lisims LNG 2023, Section 7.08, 7.09). For example, construction and operational activities are predicted to increase noise and light pollution, which may alter the behavior of fish and wildlife, making them more difficult to harvest. These behavioral changes, especially for species like fish, can reduce their availability during key harvesting periods.

In addition to these disruptions, interference from shipping routes is expected to further reduce harvesting success by directly limiting access to harvesting areas. One harvester explains: *“Well, there are so many –where we fish and everything, the shipping lane [route], where they are proposing it is right where the area is that we’ve been harvesting different species of finfish there [...] but once that shipping lane [route] goes in [...] we can’t fish there [...] And we have the same problem with fishing crabs too – it’s a good spot to get crabs, but once the lane [route] goes in there, I am pretty sure there will be restrictions where you can’t set any type of lines or gear in that area”* (M04, TUS, 2022). This illustrates how restrictions on gear placement due to shipping lanes could significantly reduce harvesting success by limiting access to preferred harvesting spots and increasing the effort required to harvest resources.



The proponent notes that marine noise disturbance from LNG carrier transits will extend over significant distances, up to 28.2 kilometers, affecting both fish and marine mammals during critical periods of harvesting (Ksi Lisims LNG 2023, Section 7.09). This disturbance will compound the effects of habitat loss and species displacement, making it harder for harvesters to maintain successful harvests. Metlakatla members are particularly concerned about the long-term effects of pollution on vital marine resources, including contamination risks to shellfish and seaweed. One harvester questioned: “*How do we know that contamination won’t affect the clam beds and seaweed?*” (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This uncertainty, based on past experiences with industrial contamination, highlights the long-term risks to harvesting success that are not adequately addressed by the proponent.

The combined impacts of reduced species availability, habitat degradation, noise pollution, and behavioral disruptions are expected to make it more difficult for harvesters to achieve successful harvests. Metlakatla members know from experience that even small disruptions in species behavior can significantly affect their ability to gather the resources they need.

#### 5.1.4 Confidence in Harvested Foods

Ksi Lisims LNG is predicted to adversely impact Metlakatla’s confidence in the health and safety of country foods. This assessment evaluates these impacts based on a key indicator: perception of risk.

##### *Perception of Risk*

Participants expressed concerns about the incremental, day-to-day changes that could affect Metlakatla’s harvestable resources because of Ksi Lisims LNG. Metlakatla members have observed a steady decline in harvesting over several decades, leading to a heavily degraded baseline. There is a widespread belief that Ksi Lisims LNG will further harm the health and environment of key marine and terrestrial species. Harvesters worry about the long-term impacts of Ksi Lisims LNG over the next 5, 10, 20, and 30 years, and how cumulative effects will affect harvesting (M14, Interview, 20 March 2024; M07, TUS, 2022). In Indigenous communities, the integration of lived experiences and traditional knowledge plays a crucial role in shaping perceptions of environmental risks, especially in relation to traditional food systems. This localized knowledge often provides insights that are missed by conventional risk management approaches, leading to a heightened perception of risk around resource degradation (Friendship & Furgal 2012).

A primary concern is the catastrophic risk of a large-scale spill of liquid natural gas or heavy hydrocarbons from marine shipments. This risk creates fear among Metlakatla members that marine and terrestrial harvesting could be permanently disrupted in affected areas. In addition to this catastrophic risk, participants raised concerns about smaller spills and changes in water quality, which could degrade the quality of harvested foods. Past spills in the area from shipping activities have already led Metlakatla harvesters to avoid certain harvesting areas for long periods (M01, M04, and M07, TUS, 2022). Direct experience and cultural knowledge strongly influence the perception of risk, leading communities to avoid areas they believe to be contaminated, even in the absence of confirmed data (Friendship & Furgal 2012).

The proponent acknowledges that pollution and contamination from marine traffic may affect the quality of harvested foods but suggests that Ksi Lisims LNG's residual effects on country foods will be minimal due to mitigation measures aimed at improving air and water quality. According to the proponent, contamination pathways that could impact the health and safety of harvested species are unlikely to result in significant changes to food quality (Ksi Lisims LNG 2023, Section 7.14). However, Metlakatla members' concerns remain, as past experiences with even minor disturbances have shown that small environmental impacts can lead to long-term degradation of sensitive ecosystems, particularly for species like shellfish and seaweed. The proponent's analysis does not fully account for cumulative effects or adequately address the potential impacts of spills and emissions, which continue to worry harvesters (Ksi Lisims LNG 2023, Section 7.14).

The proximity of the FLNG and LNG carrier shipping route to key harvesting areas, and routes of access to reach areas which lie beyond, exacerbates the perceived risk. If a spill were to occur in these areas, harvesters are likely to avoid them, as they have done in the past. Concerns that shellfish could absorb more pollution, or that species will be less abundant and taste different, further diminish harvesters' confidence. *"If there was ever any kind of spill or anything and stuff gets lodged up from the tide onto the beach, I can't harvest that anymore [...] there's no washing in the world that would take oil out of seaweed"* (M12, Cultural Continuity Focus Group, 12 March 2024). Perceived risks concerning food safety can lead to long-term shifts in behavior, as trust in the safety of traditional foods is central to Indigenous harvesting practices. Trust in risk communication and assessment processes is crucial in determining how communities assess the safety of these foods. In many cases, the lack of trust in external assessments leads harvesters to rely on personal experience and traditional knowledge (Fortier 2022). This erosion of confidence in the safety of harvested foods will affect decision-making on whether to continue harvesting in affected areas or to seek resources elsewhere.

### 5.1.5 Connections to Other Values

The impacts on harvesting discussed in this section have direct and indirect consequences for other critical values, particularly cultural continuity, community well-being, and stewardship and governance.

**Cultural Continuity:** The ability to harvest traditional foods is intimately tied to the practice and transmission of cultural knowledge and traditions. Disruptions to harvesting success from resource scarcity, contamination, or loss of access will diminish opportunities for Metlakatla members to engage in culturally important practices, including the sharing of harvested foods and the passing down of traditional harvesting knowledge to younger generations. This loss not only affects individuals but weakens the collective cultural fabric of the community.

**Community Well-Being:** Harvesting is not only a subsistence activity but also a core contributor to community health and social cohesion. A decline in the availability or safety of harvestable resources could lead to food insecurity, reduce the nutritional intake of community members, and increase reliance on store-bought foods, which are often less healthy. This, in turn, could exacerbate mental health stressors as concerns about food safety and resource availability heighten anxiety. Social relationships, built around sharing and communal harvesting, may also erode if traditional practices are disrupted.

**Stewardship and Governance:** The disruption of harvesting activities directly challenges Metlakatla's ability to act as stewards of their land and resources. Stewardship is not only about resource management but about exercising governance over traditional territories. When harvesting practices are undermined, so too is Metlakatla's role as environmental stewards, affecting both their legal and moral authority to manage these lands. The degradation of key harvesting areas through project activities will reduce Metlakatla's ability to sustainably manage resources, which is central to long-term stewardship and governance strategies.

These interconnections will be further analyzed in their respective sections of the RIA. The cumulative nature of these impacts will be critical in determining the overall severity of Ksi Lisims LNG's effects, which will be addressed holistically in the final severity determination.

## 5.2 CULTURAL CONTINUITY

This section evaluates the predicted impacts of Ksi Lisims LNG on key components of Metlakatla's culture, focusing on how Ksi Lisims LNG may disrupt the conditions that support cultural continuity. The assessment draws on both the proponent's application materials and community research to explore the effects on:

- Sense of place;
- Knowledge transmission;
- Cultural keystone landscapes and species; and
- Identity.

These elements are crucial to the transmission and expression of Metlakatla culture, linking individuals and communities to their land, traditions, and spiritual practices.

Due to limited community information, the potential impacts of Ksi Lisims LNG on the *Sm'álg̱yax* language and its place-based usage cannot be fully assessed in this analysis. The absence of this assessment does not diminish the importance of language to Metlakatla identity and culture, but rather reflects the gaps in available data at this time. Similarly, while spirituality and ceremony are integral parts of Metlakatla's culture, there is insufficient community-based information available to support a detailed analysis of project-specific impacts on these aspects. As a result, impacts on spirituality and ceremony are not assessed separately, but considered in the context of other topics where appropriate.

### 5.2.1 *Sense of Place*

Ksi Lisims LNG is expected to adversely affect Metlakatla members' sense of place, a key component of cultural continuity. This assessment evaluates these impacts based on three key indicators: (1) peaceful enjoyment, (2) feelings of comfort, safety, and well-being, and (3) feelings of attachment to place.

#### *Peaceful Enjoyment*

The proponent acknowledges that Ksi Lisims LNG will introduce noise from marine vessels and construction activities but suggests that the impacts will be mitigated through restrictions on nighttime shipping and other measures aimed at reducing disruption (Ksi Lisims LNG 2023, Section 7.03). However, these measures do not address the core concern raised by Metlakatla members: that even minor sensory disruptions can erode the peace and tranquility that are central to their experience of place.

For instance, community members describe the noise from increased shipping as fundamentally altering the enjoyment of being on the land. One participant compared the shipping lanes to “*having a freeway put through your neighborhood,*” illustrating how the sound of industrial activities intrudes on the quiet, peaceful experience of harvesting or simply being in nature (M19, Interview, 27 May 2024). While the proponent’s materials downplay the impacts by focusing on regulatory compliance with noise levels, they fail to recognize that these sensory disruptions have profound cultural and emotional consequences that cannot be mitigated through technical measures alone. As one participant noted: “*It [harvesting] goes from being a pleasure to ‘okay, we will do it.’ It’s losing the – the pleasure element is greatly diminished, I think. Whether that’s harvesting or whether that’s a nice quiet day out looking for seaweed or out in the wood – berries or whatever, first thing in the spring looking for shoots. That changes. Now it’s the noise, it’s the air quality, it’s the – you can’t hear the quiet anymore*” (M19, Interview, 27 May 2024).

Similarly, visual impacts are acknowledged by the proponent but are treated as minor, with suggestions of landscape screening and other mitigation strategies (Ksi Lisims LNG 2023, Section 13). However, these visual intrusions, even when reduced, alter the sense of cultural connection and sacredness that is integral to Metlakatla members’ relationship with the lands, waters and resources. Such changes diminish the emotional and spiritual value of these places, and no amount of visual mitigation can restore the lost sense of serenity and spiritual significance.

Project activities that diminish Metlakatla members’ peaceful enjoyment are also anticipated to interfere with cultural and spiritual connection to key landscapes. As noted above, this includes the shipping route which was first established by Ts’oode as a safe passage between Metlakatla villages and those at the mouth of the Nass River, especially in the environs of Nass Bay and Fishery Bay, to access the eulachon fishery (Marsden 1997; Masden 2002, Martindale 2021). The environs of Nass and Fishery Bay in their entirety, especially from Laxgalts’ap to Gingolx, include a number of other historic features and sites of a sacred nature to Coast Tsimshian (Marsden 1997). Project activities are also anticipated to diminish the cultural and spiritual integrity of important *spanaxnox* including *Lgu’ol* on north Somerville Island, *tsəmsqae’o* at Nasoga Gulf, and *wil’nlabalga s’hoks* at Ten Mile Point on Mylor Peninsula (Marsden 2002, Martindale 2021). Additionally, Ksi Lisims LNG activities are anticipated to erode the overall integrity and contiguity of the territory, including by limiting the physical ability to access other *spanaxnox* sites and sites of spiritual significance located beyond, at the mouth of the Nass, for example at Atkusooxs (Red Bluff), the site of a “double feast” between the ancestors of the Nine Tribes and *spanaxnox*.

#### *Feelings of Comfort, Safety, and Well-Being*

The proponent suggests that air emissions from marine vessels and construction activities will be within provincial and federal air quality standards and that these effects will be minimal (Ksi Lisims LNG 2023, Section 7.02). However, from the perspective of Metlakatla

members, even the perception of air pollution can lead to avoidance of traditional areas. Community members have expressed that past pollution incidents, such as those from nearby industrial operations, have made certain areas feel unsafe, leading them to stop using those locations for harvesting and other activities. As one participant noted, “*There’s still beaches in Prince Rupert that are affected from the pollution of the pulp mill [...] there’s no chance in hell you’re going to dig a clam and eat it out in Port Edward*” (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

The proponent’s focus on technical air quality standards overlooks the cultural and emotional significance of these impacts. From an Indigenous perspective, feelings of safety and comfort in the environment are essential for maintaining cultural practices, and even minor changes in air quality or perceived pollution can sever community members’ connection to important cultural sites. These concerns are not just perceptions to be managed but valid responses rooted in past experiences of environmental degradation, making the proponent’s mitigation measures inadequate in addressing the full scope of the impacts.

#### *Feelings of Attachment to Place*

The proponent’s analysis of visual impacts concludes that the changes will be localized and mitigated through design and landscape measures (Ksi Lisims LNG 2023, Section 13). However, Metlakatla members have stated that these visual intrusions will alter their deep emotional and spiritual connection to the land. Attachment to place is not solely about physical aesthetics but about the cultural and spiritual significance of the land as a living entity.

One participant explained the emotional toll of visual disruptions, stating, “*It makes me want to cry, to think of anything happening to [special places]*” (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). The proponent’s mitigation strategies, which focus on visual screening, fail to address the deeper cultural loss that occurs when the landscape is altered. These changes cannot be mitigated through design measures alone because the emotional and spiritual connection to place is based on a holistic relationship with the land, which industrial activities and visual intrusions inevitably disrupt.

#### *5.2.2 Knowledge Transmission*

Ksi Lisims LNG is predicted to adversely impact Metlakatla’s ability to transmit place-based knowledge to future generations. This assessment evaluates these impacts based on two key indicators: (1) maintenance of place-based knowledge, and (2) access to teaching and learning areas and activities.

##### *Maintenance of Place-Based Knowledge*

Knowledge transmission in Metlakatla is inherently tied to the land and water. Metlakatla members have traditionally maintained place-based knowledge through direct engagement with specific sites across their territory. This knowledge is passed on through hands-on activities such as harvesting, navigating, and understanding the ecological patterns of the region. However, project-related disturbances, including increased marine traffic, noise, and air pollution, threaten the continued use of these traditional places. The proponent acknowledges that construction and operational activities will disrupt the

physical landscape and increase sensory disturbances but downplays the long-term cultural effects of these disruptions (Ksi Lisims LNG 2023, Section 13).

Metlakatla members explained that diminished use of specific areas due to sensory disturbances or physical damage would directly reduce the transmission of knowledge tied to these places. As one participant noted: *“once you have a big industrial landscape, people are less likely to go there and utilize it. So, if people aren’t utilizing the area anymore, then the knowledge that is associated with that area is less likely to be passed down because people aren’t using it”* (M16, Interview, 13 May 2024). This reflects the deep connection between physical engagement with the land and the ability to maintain Indigenous knowledge. The proponent’s mitigation strategies, which focus on limiting sensory disturbances and preserving access, do not address the broader cultural impacts of losing meaningful interaction with specific areas that hold place-based knowledge.

#### *Access to Teaching and Learning Areas and Activities*

Many of Metlakatla’s cultural practices, including the transmission of knowledge from elders to younger generations, occur in outdoor spaces that have been used for centuries. These areas are critical for maintaining cultural continuity, as they serve as ‘living classrooms’ for the community. The construction of transmission lines, the floating LNG facility, and the increased marine traffic along traditional routes will hinder access to these key teaching and learning areas, disrupting these practices.

Participants expressed concerns about how these disruptions will affect intergenerational knowledge transfer. Noise, diminished air quality, and increased marine traffic will make these areas less attractive for teaching activities, especially those focused on quiet reflection and connection with nature. The proponent’s materials do not adequately address the importance of these areas as cultural and educational spaces, focusing instead on minimizing environmental impacts.

For Metlakatla, knowledge transmission is more than just a cultural activity; it is key to ensuring the continuity of their traditions and identity. As one participant emphasized: *“the more we learn about our culture, the more we’re going to carry it on, the more they’re going to pass it down from one generation to another”* (M07, TUS, 2022). The loss of access to these teaching sites not only hinders immediate educational activities but threatens the long-term resilience of Metlakatla’s cultural practices and identity.

#### *5.2.3 Cultural Keystone Species*

Ksi Lisims LNG is predicted to adversely impact Metlakatla members’ cultural keystone species. This assessment evaluates these impacts based on the key indicator: sense of connection with orca.

##### *Sense of Connection with Orca*

Metlakatla’s relationship with the orca is a central part of their culture, spirituality, and connection with the ancestral landscape. Community members described their traditional waters as a safe haven for orcas: *“When they come here, they know they’re safe. That’s why they come here, they come here to feed”* (M12, Marine Harvesting Focus Group, 11 March 2024). This bond with orcas is profound, encompassing both cultural and personal connections. One participant reflected on the special relationship they’ve built with these

creatures: “Not many people in the world can say they’ve touched a killer whale before. But we’re the select 10% in the world that can say I’ve made friends with a killer whale, and not just the killer whale but the gray whales and the humpbacks” (ibid.).

However, Ksi Lisims LNG’s increased shipping traffic brings significant risks to orca populations, which may harm this timeless relationship. Community members expressed concerns that the noise generated by large ships will disrupt the peace and tranquility of the waters, negatively affecting orcas. Increased underwater noise poses a serious threat to the species. Orcas rely on echolocation to hunt, communicate, and navigate their environment, and noise pollution has the potential to disrupt these vital behaviors (Burnham et al. 2021; Williams et al., 2024).

One participant emphasized the detrimental effects of noise on orcas: “They talk about the effects on the killer whales. They can’t stand all that sound from the boats going in the traffic [...]. They’re going to be affected because I’ve read and been at workshops before where they know that they can’t stand all the noise” (M08, TUS, 2022). The proponent acknowledges these concerns but claims that mitigation measures, such as reducing vessel speeds to below 10 knots, will significantly reduce the impacts of noise on marine mammals and lower the likelihood of ship strikes (Ksi Lisims LNG 2023, Section 7.09). However, recent research by Keen et al. (2023) highlights that while speed reductions may mitigate some risks, they are not sufficient to fully protect orcas from the cumulative effects of increased traffic. The proponent’s analysis underestimates the sensitivity of orcas to even low levels of noise and does not account for the long-term impacts of chronic noise exposure on their health and behavior.

Participants also expressed fears about whale collisions with ships. The sheer size of the ships makes it unlikely they could avoid a collision, leading to the potential for death and injury as recent incidents attest (McSheffrey 2023; Agarwal 2024). One participant explained: “A ship is probably going to take a while to stop. If a whale is in front of it, it’s not going to see it” (M20, Interview, 28 May 2024). The proponent asserts that vessel speed reductions will reduce the risk of ship strikes, but as Keen et al. (2023) note, even vessels traveling at reduced speeds pose a substantial risk to whales due to their limited maneuverability and the increased volume of traffic associated with Ksi Lisims LNG.

Moreover, increased marine shipping traffic may affect the orcas’ ability to feed and teach their young. Humpback whales rely on specific areas to bubble net and trap their prey, a behavior that requires space and quiet. One participant expressed concern about how congestion from vessels would disrupt this: “[The whales] bubble net to trap their feed, and they need space to do that and if it’s congested [by boats], where are they going to teach their babies?” (M13, Marine Harvesting Focus Group, 11 March 2024). The proponent’s application suggests that noise and congestion impacts will be localized and short-term (Ksi Lisims LNG 2023, Section 7.09). However, community members’ experience and external research suggest that these impacts will be far-reaching and enduring. Keen et al. (2023) underscore that orcas are highly dependent on quiet waters for successful hunting and social learning, and increased noise pollution could severely disrupt these critical behaviors.

If orcas are unable to safely visit and hunt in these waters, they may eventually stop returning, damaging their long-standing relationship with Metlakatla members. The cultural loss from the reduced presence of orcas in Metlakatla’s waters cannot be mitigated through conventional environmental measures. The proponent’s focus on

technical mitigation measures, such as speed reductions, overlooks the broader cultural implications for the community, whose connection to the orca transcends physical proximity and includes spiritual and cultural dimensions.

#### 5.2.4 Identity

Ksi Lisims LNG is predicted to adversely impact Metlakatla members' sense of belonging and sense of self. This assessment evaluates these impacts based on two key indicators: (1) sense of belonging, and (2) sense of self.

##### *Sense of Belonging*

Metlakatla members' sense of belonging is closely tied to their traditional harvesting practices and their deep relationship with the land and sea. Harvesting and consuming traditional foods like seaweed, clams, and halibut form an integral part of their identity and community cohesion. One community member explained, *"It's who they are. If they don't know any of our traditional anything, from culture to our traditional foods, then they don't really know who they are."* (M07, TUS, 2022).

The ability to continue these practices is not only essential for physical sustenance but also critical for maintaining a strong cultural identity. The ongoing transmission of these practices from generation to generation reinforces the sense of belonging that is core to being Metlakatla. Project-related disruptions, such as pollution and habitat loss, could severely impact the availability of key species, thereby threatening this fundamental connection. As the same participant elaborated, *"I can't imagine a life without seaweed, a life without clams and cockles, [speaking Sm'algayax — 01:20:18], octopus, sockeye, halibut. [...] I need to eat the fish, I need to eat the seaweed and the clams and the cockles, not to mention the abalone, whenever I can get it, but [...] It's a necessity to me"* (M07, TUS, 2022).

##### *Sense of Self*

Ksi Lisims LNG is also predicted to negatively impact Metlakatla members' sense of self, which is intimately connected to their ability to live off the land and water and maintain cultural traditions. The deep cultural connection that Metlakatla members feel to their land and resources also informs their individual sense of self. For many, their personal identity is intertwined with their ability to carry out traditional practices, such as harvesting and sharing food. Ksi Lisims LNG threatens this connection by introducing risks to the health and availability of these resources, potentially leading to a loss of cultural practices, and by extension, a loss of self.

The potential degradation of culturally significant species, such as eulachon and orca, would further challenge the personal identity of Metlakatla members, who see their role in stewarding these resources as a key part of their self-concept. As one participant remarked, *"If we lose our ability to harvest the way we have for generations, we lose a part of who we are"* (M12, Marine Harvesting Focus Group, 11 March 2024). The destruction of these ties to the land and resources creates a profound sense of loss, not only of livelihood but also of self-identity.

In addition to direct impacts on harvesting, there is anxiety over the potential loss of connection with ancestral heritage sites, which are tangible links to the past and play a



significant role in shaping the individual's sense of self. The destruction of these sites will further diminish individuals' self-identity, rooted in their relationship with the land and their ancestors.

### 5.2.5 *Connections to Other Values*

The impacts on cultural continuity discussed in this section will have long-term consequences for other critical values, including harvesting, community well-being and stewardship and governance.

**Harvesting:** The erosion of cultural continuity from the loss of sense of place, knowledge transmission, and cultural identity will affect the ability of Metlakatla members to engage in harvesting activities. As these cultural connections weaken, so too will community members' capacity to sustain traditional practices like harvesting. These knock-on effects were assessed in section 5.1, where it was noted that the degradation of culturally significant areas and the diminishing availability of key species will make it increasingly difficult for future generations to maintain harvesting practices central to Metlakatla identity and livelihood.

**Community Well-Being:** Ksi Lisims LNG's predicted impacts on cultural continuity, especially those affecting sense of place, knowledge transmission, and identity, are expected to reverberate through community members' overall well-being. As traditional practices and cultural connections are disrupted, there will be a decline in opportunities for communal gatherings and shared cultural experiences. This weakening of cultural bonds is likely to exacerbate feelings of alienation and reduce social cohesion within the community. Over time, these cultural losses could contribute to heightened mental health challenges, as individuals and families struggle to maintain their connection to their heritage, which has historically served as a source of strength and resilience. The long-term diminishment of these cultural practices and experiences is expected to undermine both individual and collective well-being.

**Stewardship and Governance:** Cultural continuity is at the core of Metlakatla's role as stewards of their lands and waters. The erosion of cultural practices and knowledge transmission is anticipated to weaken Metlakatla's ability to uphold its stewardship responsibilities. As future generations lose access to traditional knowledge and the cultural foundations of governance, Metlakatla's capacity to sustainably manage and protect its territories will diminish. The long-term degradation of cultural keystone species and landscapes, along with the diminished engagement in land- and water-based cultural activities, will hinder Metlakatla's ability to exercise its governance in a way that is rooted in cultural values and practices. This loss of cultural continuity threatens the very mechanisms of stewardship that have preserved these lands for generations.

These connected impacts will be further explored in the sections on community well-being and stewardship and governance. The cumulative nature of these effects, particularly when combined with harvesting and environmental changes, will be critical in determining the overall severity of Ksi Lisims LNG's impacts, which will be addressed holistically in the final severity determination.

## 5.3 COMMUNITY WELLBEING

Ksi Lisims LNG is predicted to have significant effects on the well-being of Metlakatla members, touching on multiple dimensions of health, social cohesion, personal safety, and economic stability. This assessment examines anticipated impacts across five key areas:

- Physical health;
- Mental and emotional health;
- Social cohesion and support;
- Personal safety and security; and
- Livelihood and economic development.

These impacts are analyzed based on pathways identified in the proponent's application materials as well as concerns raised through community research. The cumulative and interconnected nature of these impacts will be critical to understanding how Ksi Lisims LNG may influence the overall well-being of Metlakatla members, both in the short and long term.

### 5.3.1 Physical Health

Ksi Lisims LNG is expected to adversely affect Metlakatla members' physical health due to changes in the environment that could impact both the safety of country foods and air quality. This assessment evaluates these impacts based on two key indicators: (1) safety of country foods and air quality, and (2) essential infrastructure and services.

#### *Safety of Country Foods and Air Quality*

The safety of country foods is central to the health of Metlakatla members, who rely on traditional harvesting as a key source of nutrition. Ksi Lisims LNG presents multiple pathways for potential contamination of marine and terrestrial environments, which would directly affect the quality and availability of country foods. Community members expressed concerns that project activities including construction and marine operations could contaminate or reduce the availability of harvested resources. As one participant explained: "*There could be a million abalone on that beach but if they're all covered in [pollution from Ksi Lisims LNG], they're nothing. So, quality and quantity are hand in hand in our territory*" (M12, Marine Harvesting Focus Group, 11 March 2024).

The proponent's assessment acknowledges that project construction will disturb the seabed, potentially mobilizing contaminants that could adversely affect marine organisms (Stantec 2023, 7.9-14). Similarly, risks from project-related spills including diesel fuel, hydraulic fluid, and LNG products pose significant contamination threats (ibid., 7.9-29). While mitigation measures are proposed, the potential for contamination remains a major source of concern. Community members emphasized how even small spills could devastate the local ecosystem, which has historically struggled to recover from such events.

In addition to country food contamination, participants worried about Ksi Lisims LNG's contribution to air pollution. The proponent has identified several chemicals of potential concern (COPCs) resulting from project activities, including sulfur oxides (SOx), nitrogen oxides (NOx), particulate matter (PM2.5), and volatile organic compounds (VOCs), all of which could impact human health (Stantec 2023, 7.14-31). As one participant noted, "*The toxic gas emissions that are going to come from these ships, our air quality will go down [...] this is going to have way more long-term effects that we don't know yet and I don't want to sacrifice my children and my bloodline*" (M12, Marine Harvesting Focus Group, 11 March 2024).

The proponent claims that predicted pollutant concentrations will fall within regulatory standards (Stantec 2023, 7.2-49). However, the risk of exposure remains higher for individuals engaged in outdoor activities, including those harvesting country foods near Ksi Lisims LNG site (ibid., 7.14-59). Given community members' dependence on outdoor harvesting activities, even slight increases in pollutant levels could have significant health impacts, particularly for vulnerable populations.

#### *Essential Infrastructure and Services*

Ksi Lisims LNG 's impact on essential infrastructure and services is another concern, particularly in light of the anticipated influx of workers during both construction and operation phases. Community members have voiced concerns that local infrastructure including healthcare, water, and emergency services will be unable to cope with increased demand. As one participant noted: "*The water [infrastructure] is so outdated [...] once the [Ksi Lisims LNG] construction happens, there's going to be even more people, more water use, and the system is too outdated, it really needs to be updated*" (M18, Interview, 30 May 2024).

The proponent anticipates an average workforce of 450 during construction, peaking at 800, with an additional 150-250 staff during operations (Stantec 2023, 7.10-64). While the proponent plans to house workers on-site and prioritize local recruitment, it is uncertain how many workers will relocate to local communities. This potential population influx could strain already overburdened services, including water and healthcare infrastructure, which are critical to maintaining community health.

Healthcare services, in particular, are a major concern. Prince Rupert Regional Hospital is already under strain, frequently shutting down its ER due to staff shortages and loss of doctors (Daflos 2024). An influx of new residents, combined with project-related risks such as workplace accidents, could further overwhelm local hospitals and ambulance services. One participant highlighted the risk: "*There's no way our healthcare system would be able to handle something happening with that facility [...] We have one surgeon. If anything extreme were to happen, they're in jeopardy*" (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

#### *5.3.2 Mental and Emotional Health*

Ksi Lisims LNG is predicted to adversely impact the mental and emotional well-being of Metlakatla members, primarily through stress and anxiety related to potential accidents, environmental changes, and shifts in community dynamics. This assessment evaluates these impacts based on two key indicators: (1) stress and anxiety, and (2) access to mental health care.

## *Stress and Anxiety*

The possibility of accidents during project construction and operation remains a significant source of stress and fear for community members. Many believe that their time and energy should be focused on meeting their cultural and nutritional needs, rather than being consumed by worry about Ksi Lisims LNG. One participant summarized this sentiment: *“Why should we live in anxiety and fear?”* (M12, Cultural Continuity Focus Group, 12 March 2024). Another added: *“Why should we spend our time and energy worrying and being concerned about [Ksi Lisims LNG and accidents] when our energy should be spent towards harvesting and teaching our people to harvest and how to connect to the land?”* (M13, Marine Harvesting Focus Group, 11 March 2024).

Community members also expressed uncertainty about the long-term impacts of Ksi Lisims LNG together with cumulative impacts from the PRGT pipeline, which many described as traumatizing. One participant stated: *“the [Project] itself will be 30-40 years, but that pipeline will be there forever. We’re always going to have that risk [...] it’s already caused trauma amongst our people”* (M12, Cultural Continuity Focus Group, 12 March 2024). This fear of permanent risk is a key contributor to the emotional and psychological stress experienced by the community.

Research on environmental dispossession shows that Indigenous communities experience heightened psychological stress when their access to traditional environments is compromised (Richmond and Ross 2009). Community members voiced similar concerns about the potential for environmental contamination, particularly through shipping accidents or cumulative pipeline leaks. One participant reflected on the long-term risks: *“It’s not just about today; it’s about what happens to the air, the water, the land that my grandchildren will inherit”* (M19, Interview, 27 May 2024).

The anticipated influx of workers associated with Ksi Lisims LNG is another source of anxiety. One participant described this influx as “scary” and felt that the economic benefits would not outweigh the potential harms: *“It’s hard to think of all of this wealth coming into our community and our people will get scraps [...] and then you’re screwed—suicide is big within our people”* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Additionally, the Proponent acknowledges in its Application that project activities, including construction and increased marine traffic, may negatively impact community members’ mental health by altering the sensory environment and reducing access to traditional spaces (Stantec 2023, 7.13-97). The Proponent’s focus on low-magnitude residual effects contrasts with community members’ perception that these changes will have far-reaching impacts on their well-being and cultural continuity.

## *Access to Mental Health Care*

The influx of workers and their families into the area is expected to place additional strain on local healthcare infrastructure, including mental health services, which are already overstretched. The Prince Rupert Regional Hospital (PRRH) has had to regularly shut down its emergency room due to staffing shortages, leaving residents with limited access to care (Daflos 2024). Participants worried that the current lack of mental health services would worsen under the pressures of increased population: *“There’s no way our healthcare system would be able to handle something happening with that facility [...]”*

*there's no triage here, there's no emergency surgeons"* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Local ambulance services are similarly limited in capacity, and additional calls to project-related incidents may deplete these resources further, putting both workers and residents at risk (Stantec 2023, 7.13-123). Without adequate access to mental health care, the stress and anxiety caused by Ksi Lisims LNG are likely to exacerbate existing mental health challenges within the community, leaving long-term impacts on the emotional well-being of Metlakatla members.

### 5.3.3 Social Cohesion and Support

Ksi Lisims LNG is predicted to adversely impact Metlakatla members' social cohesion and support networks, key components of community well-being. This assessment evaluates these impacts based on two key indicators: (1) social networks, and (2) reciprocity and sharing.

#### *Social Networks*

Concerns were expressed regarding whether Ksi Lisims LNG may weaken social networks within the Metlakatla and broader Tsimshian communities by fostering divisions over its perceived benefits and risks. Community members shared concerns that Ksi Lisims LNG has already begun to cause tension. One participant noted that *"it's already causing waves that don't need to be there"* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024), referring to the growing divisions within the Tsimshian community over Ksi Lisims LNG. Participants raised a concern that these tensions could escalate to the point of impacting rights to harvest. As one participant expressed, *"It's going to get to the point now where we're going to go out to these islands, and we're going to [...] do what we always do, and then we're going to have our own people come in and say get lost, you guys are trying to sell us out"* (M12, Cultural Continuity Focus Group, 12 March 2024). In the past, the traditional feasting system could or would have been used to resolve these tensions. As noted above, the Coast Tsimshian and the proponent Nisga'a Nation share a legal system in common to this effect. However, nothing of this nature has been proposed by the proponents.

Resource pressures may also intensify intra-nation competition as harvesting areas are impacted by project activities. *"If people stopped using areas around where the project itself is happening but also along the shipping route then the pressures are going to go elsewhere"* (M16, Interview, 13 May 2024). This redistribution of harvesting pressure could lead to conflicts between families and individuals vying for access to fewer remaining sites. As community members are forced to compete over increasingly limited resources, Ksi Lisims LNG could further strain social networks, weakening the social cohesion that is central to Metlakatla's cultural and community resilience.

Demographic changes brought about by the influx of temporary or permanent workers may further disrupt social networks. The proponent's materials recognize that large numbers of new residents can alter the character of a community, and resource development projects have been associated with weakened social networks (Stantec 2023, 7.13-95). Resource workers can also bring higher wages, driving up housing and consumable costs, which can further strain community dynamics (Northern Health 2018). These demographic shifts, combined with reduced housing affordability and increased

social stressors like substance abuse and crime, could undermine community cohesion by impacting residents' sense of belonging.

### *Reciprocity and Sharing*

Reduced harvesting opportunities resulting from project impacts are expected to strain community members' traditions of reciprocity and sharing, especially in providing for elders and those unable to harvest for themselves. In Metlakatla, harvesting is a collective activity where resources are shared widely among community members, including elders, families without access to equipment, and those who are unable to harvest due to age or other limitations. As project activities reduce the availability of harvestable resources, there will be less to share, affecting the community's ability to support these vulnerable members.

Harvesting is more than just a subsistence activity in Metlakatla; it is a central part of social life, cultural continuity, and community well-being. As one participant noted, "*When families go out, everybody goes out and does something at some point in time [...] We all share bounty with everyone*" (M12, Cultural Continuity Focus Group, 12 March 2024). When harvesting practices are disrupted, the social networks that rely on these activities are also weakened. Therefore, impacts on harvesting have broader implications for social cohesion, eroding community members' resilience and undermining the support systems that sustain Metlakatla's social fabric.

### *5.3.4 Personal Safety and Security*

Ksi Lisims LNG is expected to negatively impact the safety and security of Metlakatla members, particularly Indigenous women, children, and LGBTQIA2s+, due to the influx of non-local workers and associated work camp conditions. This assessment evaluates these impacts based on the key indicator: incidence of violence and abuse.

#### *Incidence of Violence and Abuse*

Ksi Lisims LNG is predicted to lead to an increase in violence and abuse, particularly against Indigenous women and marginalized groups, due to the influx of workers. The presence of large work camps has been consistently linked to heightened risks of gender-based violence, sexual assault, and human trafficking in Indigenous communities. Resource development projects like this are known to attract transient workers who often bring with them behaviors that can exacerbate local social issues. Evidence from community-based research and literature demonstrates the relationship between such projects and an increased incidence of violence and abuse (Amnesty International 2016a, 2016b; KAIROS 2014; National Inquiry into Missing and Murdered Indigenous Women and Girls [NIMMIWG] 2019).

One community member pointed out that resource development projects tend to "*increase violence towards women, marginalized people, [and] bring in drug activity. We already have a missing and murdered Indigenous women [and] girls issue. Projects will already increase that*" (M14, Interview, 20 March 2024). This concern is particularly pressing as the Metlakatla community lies along the Highway of Tears, a corridor notorious for its association with MMIWG cases. This phenomenon has been well-documented in studies such as those by Amnesty International (2016a, 2016b), KAIROS (2014), and the National Inquiry into Missing and Murdered Indigenous Women and Girls (NIMMIWG 2019).

The proponent's materials confirm that Ksi Lisims LNG will employ an average of 450 workers during construction, with peaks of up to 800. While many workers will reside in work camps, others will pass through and potentially settle in local communities such as Prince Rupert and Terrace, creating opportunities for increased crime and social disruptions (Stantec 2023, 7.10-64). This influx of temporary, transient workers has been linked to the erosion of safety for women and children in host communities, exacerbating existing vulnerabilities (Northern Health 2018, NIMMIWG 2019).

Metlakatla members, drawing from past experiences with imported workers during other construction projects, expect similar outcomes here. One participant shared that during a previous development project, *"there were hundreds of men from Prince George, Houston, Williams Lake and they were here for months"* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 12 March 2024). The presence of these temporary workforces often led to negative social outcomes, including an increase in absent or abusive fathers: *"What happens when they [Ksi Lisims LNG workers] need a person and they want to start planting roots here [...] then we have more of our children without fathers. We have children being brought up in abusive relationships because when people come – foreign people come here, they're told that we're dirty Indians and they don't have to respect us"* (M12, Cultural Continuity Focus Group, 12 March 2024).

These concerns are supported by existing research that documents the connection between resource development projects and increased violence in nearby communities. Studies show that the arrival of temporary workforces in remote regions is associated with increases in drug and alcohol offenses, sexual offenses, including sex trafficking, and assaults (Gibson and Klinck 2005, National Aboriginal Health Organization 2008, Ruddell 2011, Shandro et al. 2014, Amnesty International 2016a, 2016b). The hyper-masculine culture of work camps, coupled with social isolation and high wages, creates an environment where crimes of this nature become more frequent (Northern Health 2018, NIMMIWG 2019).

These concerns are amplified by the fact that perpetrators could evade accountability, especially if they are transient workers or part of the shipping industry. As one participant expressed, *"all it's going to take is some guy coming to town and [...] he'll get to leave on that ship, and nobody will know anything"* (M12, Marine Harvesting Focus Group, 11 March 2024). This highlights the potential for long-term and far-reaching consequences on community safety and well-being.

### 5.3.5 *Livelihood and Economic Development*

Ksi Lisims LNG is expected to impact Metlakatla members' livelihood and economic development, key components of community well-being. This assessment evaluates these impacts based on two key indicators: (1) cost of living, and (2) economic competition.

#### *Cost of Living*

Ksi Lisims LNG is predicted to increase the cost of living for Metlakatla members due to population influx, increased demand for local resources, and changes in the availability of country foods. Participants have expressed concerns that the influx of workers during Ksi Lisims LNG's construction and operation phases will drive up prices for essential goods and housing, as they have seen in past development projects. One participant noted that

*“when LNG came in, prices went up”* (M11, Marine Harvesting Focus Group, 11 March 2024). Similar concerns were shared about other large seasonal influxes, such as fishing season, which have historically led to inflation: *“last year, it was mid-summertime and that’s when all the fishermen were coming out—man—prices just jumped!”* (M18, Interview, 30 May 2024).

The potential for price increases is compounded by the limited ability of local retailers to restock their supplies quickly, especially in Prince Rupert: *“The grocery stores get a delivery twice a week [...] If 500 people hit the grocery stores, everything’s sold out for a week”* (M16, Interview, 13 May 2024).

In addition to the increase in consumable prices, Ksi Lisims LNG is predicted to place upward pressure on local housing costs. The influx of consulting firms, project workers, and potentially their families, is expected to drive up housing demand in Prince Rupert, as noted by one participant: *“[This will] increase pressure on the area and [affect] the cost of living for everybody”* (M16, Interview, 13 May 2024).

The proponent anticipates that construction will require an average direct workforce of 450, peaking at 800, with an operational workforce of 150–250, plus 50–100 additional staff in local offices (Stantec 2023, 7.10-64). While workers will be housed in work camps and transported directly to the site, transient workers will still pass through and spend time in local communities, which will contribute to the local economic burden. The proponent acknowledges that the Project will place upward pressure on housing costs and consumables (Stantec 2023, 7.10-88).

Additionally, reduced harvesting success due to project-related environmental impacts is expected to decrease the contribution of country foods to household budgets. As one participant noted, *“If we don’t have the food, now we actually have to go to the grocery store [...] I make a living off being able to harvest our foods”* (M12, Marine Harvesting Focus Group, 11 March 2024). Additionally, Ksi Lisims LNG may undermine the trustworthiness of country foods, affecting Metlakatla’s ability to barter with other Nations: *“What if other households that we barter with didn’t trust that – they perceived it as a risk and didn’t want to barter with us”* (M13, Marine Harvesting Focus Group, 11 March 2024).

This loss of access to country foods and the corresponding rise in dependence on store-bought goods will likely worsen the inflationary pressure on Metlakatla members’ cost of living.

### *Economic Competition*

Ksi Lisims LNG is predicted to create economic competition that will impact both local businesses and individuals in the workforce. Project-related employment opportunities come with the potential for wage inflation as local businesses may struggle to retain workers in the face of higher wages offered by the Project. One participant highlighted how project employment could drive up wages and induce labour competition, which could push local businesses to raise wages in order to retain staff: *“[I]f they were to say okay, well we’ll offer jobs, then that would not mean [...] now we only have 6 people working and that’s not the agreement we had”* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).



The proponent estimates that project wages during construction and operations will far exceed the existing mean employment income in the LAA, with average project wages expected to be \$115,000 to \$120,000 per year, compared to the local average of \$53,247 (Stantec 2023, 7.10-88). While the proponent has proposed mitigation measures to prioritize local employment and businesses, the local labour force may not have the capacity to meet Ksi Lisims LNG's needs, which would lead to significant competition with external workers.

Some community members are skeptical about whether Ksi Lisims LNG will truly benefit local businesses. One participant noted that past projects had failed to meaningfully support local businesses, stating: *"They even bring in their gas with them because there's no tax in Alberta, they bring their own fuel and stuff"* (M11, Marine Harvesting Focus Group, 11 March 2024).

This skepticism is further supported by the proponent's own estimates, which suggest that much of the labour required for construction will have to come from outside the local area due to a shortage of skilled labour in the LAA. The proponent has estimated that only 180 workers out of the 800 needed during peak construction can be sourced from the local labour pool (Stantec 2023, 7.10-68). This reliance on external labour will limit the extent to which Ksi Lisims LNG will generate long-term economic benefits for local communities, particularly Indigenous residents, who are less likely to meet the qualifications for project employment (Stantec 2023, 7.13-47).

Participants also expressed concern about the unequal distribution of project benefits and the historical trend of Indigenous communities assuming risk without receiving corresponding rewards. As one participant remarked: *"When it comes to use in our territory, we take all the risk, and we don't get any reward"* (M12, Cultural Continuity Focus Group, 12 March 2024).

This sentiment reflects broader concerns that project-related income may not address the underlying economic inequalities within the community and may even exacerbate issues such as substance abuse and poverty, with one member stating: *"money is not going to do everything except maybe make [expletive] worse for a lot of people"* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

### 5.3.6 Connections to Other Values

The impacts of Ksi Lisims LNG on community well-being will have significant knock-on effects on other critical values, particularly harvesting, cultural continuity, and stewardship and governance.

**Harvesting:** As community well-being declines due to project-related stressors, such as population influx, increased cost of living, and reduced physical and mental health, there will likely be a reduction in the capacity and motivation for Metlakatla members to engage in subsistence harvesting. This may result in fewer harvesters being able to participate in traditional harvesting activities, which are vital for community cohesion, food security, and economic resilience.

**Cultural Continuity:** As disruptions to social cohesion and mental health strain the community, the ability to engage in and pass on traditional knowledge and cultural practices will be weakened. Metlakatla's identity is closely tied to harvesting, spiritual

practices, and connection to the land. The loss of strong social networks, compounded by mental and emotional health challenges, threatens these cultural practices. The inability to access or share in these cultural expressions could create lasting damage to the community's cultural fabric, as the community is pulled further from its traditional way of life.

**Stewardship and Governance:** Community well-being is linked to Metlakatla's ability to act as stewards of their territory. A weakened community, suffering from poor physical and mental health may be less able to engage in active stewardship. This could lead to diminished capacity to manage resources, engage in governance, or advocate for their rights and interests in land use decisions. Ultimately, the effects of poor community well-being could operate to undermine Metlakatla's long-standing role as stewards of their environment and resources.

The cascading impacts of reduced community well-being on harvesting, cultural continuity, and stewardship and governance will be further explored in their respective sections of this RIA. Each of these values will be analyzed holistically to determine the full extent of Ksi Lisims LNG 's effects on Metlakatla's way of life.

## 5.4 STEWARDSHIP AND GOVERNANCE

*M12: We would like to see respect, but we already know that this entire thing [Ksi Lisims LNG] is completely disrespectful. (M12, Cultural Continuity Focus Group, 12 March 2024)*

Ksi Lisims LNG is predicted to adversely impact Metlakatla's stewardship and governance by affecting Metlakatla's ability to protect and sustain its lands, waters, and resources, exercise traditional authority, and maintain effective government-to-government relations. This assessment evaluates these impacts based on two key areas:

- Protecting and Sustaining Metlakatla Lands, Waters, and Resources; and
- Exercising Traditional Authority.

These impacts are analyzed using pathways identified in the proponent's application materials and concerns raised through community research. Understanding the cumulative and interconnected nature of these impacts is critical for assessing the potential challenges to Metlakatla's stewardship practices and governance structures.

### 5.4.1 *Protecting and Sustaining Metlakatla Lands, Waters and Resources*

Ksi Lisims LNG is anticipated to adversely impact Metlakatla's ability to protect and sustain its lands, waters, and resources by limiting their control over stewardship and decision-making, constraining resource management options, and reducing the effectiveness of monitoring systems. This section assesses Ksi Lisims LNG's impacts based on three key indicators: (1) control over stewardship decision-making, (2) resource management resilience and flexibility, and (3) effectiveness and integrity of monitoring and information systems.

### *Control over Stewardship Decision-Making*

The Project is predicted to reduce Metlakatla's control over key decisions that affect stewardship. Metlakatla members expressed concern about their ability to remain involved in decisions affecting their territory, particularly regarding the management of marine resources. As one participant noted, the Project will impact their ability to access and steward marine harvesting areas, and the proponent acknowledges that increased shipping traffic for Ksi Lisims LNG will reduce Metlakatla's ability to make decisions and "*uphold the Nation's management principles*" in affected areas (Ksi Lisims 2024, 13-52 - 13-53). Metlakatla's ability to maintain stewardship depends on being able to access areas safely and manage the resources within them. Increased LNG shipments are predicted to reduce this access and weaken Metlakatla's decision-making authority regarding marine protection.

One participant expressed, "*When they're [the big ships] coming through, we have to stay back, there's absolutely no choice [...] we break the law and we'll be the ones reprimanded – they'll have every authority to call the Coast Guard on us if we get too close*" (M12, Cultural Continuity Focus Group, 12 March 2024).

Moreover, participants emphasized that Metlakatla has not been sufficiently involved in the design of marine monitoring and response plans, which further limits control over stewardship. The proponent's materials show a need for increased monitoring, but without adequate involvement of Metlakatla in monitoring design, Metlakatla's stewardship role may be diminished. The proponent's application makes no firm commitments to fund Metlakatla monitoring initiatives, further raising concerns that Metlakatla's stewardship capacity will be insufficient to manage the risks posed by Ksi Lisims LNG. As one member highlighted, "*I hope there'll be more monitoring on that – there's that little inlet there, where we see the most humpback whales and killer whales, so that's going to impact their returning*" (M17, Interview, 24 May 2024).

### *Resource Management Resilience and Flexibility*

The Project is expected to constrain Metlakatla's ability to maintain a diverse range of resource management options, a key factor in supporting the modern expression of their stewardship practices. The ability to adjust management strategies in response to environmental and cultural challenges is fundamental to Metlakatla's long-term stewardship of their lands and waters. Participants expressed concerns that Ksi Lisims LNG could significantly reduce their flexibility by limiting the options available for managing key species, ecosystems, and cultural practices.

Metlakatla's stewardship framework, as demonstrated by the Metlakatla Stewardship Society, Guardian Program, and Marine Use Planning, depends on Metlakatla's capacity to adaptively manage resources based on changing environmental conditions. However, the increased industrial activity and environmental degradation associated with the Project could limit these adaptive management practices by reducing access to key areas or by introducing ecological changes that make certain management strategies less effective or even impossible to implement. This would narrow the range of management options available to the community, directly impacting their resilience in the face of future challenges.

For example, the Guardian Program’s ability to monitor adherence to community laws and protocols in important areas, and to report any infractions, could be severely hampered by restricted access or environmental damage from Ksi Lisims LNG. If the community cannot remain flexible in how they patrol and manage different areas, their ability to adapt their stewardship practices to emerging issues, such as changes in species distributions or new environmental risks, will be limited. Similarly, the Stewardship Society’s role in monitoring long-term environmental changes could be constrained if industrial activity compromises key ecosystems, making it harder for Metlakatla to implement diverse resource management strategies tailored to different areas or species.

Moreover, participants highlighted concerns about external mitigation frameworks, such as wetland compensation programs, which often fail to address local impacts. This forces Metlakatla to rely on management options that may not align with their own priorities or conditions, further limiting Metlakatla’s ability to maintain a flexible and diverse set of resource management strategies. As one participant noted, *“The local study area does not benefit from wetland impacts. Because when they are rehabilitating wetland, they consider all of BC to be within the area of where wetland compensation can happen, and so we’ve learned from other projects that it usually just goes to [other locations]”* (M16, Interview, 13 May 2024). This misalignment of external mitigation measures with local needs further reduces Metlakatla’s ability to adaptively manage their lands and waters in a way that preserves resilience.

Cumulatively, Ksi Lisims LNG threatens to reduce the range of resource management options available to Metlakatla by restricting access, degrading ecosystems, and introducing external management frameworks that do not account for local conditions. This reduction in flexibility undermines the adaptability of Metlakatla’s stewardship practices, making it more difficult for the community to respond to future challenges and continue their long-standing role as stewards of their lands and waters.

#### *Effectiveness and Integrity of Monitoring and Information Systems*

The Project is likely to diminish the effectiveness and integrity of monitoring systems that are essential for Metlakatla to exercise its stewardship rights. Participants expressed concerns that the monitoring systems proposed by the proponent may not align with Metlakatla’s values or provide the necessary level of oversight to manage sensitive species and ecosystems. As one member explained with respect to cumulative impacts from the PRGT pipeline, *“I’d like to see almost a daily monitoring of the pipeline... like a 24-hour, 24/7 they’ll be able to see the pipeline from beginning to end”* (M11, Marine Harvesting Focus Group, 11 March 2024)<sup>1</sup>. This underscores the gap between the proponent’s proposed monitoring regime and the level of oversight the community feels is required to ensure effective management of their resources.

Members also raised concerns that increased shipping traffic for the Project would impede their ability to make decisions and *“uphold the Nation’s management principles”* in the

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<sup>1</sup> While the pipeline is not part of the Ksi Lisims Project currently being assessed in the regulatory process, the Nation considers the pipeline to be integral components of the overall project. For this reason, it has been included in this Indigenous-led assessment to provide a comprehensive evaluation of the project’s full range of potential impacts on Metlakatla’s rights and resources.

affected area (Ksi Lisims 2024, 13-52 - 13-53). Reduced access to marine harvesting areas, driven by as many as 140 to 160 LNG shipments per year, would compromise Metlakatla's capacity to monitor and manage these critical areas. Metlakatla's ability to effectively steward its marine environment relies heavily on safe access, and without this, the integrity of their monitoring systems will be significantly weakened.

Metlakatla members also expressed frustration over the proponent's lack of commitment to adequately involving them in the design and execution of monitoring and response plans. As noted by one member regarding cumulative impacts from the PRGT pipeline, "*I hope there'll be more monitoring on [the underwater pipeline]—there's that little inlet there, where we see the most humpback whales and killer whales, so that's going to impact their returning*" (M17, Interview, 24 May 2024). This highlights the need for increased monitoring, especially for sensitive marine species, yet the proponent's materials do not offer firm commitments to fund or involve Metlakatla in these critical monitoring activities. Without this collaboration, the modern expression Metlakatla's stewardship rights and the ability to manage key environmental values may be compromised.

Moreover, participants emphasized that the Project increases the risk of accidents or malfunctions, which disproportionately fall on Metlakatla. The community will likely need to invest significant resources in managing potential risks and failures, such as providing escorts in and out of the facility and participating in marine emergency response (Leadership meeting, September 18, 2024). One member expressed concern about emergency response capabilities, stating, "*In that [Project] area something's going to go down and we're going to have to put our people at risk to go and save these people. Because that's what we'll do, because we don't want them to be hurt in our area*" (M12, Cultural Continuity Focus Group, 12 March 2024). This sentiment reflects a broader concern that, without sufficient control over monitoring systems and the necessary funding to support them, Metlakatla will bear the brunt of environmental and safety risks, with their stewardship capacity significantly undermined.

#### 5.4.2 *Exercising Traditional Authority*

Ksi Lisims LNG is anticipated to negatively impact Metlakatla's ability to exercise traditional authority over their lands, waters, and resources by undermining their governance rights, bypassing hereditary leadership, and disregarding established decision-making protocols.

As set out above, Metlakatla's stewardship practices and traditional authority are deeply tied to the recognition of specific House territories, which have been governed for generations through the House leadership system (Martindale, 2021). LNG

One community member emphasized that "*it's a Nisga'a Project but [...] it's in the core of Coast Tsimshian territory,*" highlighting the disputes over the recognition of Metlakatla's territorial authority in areas relevant to Ksi Lisims LNG (M15, Interview, 25 March 2024). This failure to acknowledge Metlakatla's territorial authority through traditional or contemporary governance processes undermines their governance system and the management of key areas. Without recognition of these territories, Metlakatla's ability to protect their lands and waters is significantly compromised.

The authority of hereditary leaders is central to Coast Tsimshian governance. As noted above, the traditional system recognizes leaders as responsible for managing specific territories on behalf of their House and stewarding those territories.

One community member noted the importance of involving hereditary leaders in stewardship initiatives and decision-making, explaining that *“our hereditary [leaders] need to be consulted [...] they’ll tell you ‘hey, that’s that person’s territory, that island’s that person’s territory.’”* The member went on to emphasize that these hereditary leaders represent the nine Tsimshian tribes and failing to include them in decisions about Ksi Lisims LNG risks undermining traditional governance structures (M12, Cultural Continuity Focus Group, 12 March 2024). Some Metlakatla members expressed the feeling that their traditional authority is being ignored by Ksi Lisims LNG as proposed. As noted above, one feature of the Tsimshian legal system is the feast or potlach, in which disputes can be moderated as between Coast Tsimshian and Nisga’a peoples. This element has not been addressed by the proponent.

Participants expressed frustration that Ksi Lisims LNG has failed to fully and meaningfully engage with Metlakatla’s governance structures. Community members criticized Ksi Lisims LNG’s limited engagement, which consisted mostly of “notifications” and “updates” rather than meaningful consultation (Ksi Lisims 2024, 13-3). One participant explained that *“the communities were not made aware [of Ksi Lisims LNG]”* and that engagement should have begun with the people directly affected by Ksi Lisims LNG (M15, Interview, 25 March 2024). This failure to follow governance protocols disempowers elected and hereditary leaders and the community alike by excluding them from important decisions about Metlakatla’s lands and waters.

Moreover, members noted the lack of communication and public meetings – including site visits which are viewed by many as crucial - with one individual saying, *“they don’t really communicate with the public that much and let us know what they’re really planning”* (M01, Interview, 4 April 2024). This limited communication has led to frustration within the community, as many feel excluded from discussions about Ksi Lisims LNG’s impact on their lands, waters and resources. Transparent communication is a key element of Metlakatla’s governance system, which emphasizes public involvement. While the Metlakatla Stewardship Society meets regularly with the Proponents and the EAO and provides updates to the community, a lack of trust in the process remains, weakening community members’ ability and willingness to participate in important decisions.

#### 5.4.3 Connections to Other Values

The impact of Ksi Lisims LNG on reconciliation and co-governance will have significant knock-on effects on other critical values, particularly harvesting, cultural continuity, and community well-being.

**Harvesting:** The weakening of reconciliation and co-governance processes will undermine Metlakatla’s ability to protect their harvesting areas and manage resources sustainably. Without meaningful collaboration with the Crown, decisions regarding resource management may not reflect Metlakatla’s needs. This could result in resource depletion and restrict participation in harvesting practices.

**Cultural Continuity:** Governance breakdowns have the potential to affect cultural continuity by limiting Metlakatla's ability to protect culturally significant areas and ensure the transmission of traditional knowledge.

**Community Well-Being:** The strain on reconciliation and co-governance will negatively impact community well-being by fostering feelings of exclusion and disempowerment. Reduced governance capacity due to increased demand for external engagement with the Proponent and the Crown could affect well-being programs, including those that provide culturally appropriate food, and compound mental and emotional health challenges within the community.

The cascading impacts of weakened reconciliation and co-governance on harvesting, cultural continuity, and community well-being are further explored in their respective sections of this RIA. Each of these values will be analyzed holistically to determine the full extent of Ksi Lisims LNG's effects on Metlakatla's way of life.

## 6. EVALUATION OF PROPOSED MITIGATION MEASURES

This section evaluates the proponent's proposed mitigation measures. The evaluation focuses on the likelihood of each measure's effectiveness in addressing impacts on Metlakatla's rights and interests, specifically in the areas of harvesting, cultural continuity, community well-being, and stewardship and governance. Measures designed to mitigate impacts on pathway valued components are discussed but are not considered direct mitigation of impacts on Metlakatla's rights and interests.

### 6.1 HARVESTING

No harvesting-related mitigation measures were identified by the Proponents in the review of materials for this assessment. However, the proponent's Application does include a general mitigation measure relevant to all affected Indigenous groups. Mitigation measure IN-1 states:

*The Proponents will continue to work with Metlakatla First Nation to develop a shared understanding of how the Project may affect their Indigenous interests. The Proponents will continue engaging with Metlakatla First Nation to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns. (Ksi Lisims LNG 2023, Appendix A)*

While Mitigation IN-1 provides assurances that harvesting-related concerns and impacts will be meaningfully addressed, the measure lacks critical details regarding its implementation. Specifically, it does not describe how Metlakatla's harvesting concerns will be addressed or how differences of opinion between Indigenous groups will be resolved. Additionally, the measure does not specify the intended engagement process, the duration of engagement, or how concerns raised by Metlakatla will influence decision-making. It also fails to outline how financial support will be provided by the proponent for any agreed-upon measures. Without these details, Mitigation IN-1 provides little confidence that Metlakatla's rights and interests related to harvesting will be meaningfully addressed.

Other mitigation measures proposed by the proponent are similarly vague. These measures target non-cultural components with the intent of minimizing or reducing pathways of effect on values that affect harvesting. For example, measures 7.09-1 (spill prevention and response), 7.08-6 (instream works), 7.02-6 (implementing industry standards), 7.09-8 (underwater noise monitoring for pile driving and blasting), and 7.09-9 (marine mammal detection and response) are all intended to mitigate impacts on the environment that indirectly affect harvesting. However, the descriptions provided in Appendix A of the Proponent's Application lack tangible details on how these measures will be implemented, monitored, or adapted if they fail to meet their objectives. No provisions for Metlakatla input or involvement in monitoring or reviewing these mitigation efforts are included, leaving the community without any meaningful role in ensuring that their harvesting rights are protected.



## **6.2 CULTURAL CONTINUITY**

Mitigation IN-1, intended to address concerns from Indigenous groups, also applies to cultural continuity. However, as with harvesting, the measure lacks specific details on how the proponent will engage with Metlakatla to protect culturally significant areas or address community members' concerns regarding impacts on traditional knowledge transmission and cultural practices. There are no clear mechanisms for safeguarding cultural sites, conducting cultural ceremonies, or mitigating the sensory impacts (e.g., noise and visual disturbances) that affect cultural continuity. Community participants expressed concern that without concrete plans, these areas may suffer permanent damage, undermining community members' ability to pass on cultural knowledge and maintain their connection to the land.

Proposed environmental measures, such as those related to noise and air quality, may have indirect benefits for cultural continuity by minimizing disturbances to the landscape. However, without specific provisions for protecting culturally significant areas, such measures are unlikely to be sufficient. The lack of cultural oversight, monitoring, and adaptive management in these mitigation measures means that they do not inspire confidence in their ability to protect Metlakatla's cultural continuity.

## **6.3 COMMUNITY WELL-BEING**

Mitigation IN-1 does not explicitly address community well-being, though it is intended to facilitate ongoing engagement with Metlakatla. The Application does include mitigation measures aimed at infrastructure and services, such as healthcare and social services, which are designed to mitigate additional stress on community resources resulting from Ksi Lisims LNG. However, as with other proposed measures, the details are sparse. The mitigation plan does not clarify how increased demand on local healthcare and community services will be managed, nor does it provide assurances that Metlakatla will have a say in how these services are enhanced to meet the community's needs.

Community members are concerned that the proposed measures do not account for the cumulative effects of Ksi Lisims LNG in combination with other developments in the region. The existing strain on social services, combined with the impacts of Ksi Lisims LNG, could exacerbate issues related to physical and mental health, increased cost of living, and social cohesion. Without meaningful involvement from Metlakatla in shaping these measures, community members' well-being may not be adequately protected.

## **6.4 STEWARDSHIP AND GOVERNANCE**

The proponent's mitigation measures regarding stewardship and governance primarily focus on alignment with established marine use plans and engagement in cumulative effects initiatives. While these efforts aim to minimize impacts on Metlakatla's governance systems, they fall short in terms of detail and implementation. The proponent's commitment to cumulative effects management appears to have some merit, but it lacks any specific provisions for how Metlakatla will be involved in decision-making, or how their stewardship rights will be respected and upheld throughout Ksi Lisims LNG's lifecycle.

Mitigation IN-1's promise of continued engagement is relevant but lacks sufficient guarantees that Metlakatla's governance systems will be meaningfully integrated into Ksi

Lisims LNG's management. Without clear mechanisms with respect to governance, financial support, or adaptive management, the proposed measures offer little assurance that Metlakatla's stewardship and governance rights will be respected.

## 7. RESIDUAL IMPACTS

The proponent's proposed mitigation measures are insufficient to fully address or avoid the impacts on Metlakatla's rights and interests. While some measures provide general commitments to ongoing engagement or environmental protections, they lack the specificity, accountability, and community involvement necessary to ensure the protection of Metlakatla's values. As a result, the identified impacts on harvesting, cultural continuity, community well-being, and stewardship and governance are all carried forward for further assessment as residual effects.

The residual impacts evaluation considers all assessed impacts on each right collectively, rather than individually. This approach supports an integrated evaluation of Ksi Lisims LNG's overall impacts on each right. The following sections will characterize these residual impacts based on vulnerability, magnitude, extent, frequency, duration, and reversibility, as well as the associated risks, uncertainties, and feedback loops.

### 7.1 HARVESTING

This section will characterize residual impacts on Harvesting. The characterization will be provided in a narrative format and summarized in a table.

#### 7.1.1 *Residual Impacts on Harvesting*

Residual impacts on harvesting are presented in Table 1 and summarized below.

Harvesting activities face numerous pressures that challenge harvest success and capacity, including declines in the abundance and availability of key harvest species, such as salmon, halibut, and crab. Harvesters have already noted closures of important fisheries, changes in pollution and environmental health, and increased competition pressures from recreational fisheries, pushing them further afield. While remote offshore islands remain relatively undisturbed and serve as crucial harvesting locations, their sanctity is vulnerable to additional marine traffic and external users. These islands, such as Triple Island and the Tree Knob Island group, are culturally and ecologically significant and act as a buffer against disturbances. Project-related impacts to these remote areas, such as increased marine traffic and potential sensory disturbances, threaten to compromise these areas' resilience, leading to uncertainty about the future well-being of harvesting practices.

The proponent's Application identifies increased marine traffic, including 140-160 transits per year, and construction activities that overlap with key harvesting periods as contributing factors to this disruption (Ksi Lisims LNG 2023, Section 13.1.5, p. 13-67). This marine traffic will affect species availability and travel time for harvesters, potentially forcing them to lose important connections to key sites such as the Tree Knob Island group, Metlakatla Pass, Somerville Island, Mylor Peninsula, and areas throughout the

environs of Portland Inlet and beyond, including the environs of Nass Bay and Fishery Bay at the mouth of the Nass River.

The **magnitude** of the impacts is assessed as **moderate to high**, based on the expected long-term disruption to access, increased travel time, and loss of harvesting areas due to the sensory and physical disturbances posed by marine traffic and permanent infrastructure. Harvesters will be forced to adapt by traveling further to harvest and altering their methods, but the success and meaningfulness of harvesting will be significantly diminished, especially in culturally vital areas.

The **extent** is ranked as **regional** because the impacts will affect both the terrestrial and marine portions of Metlakatla's territory, spanning areas such as the coastal portion of the transmission line, the marine shipping component west of Triple Island and materials and supply shipping from Prince Rupert. Ksi Lisims LNG's effects will extend beyond the immediate project footprint, impacting the broader ecosystem and harvestable species.

**Frequency** is expected to be **frequent to continuous**, as marine traffic and related disturbances will occur regularly, year-round, with vessel transits happening several times a week. The cumulative nature of these impacts, including noise and pollution, will affect harvesters' access and success on a continuous basis. Additionally, the anxiety felt by harvesters due to the perceived and actual risks of contamination and environmental degradation will be ongoing.

The **duration** of the impacts will be **long-term**, lasting over the 30-year lifespan of Ksi Lisims LNG, with the potential for continued impacts beyond Ksi Lisims LNG's completion if the environment is not adequately restored. Project-related activities, including marine traffic and infrastructure development, will span decades, contributing to long-term changes in resource availability and habitat conditions. Furthermore, any major event, such as a spill, could result in permanent damage to key harvesting areas.

**Reversibility** is ranked as **partially reversible**, as some aspects of harvesting could recover over time if Ksi Lisims LNG ceases, but significant impacts such as species loss, knowledge loss due to reduced access, or contamination from spills may be irreversible. One participant expressed concern about the lasting effects of contamination: "*There's no washing in the world that would take oil out of seaweed*" (M12, Cultural Continuity Focus Group, 12 March 2024). The proponent's mitigation measures are insufficient to fully restore the area if these impacts materialize.

The **vulnerability** of Metlakatla's harvesting practices is ranked as **high**, as the existing pressures on harvesting, combined with Ksi Lisims LNG's anticipated impacts, push the practice toward a threshold where it could no longer be sustained at meaningful levels. The remoteness of key harvesting areas offers some resilience, but increased marine traffic, habitat destruction, and the risk of contamination significantly threaten this.

**Affected populations** are expected to be **disproportionately distributed** among Metlakatla members. Those who rely heavily on harvesting, such as harvesters, elders, and members without access to harvesting equipment, will face the most significant impacts. Vulnerable populations, such as elders who depend on others for their subsistence food supply, may experience greater food insecurity due to decreased access to resources and the difficulty of harvesting in affected areas. Additionally, those without

boats or other harvesting equipment will be disproportionately affected, as they may not be able to travel to more remote, unaffected areas to harvest.

*Table 1 Residual Impacts on Harvesting*

<b>Criterion</b>	<b>Ranking</b>
Vulnerability	<b>High</b>
Magnitude	<b>Moderate to high</b>
Extent	<b>Regional</b>
Frequency	<b>Frequent to Continuous</b>
Duration	<b>Long-term</b>
Reversibility	<b>Partially reversible</b>
Affected populations	<b>Disproportionately Distributed</b>

### 7.1.2 Risk and Uncertainty

This section evaluates the risk and uncertainty of residual impacts on harvesting, considering both the likelihood of project interactions with Metlakatla harvesting rights and interests and the potential consequences. Likelihood is assessed based on project interactions, the effectiveness of proposed mitigation measures, and study participants' evaluations. Consequences are estimated in terms of the ranked magnitude of residual impacts.

Table 2 identifies the risk rankings for harvesting.

*Table 2 Risk Rankings for Harvesting.*

	<b>Low magnitude</b>	<b>Moderate magnitude</b>	<b>High magnitude</b>
<b>Low likelihood</b>	Low risk	Moderate risk	High risk
<b>Moderate likelihood</b>	Moderate risk	Moderate risk	High risk
<b>High likelihood</b>	High risk	High risk	High risk

**The overall anticipated risk to Metlakatla’s harvesting rights is high** given the high likelihood of project interactions with Metlakatla harvesting rights and the moderate to high magnitude of residual impacts. This high risk reflects the significant potential for negative consequences on key aspects of harvesting, such as access to areas, resource sufficiency, and the ability to harvest safely.

Key factors contributing to this high risk include:

- High likelihood: Study participants expressed concerns about Ksi Lisims LNG ’s interference with harvesting due to increased marine traffic, restricted access, and environmental degradation. These factors are supported by the proponent’s own materials, which acknowledge that important terrestrial and marine areas used by Metlakatla harvesters will be impacted.
- Moderate to high magnitude: Impacts such as reduced resource availability, diminished safety, and altered harvesting practices are anticipated to occur, requiring substantial adaptation or resulting in a significant decline in the practice of traditional harvesting.

The interconnections between harvesting rights and other critical rights, such as community well-being, cultural continuity, and stewardship and governance, amplify the likelihood of cascading impacts. As disruptions to harvesting rights are likely to lead to broader negative effects, this further increases the overall level of risk.

**There is a high level of certainty** that Metlakatla harvesting rights will be adversely impacted by Ksi Lisims LNG. Extensive information provided by study participants, combined with consistent findings from the 2022 TUS study and the proponent’s own application materials, confirms that cumulative effects thresholds have been surpassed. This high level of certainty underscores the seriousness of the residual impacts on harvesting rights and the likelihood that these impacts will persist throughout Ksi Lisims LNG’s duration.

## **7.2 CULTURAL CONTINUITY**

### *7.2.1 Residual Impacts on Cultural Continuity*

Residual impacts on cultural continuity are presented in Table 3 and summarized below.

Metlakatla’s cultural continuity is highly vulnerable due to existing pressures from industrial development, which Ksi Lisims LNG is expected to exacerbate further. Key elements of Metlakatla culture, such as sense of place, knowledge transmission, cultural keystone landscapes and species, and identity, are at risk. The ability to maintain cultural practices tied to the land and waters will be diminished by the project Ksi Lisims LNG, especially through restricted access to critical areas, sensory disturbances, and reduced availability of culturally important species. The proponent’s Application acknowledges some of these impacts, but mitigation measures are inadequate to fully address the depth of cultural loss anticipated.

Ksi Lisims LNG’s predicted impacts on culturally significant landscapes and species, the loss of sensory and spiritual experiences in key places, and barriers to intergenerational knowledge transmission will compromise Metlakatla’s cultural resilience. Ksi Lisims LNG

threatens to sever vital connections to the land and water, limiting cultural continuity and endangering the integrity of Metlakatla identity and traditional practices.

The **magnitude** of residual impacts on cultural continuity is assessed as **high** due to the significant, long-term disruptions to Metlakatla's sense of place, knowledge transmission, and cultural keystone species. Ksi Lisims LNG will introduce persistent sensory disturbances, such as noise and visual impacts, which undermine the emotional and spiritual connections essential to cultural practices and places such as *spanoxnox* sites and other sites of a sacred or important historical nature. Restricted access to key teaching areas and harvesting locations will disrupt the transmission of place-based knowledge, while increased marine traffic threatens culturally important species like orca. These impacts collectively reduce Metlakatla's ability to maintain and transmit their cultural practices.

The **extent** is ranked as **regional**. The effects will span across both terrestrial and marine areas that are central to Metlakatla's cultural practices, including key teaching sites, harvesting areas, and ceremonial locations along the project route. Ksi Lisims LNG will affect cultural continuity across a wide geographic area, including the coastal portion of the transmission line and marine shipping component, extending west of Triple Island.

**Frequency** is expected to be **continuous**. Project-related disturbances will occur year-round due to ongoing marine traffic, construction activities, and infrastructure development. These disturbances will continuously affect cultural practices and prevent uninterrupted access to critical cultural and harvesting areas throughout the life of Ksi Lisims LNG.

**Duration** is **long-term**. The impacts on cultural continuity will persist throughout the 30-year lifespan of Ksi Lisims LNG, with the possibility of extension. The effects on access, species availability, and the integrity of culturally significant sites will last for decades, and the cultural consequences may extend beyond the cessation of Ksi Lisims LNG.

**Reversibility** is ranked as **partially reversible**. Some aspects of cultural continuity may recover if Ksi Lisims LNG ceases and access is restored. However, long-term disconnection from key cultural sites and the erosion of place-based knowledge may result in irreversible cultural losses, especially if generational transmission of knowledge is disrupted for an extended period.

**Vulnerability** is **high**. Ksi Lisims LNG will exacerbate existing pressures on Metlakatla's cultural practices, pushing cultural continuity beyond a threshold where it can no longer be sustained at meaningful levels. Cumulative effects, including the degradation of key cultural areas and species, significantly weaken the resilience of cultural practices.

**Affected Populations** are expected to be **disproportionately impacted**. Those who rely heavily on harvesting-based cultural practices, such as elders, youth, and individuals engaged in traditional livelihoods, will face the greatest consequences. Vulnerable populations who depend on access to specific areas and resources for cultural activities will be disproportionately affected by Ksi Lisims LNG's impacts on cultural continuity.

Table 3 Residual Impacts on Cultural Continuity

Criterion	Ranking
Vulnerability	High
Magnitude	High
Extent	Regional
Frequency	Continuous
Duration	Long-term
Reversibility	Partially reversible
Affected Populations	Disproportionately Distributed

### 7.2.2 Risk and Uncertainty

Table 4 identifies the risk rankings for cultural continuity.

Table 4 Risk Rankings for Cultural Continuity

	Low magnitude	Moderate magnitude	High magnitude
Low likelihood	Low risk	Moderate risk	High risk
Moderate likelihood	Moderate risk	Moderate risk	High risk
High likelihood	High risk	High risk	High risk

**The overall anticipated risk to Metlakatla’s cultural continuity rights is high** given the high likelihood of project interactions with Metlakatla cultural continuity rights and the moderate to high magnitude of residual impacts. This high risk reflects the potential for significant consequences on key aspects of cultural continuity, such as sense of place, knowledge transmission, and the role of cultural keystone species like orca.

Key factors contributing to this high risk include:

- High likelihood: Study participants and community research emphasize the likelihood of Ksi Lisims LNG’s impacts on culturally significant landscapes, knowledge transmission activities, and key species. The proponent’s own materials acknowledge that key sites for cultural continuity, such as the marine

areas around Triple Island, will be affected by increased marine traffic and environmental disturbances.

- Moderate to high magnitude: Impacts on the sense of place, loss of access to cultural teaching sites, and potential disruptions to the orca population are expected to be significant, requiring substantial adaptation and potentially leading to long-term erosion of cultural practices and identity.

The strong interconnections between cultural continuity and other critical values, such as harvesting, community well-being, and stewardship and governance, amplify the risk. Impacts to cultural continuity are likely to trigger cascading effects on other values, further increasing the overall risk.

**There is a high level of certainty** that Metlakatla cultural continuity rights will be adversely impacted by Ksi Lisims LNG. Community research participants consistently expressed concerns about the long-term effects of sensory and environmental disturbances on their cultural practices. These concerns align with external studies and the proponent's own findings, providing a high degree of confidence that cultural continuity will be significantly affected throughout Ksi Lisims LNG's duration.

## 7.3 COMMUNITY WELLBEING

### 7.3.1 *Residual Impacts on Community Wellbeing*

Residual impacts on community well-being are presented in Table 5 and summarized below.

Ksi Lisims LNG is predicted to adversely impact the well-being of Metlakatla members across various dimensions, including physical and mental health, social cohesion, personal safety, and economic stability. Concerns were raised about Ksi Lisims LNG's potential contamination of country foods, increased air pollution, and the influx of non-local workers, all contributing to heightened stress and anxiety. Furthermore, essential services like healthcare and water infrastructure, which are already under strain, are expected to face additional pressures. These impacts, combined with cumulative pressures from previous industrial developments, create substantial challenges for Metlakatla members in maintaining their community well-being.

The **magnitude** of impacts is assessed as **moderate**. While there is expected to be some strain essential infrastructure and increase risks to personal safety due to population influx, the limited influx of workers and the remote nature of their housing will reduce the potential for impacts. Impacts on country foods and social cohesion, though present, will primarily affect those reliant on traditional food sources and community-based sharing practices, but they are unlikely to disrupt community well-being in a major way.

The **extent** of the impact is considered **regional**, as they will affect not only Metlakatla's local community but also the broader Regional Assessment Area (RAA). This includes impacts on physical and mental health, social networks, and economic conditions, which will be felt throughout the territory and in neighboring communities. Community well-being in Metlakatla is closely linked to territorial use, including access to harvesting areas and travel across the land. As such, Ksi Lisims LNG's regional effects are expected to disrupt both community relationships and safety across Metlakatla territory



**Frequency** is expected to be **frequent to continuous**. The influx of workers, environmental disturbances, and increased demands on infrastructure will result in daily disruptions to community activities and well-being. These disruptions are anticipated to span the entire project lifecycle, from construction through operation and into decommissioning. Additionally, significant events tied to Ksi Lisims LNG, such as worker influxes, are likely to recur throughout the construction, operation, and decommissioning phases, further intensifying the impacts.

The **duration** is **long-term**. Ksi Lisims LNG’s estimated 30-year lifespan means that disruptions to health services, social cohesion, and economic stability will persist over decades. In some cases, such as with healthcare access and community trust, these impacts may extend beyond the life of Ksi Lisims LNG. The long-term nature of community well-being activities, which are integral to Metlakatla’s cultural and social structure, means that Ksi Lisims LNG’s effects could last well into the future, potentially affecting multiple generations.

**Reversibility** is ranked as **partially reversible**. While some aspects of community infrastructure and economic conditions may improve after Ksi Lisims LNG ends, the long-term damage to social cohesion, mental health, and community trust could take much longer to recover, if at all. Community resilience and local ecological recovery may allow certain elements of well-being to return to current conditions, but substantial recovery, especially in social cohesion and trust, will require significant time and effort.

**Vulnerability** is ranked as **moderate to high**. Metlakatla’s community well-being is already under significant strain due to cumulative effects from past industrial projects, and Ksi Lisims LNG’s additional stressors may push the community beyond its ability to cope without severe consequences. Study participants emphasized that Ksi Lisims LNG risks pushing relationships and well-being practices “past a threshold” where they may no longer be effectively maintained, leading to the potential breakdown of community networks and practices central to community well-being.

**Affected populations** are expected to be **disproportionately distributed**. While all Metlakatla members will experience some level of impact, specific groups, such as women, children, elders, and those reliant on traditional livelihoods, will likely face the greatest risks. Personal safety concerns for women and girls due to the influx of workers, as well as economic challenges for elders and others dependent on country foods, are expected to be particularly severe. Additionally, women and vulnerable groups may face increased risks of violence and marginalization as a result of the anticipated influx of project workers.

*Table 5 Residual Impacts on Community Wellbeing*

<b>Criterion</b>	<b>Ranking</b>
Vulnerability	<b>Moderate to High</b>
Magnitude	<b>Moderate</b>
Extent	<b>Regional</b>

Criterion	Ranking
Frequency	Frequent to Continuous
Duration	Long-term
Reversibility	Partially Reversible
Affected populations	Disproportionately Distributed

### 7.3.2 Risk and Uncertainty

Table 6 identifies the risk rankings for community wellbeing.

*Table 6 Risk Rankings for Community Wellbeing*

	Low magnitude	Moderate magnitude	High magnitude
Low likelihood	Low risk	Moderate risk	High risk
Moderate likelihood	Moderate risk	Moderate risk	High risk
High likelihood	High risk	High risk	High risk

**The overall risk to community well-being is considered moderate** based on the moderate likelihood of project interactions with community well-being and the moderate magnitude of residual impacts. Key factors contributing to this moderate risk include:

- **Moderate likelihood:** Although the influx of workers will be limited due to the remote location of the camp, impacts on country foods, social cohesion, and related rights such as marine harvesting and cultural continuity create secondary risks to community well-being. While direct effects on well-being may be less pronounced, interconnected impacts on other rights elevate the likelihood of indirect effects.
- **Moderate magnitude:** Ksi Lisims LNG is anticipated to create moderate strain on certain aspects of community well-being, particularly in relation to food security and social cohesion. The ability of community members to adapt to these impacts may reduce their overall severity, but significant disruptions could still arise, particularly regarding access to country foods and the maintenance of cultural practices.

**There is a moderate degree of certainty** that Ksi Lisims LNG will impact community well-being. The assessment is based on a combination of community-based research, secondary literature, and project application materials, which provide a reliable foundation for the conclusions. However, a key source of uncertainty lies in predicting demographic

and economic changes in the communities, as the exact scale of worker influx and economic shifts remains difficult to quantify.

## 7.4 STEWARDSHIP AND GOVERNANCE

### 7.4.1 *Residual Impacts on Stewardship and Governance*

Residual impacts on stewardship and governance are presented in Table 7 and summarized below.

Ksi Lisims LNG is expected to adversely impact Metlakatla's stewardship and governance rights, which (as set out above) are critical to protecting and sustaining their lands, waters, and resources. These impacts arise from Ksi Lisims LNG's interference with Metlakatla's travel to key areas and control over key stewardship decisions relating to those areas, constraints on resource management flexibility, and a lack of meaningful engagement with the community in monitoring and response activities. Metlakatla's ability to govern its territory is already under pressure from cumulative industrial developments, and Ksi Lisims LNG is predicted to exacerbate these challenges, reducing the effectiveness of the modern expression of Metlakatla's stewardship practices and undermining traditional and contemporary governance practices and structures.

**Vulnerability** is ranked as **high**. The ability of Metlakatla to practice its stewardship and governance rights has been severely affected by past and ongoing industrial developments, and study participants have expressed concern that Ksi Lisims LNG will push these rights beyond a critical threshold. Despite existing contemporary programs and structures, such as the Guardian Program and Marine Use Planning, the cumulative pressures from this and other projects significantly heighten the vulnerability of stewardship and governance rights to further impacts.

**Magnitude** is assessed as **high**. Ksi Lisims LNG will severely limit Metlakatla's control over stewardship and decision-making, reduce resource management flexibility, and undermine the effectiveness of monitoring systems. These impacts, combined with a lack of meaningful engagement in governance processes, will have major impacts on Metlakatla's ability to steward its lands and waters.

**Extent** is ranked as **regional**. The impacts of Ksi Lisims LNG on stewardship and governance will be felt throughout Metlakatla's territory, with participants expressing concern that effects could extend beyond the Regional Study Area (RSA), affecting both marine and terrestrial environments. The broad geographic scope of these impacts will challenge Metlakatla's ability to effectively steward and govern large portions of its territory.

**Frequency** is expected to be **continuous**. The nature of Ksi Lisims LNG's operations particularly marine shipping and other ongoing activities will require Metlakatla to engage in regular stewardship and governance efforts. Participants highlighted the regularity with which project-related disturbances will require action, leading to frequent impacts on their ability to exercise stewardship and governance rights.

**Duration** is ranked as **long-term**. Ksi Lisims LNG is expected to operate for at least 30 years, with impacts on stewardship and governance persisting throughout the lifespan of Ksi Lisims LNG. Participants noted that these impacts could extend beyond the life of Ksi

Lisims LNG if the necessary commitments to respect Metlakatla’s governance structures and stewardship roles are not made.

**Reversibility** is ranked as **partially reversible**. While Metlakatla would be able to resume certain stewardship and governance activities over affected areas if Ksi Lisims LNG ceased, certain elements of stewardship and governance would remain constrained. This includes limitations on resource management resilience and flexibility.

**Affected Populations** are expected to be **disproportionately distributed**. While all Metlakatla members will experience some level of impact on their stewardship and governance rights, those involved in governance structures or stewardship programs will face additional burdens due to Ksi Lisims LNG’s interference with decision-making processes.

*Table 7 Residual Impacts on Stewardship and Governance*

<b>Criterion</b>	<b>Ranking</b>
Vulnerability	<b>High</b>
Magnitude	<b>High</b>
Extent	<b>Regional</b>
Frequency	<b>Continuous</b>
Duration	<b>Long-term</b>
Reversibility	<b>Partially reversible</b>
Affected Populations	<b>Disproportionately distributed</b>

#### 7.4.2 Risk and Uncertainty

Table 8 identifies the risk rankings for Stewardship and Governance.

*Table 8 Risk Rankings for Stewardship and Governance*

	<b>Low magnitude</b>	<b>Moderate magnitude</b>	<b>High magnitude</b>
<b>Low likelihood</b>	Low risk	Moderate risk	High risk
<b>Moderate likelihood</b>	Moderate risk	Moderate risk	High risk
<b>High likelihood</b>	High risk	High risk	High risk

**The overall risk to Metlakatla’s stewardship and governance rights is considered high**, based on the high likelihood of project interactions with these rights and the high magnitude of residual impacts. Key factors contributing to this high risk include:

- High likelihood: Project-related impacts are highly likely to interfere with Metlakatla’s ability to effectively engage in stewardship and governance. The limited commitments from the proponent and government to respect and support Metlakatla’s decision-making authority, combined with Ksi Lisims LNG’s scale, create a high likelihood of disruption to stewardship and governance efforts.
- High magnitude: Ksi Lisims LNG is expected to severely impact Metlakatla’s ability to protect their territory and exercise traditional authority. While some aspects of governance and stewardship may be adaptable, the long-term strain on resource management resilience and flexibility is predicted to be significant.

**There is a high degree of certainty** that Ksi Lisims LNG will adversely impact Metlakatla’s stewardship and governance rights. This conclusion is supported by detailed community-based research and qualitative data that describe cumulative and project-specific impacts on these rights. Although some uncertainty exists due to limited information on future Metlakatla-led stewardship initiatives, the consistency of participant feedback, secondary literature, and project application materials provides strong support for the conclusions. The primary uncertainty relates to how effectively mitigation measures may be implemented, but the high likelihood and magnitude of impacts contribute to an overall high level of certainty.

## 8. IMPACT SEVERITY

[Placeholder]

DRAFT

## 9. CONCLUSIONS

[Placeholder]

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## APPENDIX A: METHODOLOGY FOR THE METLAKATLA RIGHTS IMPACT ASSESSMENT OF KSI LISIMS LNG

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This section outlines the methodology used in the Metlakatla RIA. This assessment applies a community-led and holistic approach to evaluating potential project impacts, ensuring that the perspectives, values, and knowledge of Metlakatla First Nation are central to the assessment process. By integrating community-defined methods with standard impact assessment practices, the RIA ensures that both Metlakatla's unique rights and broader environmental and cultural considerations are examined. The methodology includes guiding principles, assessment steps, information sources, and an evaluation framework for understanding project-specific and cumulative effects on Metlakatla's rights and way of life.

### OVERVIEW

#### *Guiding Principles*

Metlakatla's assessment methodology is guided by the following principles:

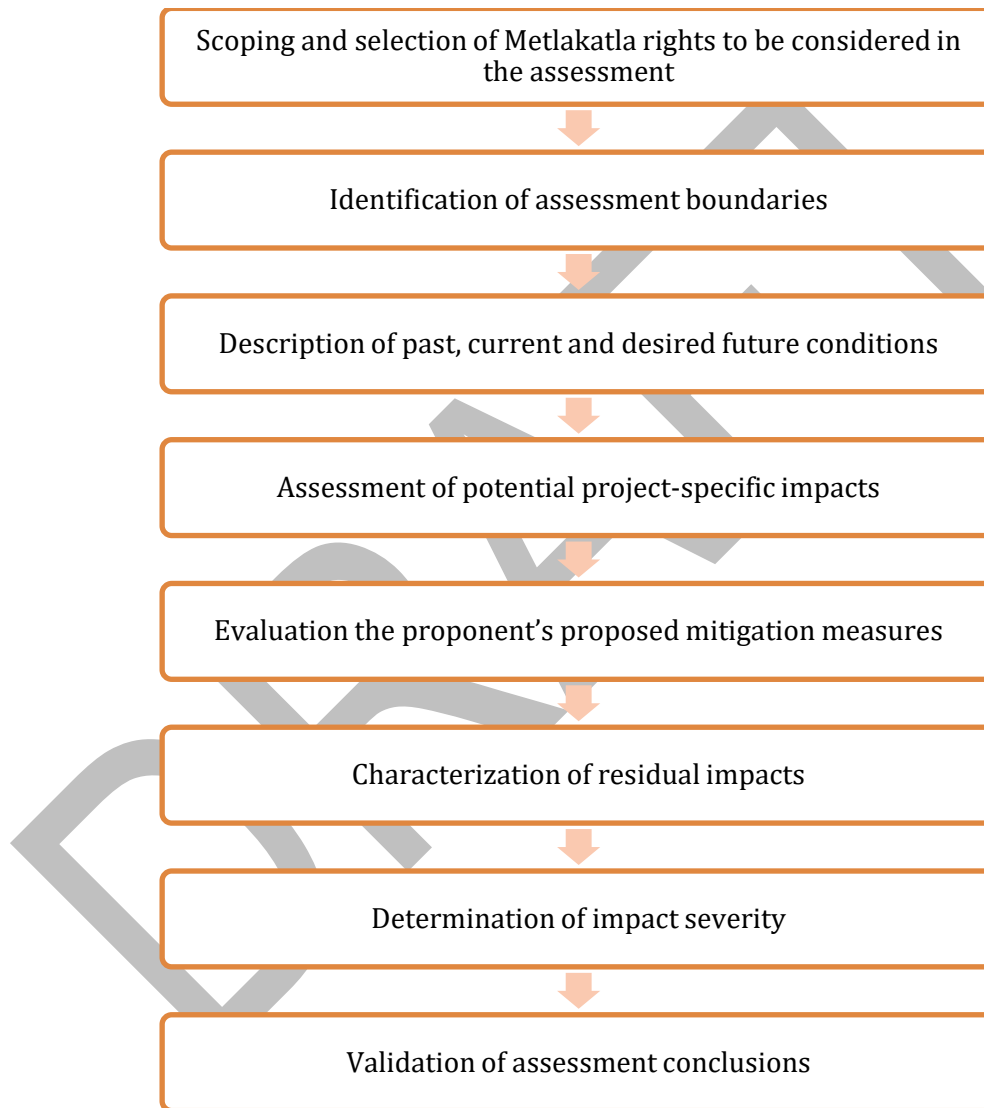
1. **Focus on community-defined values.** The Metlakatla Assessment is centred on the values and issues identified by community members to be of the greatest interest and concern.
2. **Use Metlakatla perspectives and knowledge.** The Metlakatla Assessment directly draws on Metlakatla members' knowledge and expertise throughout the assessment process, including scoping, impact prediction and evaluation, severity determination, and verification.
3. **Use community-defined methods, indicators, and evaluation criteria.** The Metlakatla Assessment is based on methods developed by the Metlakatla Assessment team, including assessment steps, indicators, evaluation criteria, and severity determination approach.
4. **Evaluate impacts in the context of cumulative effects.** The Metlakatla Assessment evaluates project-specific impacts in the context of past, present, and anticipated future cumulative impacts on Metlakatla's rights and interests.
5. **Apply a holistic assessment approach.** The Metlakatla Assessment applies a holistic lens to consider the totality of project-specific impacts on Metlakatla's way of life. This includes a consideration of interconnected impacts, feedback loops, and disproportionate impacts.
6. **Consider the project's contribution to reconciliation.** The Metlakatla Assessment evaluates the project's impact on Metlakatla's way of life from a reconciliation perspective. This includes consideration of how the project supports or hinders the resumption of Metlakatla self-determination, sovereignty, and cultural revitalization.



### *Steps in the Assessment*

The Metlakatla Assessment adopts standard impact assessment methods outlined in the EAO's *Effects Assessment Policy* (BC EAO 2020), while leaving room for Metlakatla-specific concepts and process steps. During a methodology workshop held on November 29<sup>th</sup>, 2023, in Metlakatla Village and Prince Rupert, BC, the Metlakatla Assessment team confirmed the following steps for the Metlakatla Assessment (Figure 1).

*Figure 1 Steps in the Metlakatla Assessment*



Sections 3.2-3.8 describe methods used within each of these steps.

### *Information Sources*

Information sources supporting the Metlakatla Assessment include primary community-based research, secondary literature, the Proponent's Application materials, and Metlakatla-developed documents and research tools. Key information sources include:

- Metlakatla Traditional Knowledge and Use Study (Metlakatla First Nation 2022);
- Ksi Lisims's Application for an Environmental Assessment Certificate;
- Metlakatla's cumulative effects monitoring tool;
- Community scoping sessions;
- Methodology workshop; and
- Community-based research.

On November 28, 2023, Metlakatla held community scoping sessions in Metlakatla Village and Prince Rupert, BC. The purpose of the sessions was to inform Metlakatla members about Ksi Lisims LNG and provide a space for Metlakatla members to identify key values, issues, and concerns related to Ksi Lisims LNG.

On November 29, 2023, Metlakatla held a methodology workshop with the Metlakatla Assessment team in Prince Rupert, BC. The purpose of the workshop was to confirm the Metlakatla assessment approach by defining key values and indicators as well as the assessment criteria. Timelines and next steps were also discussed during the workshop.

From 11 March 2024 to 30 May 2024, the Metlakatla Assessment team conducted 8 interviews and 3 focus groups with Metlakatla knowledge holders, leadership, and staff. The purpose of this community-based research was to elicit participants' expert judgment of the potential project-specific impacts on Metlakatla's Rights (based on local and traditional knowledge and experience). Both open-ended and fixed-choice questions were included in the interview and focus group guides. Fixed choice questions were designed to elicit participants' predictions about the relative severity of impacts and to compare with estimated change in the conditions supporting Metlakatla's Rights. A total of 8 interviews and 3 focus groups were conducted (see Appendix B for additional details).

Metlakatla also integrated the results of its cumulative effects monitoring (CEM) tool into the assessment. The CEM tool explores, monitors, and analyzes in near real-time baselines and impacts on Metlakatla waters and lands due to the anticipated increase in shipping activity from Ksi Lisims LNG. To date, a draft open-source geographic information system (GIS) has been co-created to streamline processing, monitoring, and visualizing scores of cumulative effects based on the following:

- Presence of Metlakatla's traditional use studies (TUS) data;
- Shipping impacts (2009 to 2022 Automatic Identification System data); and,
- Climate change impacts, specifically mean annual temperature (1961-1990).

## **METLAKATLA RIGHTS AND INTERESTS CONSIDERED IN THE RIA**

The Metlakatla rights and interests considered in this assessment include Harvesting, Cultural Continuity, Community Wellbeing, and Stewardship and Governance. These rights and interests were selected as the Metlakatla rights and interests that appear most

likely to be affected by the proposed Ksi Lisims LNG Project, based on the information provided by the Ksi Lisims LNG Project proponents, and following review of the Metlakatla Traditional Knowledge and Use Study, previous Metlakatla/Coast Tsimshian rights impact assessments, and community scoping. This list of rights and interests, and their scope, has been defined and applied for the purposes of this assessment and is not exhaustive, and it may not be appropriate for any other proposed project in Metlakatla's traditional territory without further analysis and consideration. Metlakatla's rights are based on pre-contact use, occupancy, stewardship, and governance of the project area by Coast Tsimshian people, and the continuation of those elements into the present.

As depicted in Figure 2 the rights and interests considered in this assessment are overlapping, highly interdependent and interconnected. Fishing, for example, may at once be considered as a harvesting activity, a cultural practice, a determinant of community wellbeing and as an act of stewardship. While these rights overlap, the assessment considers each right separately (e.g., fishing in terms of amount of catch in the case of Harvesting, knowledge transmission in the case of Culture, and management objectives in the case of Stewardship and Governance). Where changes in one right imply changes in another, these changes are brought forward into the subsequent assessment.

*Figure 2 Metlakatla First Nation's Rights Considered in the Assessment*



### *Harvesting*

Harvesting refers to the practice of gathering, hunting, fishing, and cultivating natural resources by Metlakatla members for sustenance, cultural practices, and economic purposes. Harvesting encompasses a wide range of terrestrial, aquatic, and marine activities that have been integral to Metlakatla culture for generations. Key aspects of Metlakatla harvesting include:

- **Fishing:** Metlakatla members fish for a variety of species for sustenance and commercial purposes from the ocean, rivers, streams, and lakes. Metlakatla members also harvest shellfish and aquatic plants from intertidal areas.
- **Gathering of plants, herbs, and medicines:** Metlakatla members gather various plants, herbs, roots, and berries from their traditional territory for medicinal, nutritional, and ceremonial purposes;
- **Hunting:** Metlakatla members hunt a variety of game and migratory birds as a means of obtaining protein-rich food sources, guided by Indigenous knowledge and sustainable harvesting techniques; and

### *Cultural Continuity*

Cultural continuity refers to the ongoing existence of Metlakatla-specific values, beliefs, traditions, language, and knowledge systems across generations. For the purpose of this assessment, Metlakatla's rights to cultural continuity include language, sense of place, identity, spirituality and ceremony, knowledge transmission, and cultural keystone species. Brief definitions for each of these components of culture are provided below.

- **Language:** The expression, maintenance, and revitalization of the *Sm'álgyax* language, including place names and language connected to place-based activities, knowledges, and ways of being;
- **Sense of place:** Feelings of attachment and connectedness to place, territory, ancestors, and culture based on place-based sensations, emotions, thoughts, knowledge, and memories;
- **Spirituality and ceremony:** Specific spiritual, ontological, and ceremonial beliefs, practices, experiences and physical places that connect Metlakatla people with their ancestors and the divine, and in turn the larger physical territory, including *spanaxnox*, a sense of the sacred, and broad meaning and purpose;
- **Knowledge transmission:** Teaching, modeling, storytelling, demonstrating, and otherwise sharing place-based knowledge, skills, values, and norms, generally from older to younger generations;
- **Cultural keystone species:** Species whose existence and symbolic value shape the identity of Metlakatla people, as reflected in diet, medicine, language, and/or spiritual and cultural practices. Salmon, eulachon, and orca whale (*Gispwudwada*) are all Metlakatla cultural keystone species; and
- **Identity:** Sense of belonging as a Metlakatla person living in meaningful relationship with Metlakatla lands, waters, peoples, and other beings.

### *Community Wellbeing*

Community wellbeing refers to the health and prosperity of the Metlakatla members within their community, and encompasses various aspects of physical, mental, social, and economic wellness. Key components of community wellbeing include:

- **Physical health:** Access to adequate healthcare services, nutrition, clean country foods, and physical activity;
- **Mental and emotional health:** Freedom from mental and emotional stress, healing from historical trauma, and access to adequate mental health services;
- **Social cohesion and support:** Strong social networks, community cohesion, and the availability of support systems;
- **Safety and security:** Freedom from violence and crime, particularly for vulnerable groups such as women and girls; and
- **Livelihood and economic development:** Equitable access to training, employment opportunities, and community-driven economic development initiatives.

### *Stewardship and Governance*

Stewardship refers to practices of care and management of Metlakatla lands and resources for current and future generations. Stewardship is a deep and sacred responsibility based on respect, knowledge, and interconnectedness with the lands, waters, plants, and animals and is passed down through generations. Stewardship is tied to governance and decision-making regarding land use, conservation strategies, and resource management.

Key elements of stewardship and governance include:

- **Protecting and sustaining Metlakatla lands, waters and resources:** Protecting and sustaining ecosystems and natural life throughout Metlakatla territory; and
- **Maintaining traditional authority:** The jurisdiction of traditional house groups based on traditional protocols and the wealth and management of house territories resources.

## **ASSESSMENT BOUNDARIES**

### *Spatial Boundaries*

The spatial boundaries for the assessment are as follows (Figure 3):

- **Project Footprint:** Project facility with a 250m buffer
- **Project Facility Local Assessment Area (LAA):** Project Footprint with a 5km buffer and a 1km buffer on the foreshore
- **Marine Shipping LAA:** Shipping route with a 1km buffer on either side
- **Regional Assessment Area (RAA):** Project Footprint with a 25km buffer as well as within the marine environment of Metlakatla traditional territory

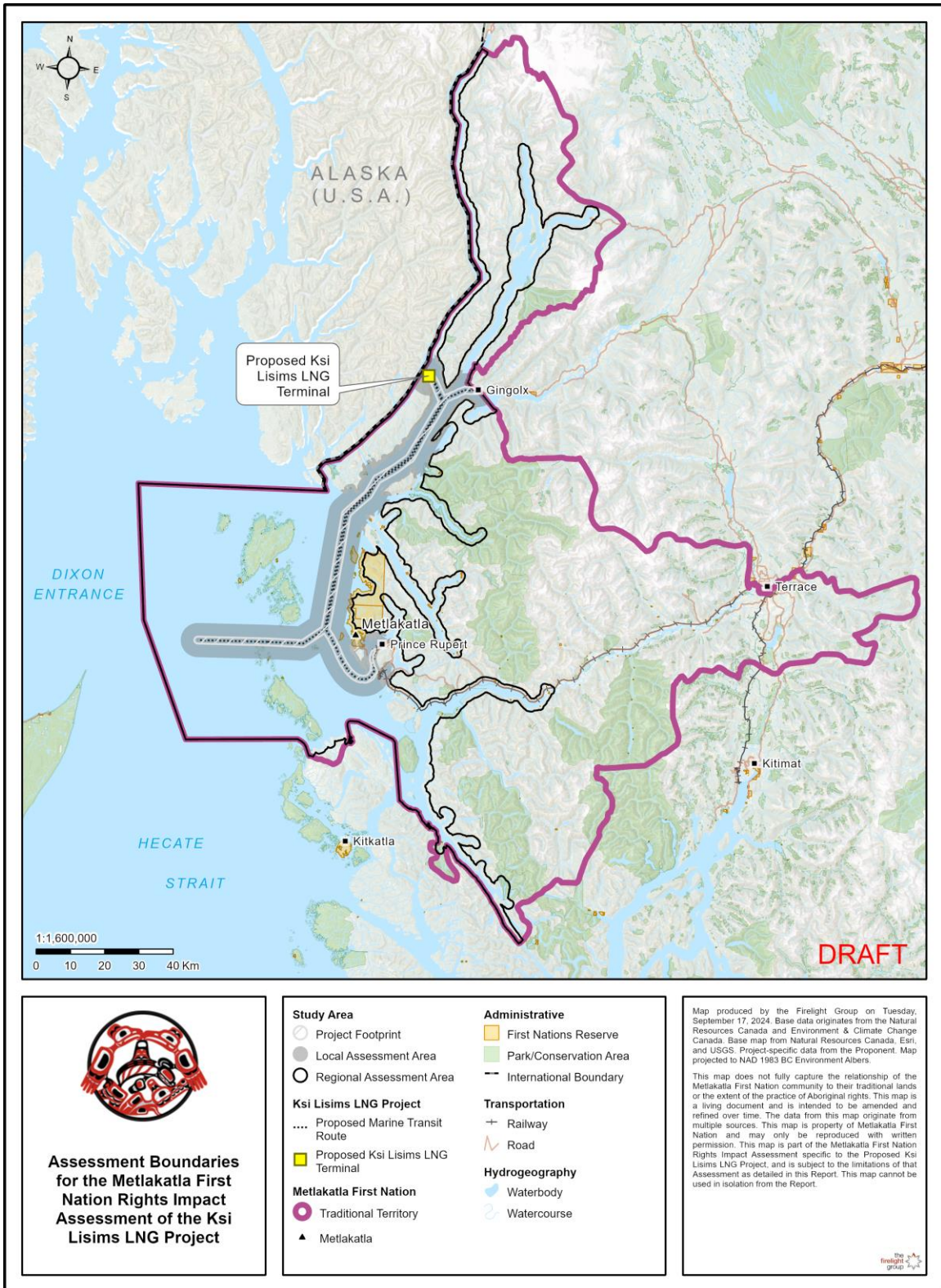
### *Temporal Boundaries*

Temporal boundaries for the assessment are as follows:

- **Historical context:** Pre-industrial period (prior to 1800) to present period
- **Construction:** 4 years
- **Operation:** 30+ years
- **Decommissioning:** 1 year after the end of operations

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Figure 3 Study Area Boundaries



## **ESTABLISHING PAST, PRESENT, AND FUTURE CONDITIONS**

The Metlakatla Assessment is based on a consideration of future conditions with and without Ksi Lisims LNG. Future conditions are defined by the timeframe during which Project construction, operation, and decommissioning is anticipated. Given that the conditions that support Metlakatla's rights and interests are not static but change over time, the assessment evaluates project-specific effects against a trendline rather than against a baseline. A trendline is also appropriate for a rights impact assessment as it overcomes the limitations of assessing project effects against a degraded baseline; better reflects cumulative effects experienced by Indigenous communities over time; and supports Indigenous knowledge systems which inherently consider trends over time (Arnold et al. 2023)

The trendline is established by considering the past, present, and anticipated future status of the conditions that support each Metlakatla right. The assessment also considers Metlakatla's desired or preferred future conditions. Applying a reconciliation lens, preferred conditions provide the appropriate benchmark against which to assess cumulative and project-specific effects and reflect the fact that 1) the actual conditions supportive of Metlakatla's rights in the study area have already been impacted and will continue to be impacted; and 2) the nature and expression of Metlakatla's rights will adapt and change over time.

The past, present, and anticipated future conditions for Metlakatla's rights were identified through document review and community-based research. Past conditions (pre-industrial to present) were primarily identified through a review of the ethnographic literature and of documentation of cumulative pressures resulting in change over time. Current conditions were primarily identified through community-based research including mapping of site-specific values. Anticipated future conditions were estimated by considering reasonably foreseeable projects and activities in the assessment area.

Key cumulative pressures interacting with Metlakatla's rights and interests include:

- European contact and trade;
- Assertion of Crown sovereignty and associated colonial policies and practices;
- Urbanization, industrialization, and resource extraction in Prince Rupert Harbour and the broader assessment area;
- Commercial fishing and fisheries management;
- Shipping activity in Metlakatla's marine traditional territory; and
- Construction and operation of port facilities in the Port of Prince Rupert.

Appendix C identifies reasonably foreseeable projects (i.e. projects currently undergoing regulatory review) that have the potential to impact Metlakatla's rights.



## **PREDICTING POTENTIAL IMPACTS**

Potential impacts of Ksi Lisims LNG on Metlakatla's rights were assessed by predicting changes in indicators resulting from project components and activities.

Community research interviews and focus groups were held from 11 March, 2024 to 30 May, 2024 with 12 of Metlakatla members and knowledge holders to solicit their expert judgements about potential impacts (see Appendix A). Research participants were presented with information about anticipated project impact pathways and asked, using open ended and fixed choice questions, to predict changes in the assessment indicators. Results from the open-ended questions were transcribed (interviews only) and coded using a custom coding scheme. Results from fixed choice questions were analysed and processed using Microsoft Excel Version 16.71.

## **EVALUATING PROPOSED MITIGATION MEASURES**

The Metlakatla Assessment considered the Proponent's proposed measures to mitigate potential impacts on Metlakatla's rights. The mitigation measures considered in this assessment include measures specifically identified by the Proponent as designed to mitigate impacts on Metlakatla's rights. Measures designed to mitigate impacts on pathway components (such as fish habitat or noise) were not considered as only the residual effects from these components were carried forward into the Metlakatla Assessment<sup>2</sup>.

Mitigation measures were evaluated in terms of their anticipated effectiveness and the likely extent of mitigation. Proposed mitigation measures were presented to Metlakatla members during community-based research. Participants were asked if the proposed measures would change their ranking of anticipated impacts on Metlakatla's rights and interests. Participants were also asked to suggest measures that would be required to change their ranking of anticipated impacts.

Where residual effects were anticipated to occur after implementation of mitigation, these impacts were carried forward to the residual impact characterization step.

## **CHARACTERIZING RESIDUAL IMPACTS**

### *Residual Impact Characterization Criteria*

Residual impacts were characterized at the level of the Metlakatla's rights using standard impact assessment criteria, including vulnerability, magnitude, extent, frequency, duration, and reversibility. The distribution of impacts across Metlakatla subpopulations was also considered. Table 1 provides definitions for residual impacts characterization criteria.

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<sup>2</sup> Metlakatla has undertaken detailed reviews of these mitigation measures as part of its technical review of Application materials. Metlakatla's comments are captured in the EAO's Issues Tracking Table.

Table 1 Residual Impacts Criteria Definitions

Criterion	Ranking
Vulnerability	<p><b>Low</b> – the ability to practice the right is relatively undisturbed and/or is highly resilient to pressure.</p> <p><b>Moderate</b> – the ability to practice the right is under pressure from one or more stressors and/or is moderately resilient to pressure.</p> <p><b>High</b> – the right is nearing or has surpassed a threshold where the right can no longer be successfully practiced.</p>
Magnitude	<p><b>Negligible</b> — change in the ability to practice the right is not detectable.</p> <p><b>Low</b> — the ability to practice the right is somewhat modified but the right can be maintained at or near current levels.</p> <p><b>Moderate</b> — the ability to maintain the right is reduced, requiring adaptive strategies (e.g. additional effort, alteration in preferred methods) and/or diminished success, meaningfulness or integrity of the right.</p> <p><b>High</b> — the ability to maintain the right is substantially or completely reduced relative to current conditions.</p>
Extent	<p><b>Site-specific</b> – the residual effect is limited to the Project footprint.</p> <p><b>Local</b> – the residual effect is limited to the LAA.</p> <p><b>Regional</b> – the residual effect is limited to the RAA.</p>
Frequency	<p><b>Rare/one time</b> – the residual effect occurs one time only or rarely within a defined time period (season, month, year, etc.).</p> <p><b>Infrequent</b> – the residual effect occurs a limited number of times within a defined time period (season, month, year, etc.).</p> <p><b>Frequent</b> – the residual effect occurs multiple times within a defined time period (season, month, year, etc.).</p> <p><b>Continuous</b> – the residual effect occurs continuously within a time defined period (season, month, year, etc.).</p>
Duration	<p><b>Short-term</b> – the residual effect persists for less than 5 years.</p>

Criterion	Ranking
	<p><b>Medium-term</b> – the residual effect persists between 5 and 25 years (up to one human generation).</p> <p><b>Long-term</b> – the residual effect persists for longer than 25 years (longer than one human generation).</p> <p><b>Permanent</b> – the residual effect persists without any foreseeable end date.</p>
Reversibility	<p><b>Reversible</b> – the ability to practice the right can fully return to current conditions if the project ceases.</p> <p><b>Partially Reversible</b> – some aspects of the ability to practice the right can return to current conditions if the project ceases.</p> <p><b>Irreversible</b> – the ability to practice the right cannot return to current conditions if the project ceases.</p>
Affected populations	<p><b>Evenly distributed</b> – residual impacts affect all Metlakatla community members equally.</p> <p><b>Disproportionately distributed</b> – residual impacts affect some Metlakatla subpopulations more than others.</p>

### *Risk and Uncertainty*

The risk and uncertainty of residual impacts were evaluated after residual impacts were characterized. The evaluation of risk considered the likelihood of an event and its consequences. Likelihood was considered in terms of the likelihood of project interactions with Metlakatla rights, evaluation of the likely efficacy of proposed mitigation measures, and community research participants' estimations. Consequences were estimated in terms of ranked magnitude of residual impacts. Table 2 identifies risk rankings used in the Metlakatla Assessment.

*Table 2 Risk Rankings*

	Low magnitude	Moderate magnitude	High magnitude
Low likelihood	Low risk	Moderate risk	High risk
Moderate likelihood	Moderate risk	Moderate risk	High risk
High likelihood	High risk	High risk	High risk

Uncertainty was considered by evaluating confidence in the analysis and findings. Considerations included information gaps and limitations in the Application materials and community research, limitations regarding knowledge of project interactions, and interpretive consistency.

## **DETERMINING IMPACT SEVERITY**

The severity of Ksi Lisims LNG 's impacts on Metlakatla's rights and interests was determined holistically at the level of Metlakatla's Way of Life, recognizing the intrinsic interconnectedness of Metlakatla harvesting, culture, community wellbeing, and stewardship and governance. The impact severity determination was undertaken within the context of the vulnerability of Metlakatla's way of life to additional impacts, given past, present, and future pressures and trends over time. Residual effects rankings were drawn on to describe Ksi Lisims LNG 's overall severity.

The following criteria guide the determination of impact severity:

- **Residual Impact Intensity and Reach:** This criterion evaluates the magnitude, extent, and reversibility of the project's residual impacts across all rights. Intensity refers to how deeply the project disrupts rights such as harvesting and cultural continuity, while reach refers to how widely the impacts spread across geographic areas and how long-lasting or reversible they are.
- **Interconnections and Compounding Effects:** This criterion assesses how the project's impacts on different rights interact and amplify one another. Rights such as harvesting, cultural continuity, and community well-being are highly interconnected, meaning that disruptions in one area can lead to cascading impacts in others. The severity of impacts is amplified when these feedback loops and compounding effects increase the overall burden on the community.
- **Trendlines of Vulnerability:** This criterion evaluates how the project's impacts align with the community's current and future vulnerability. By examining cumulative pressures from past, present, and anticipated future developments, the assessment determines whether the project pushes key practices and rights toward tipping points where recovery becomes increasingly difficult.
- **Degree of Deviation from Aspired Futures:** This criterion considers how far the project's impacts push Metlakatla away from its long-term goals and vision for sustainability, self-governance, and cultural preservation. The assessment contrasts the expected future with the project against the community's desired future, with deviations ranked according to how significantly the project undermines the community's ability to achieve its goals.

The following definitions guide the categorization of impact severity:

- **Severe:** Impacts that substantially interfere with Metlakatla's ability to practice its rights, disrupt key cultural and environmental practices, or create lasting, potentially irreversible effects. These impacts typically involve high intensity, broad reach, amplified effects through interconnections, and high deviation from aspired futures.

- **Not Severe:** Impacts that are more manageable, either because they can be mitigated or reversed, or because their intensity and reach are limited. These impacts do not fundamentally undermine the community's ability to practice its rights or achieve its long-term goals.

DRAFT

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**APPENDIX B: COMMUNITY-BASED RESEARCH MATERIALS**

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**Metlakatla Stewardship Society**

**Community Scoping Session for the Ksi Lisims Rights Impact Assessment**

**DETAILED AGENDA**

November 29, 2023  
Metlakatla Village, BC

**Goals of the Metlakatla Rights Impact Assessment:** The Metlakatla Rights Impact Assessment (RIA) will identify and evaluate the potential impacts of the Ksi Lisims LNG Project on Metlakatla First Nation’s rights and interests. The results of the RIA will be provided to Metlakatla Leadership and to the provincial and federal governments to help inform their respective decisions about whether the Ksi Lisims LNG Project should be allowed to proceed.

**Purpose of the Scoping Session:** The session will introduce community members to the Ksi Lisims LNG Project and identify key community values, issues, and concerns related to the Project. Information collected during the scoping sessions will focus the RIA on areas that matter most to community members.

WEDNESDAY, November 29, 2023		
Time	Topic	Lead
10:00-10:10 AM	Arrival and settling in	n/a
10:10-10:20 AM	Welcome and Opening Remarks <ul style="list-style-type: none"> <li>• Traditional opening</li> <li>• Welcome and introductions</li> </ul>	MSS
10:20-10:30 AM	Overview of Scoping Session <ul style="list-style-type: none"> <li>• Purpose and objectives of the scoping session</li> <li>• Overview of Agenda</li> </ul>	Firelight
10:30-11:20 AM	Project Overview <ul style="list-style-type: none"> <li>• Overview of the Ksi Lisims LNG project</li> <li>• Q &amp; A</li> </ul> <p><i>Ksi Lisims LNG to leave following presentation</i></p>	Ksi Lisims LNG

11:20-11:30 AM	Break	
11:30-12:00 PM	<p>Identification of Issues and Concerns</p> <ul style="list-style-type: none"> <li>Facilitated discussion of priority issues and concerns</li> </ul>	Firelight
12:00-1:00 PM	Lunch	n/a
1:00-1:30 PM	<p>Identification of Issues and Concerns (continued)</p> <ul style="list-style-type: none"> <li>Facilitated discussion of priority issues and concerns</li> <li>Open floor</li> </ul>	Firelight
1:30-1:50 PM	<p>Summary and Next Steps</p> <ul style="list-style-type: none"> <li>Summary of identified issues and concerns</li> <li></li> <li>Next steps, including further community engagement</li> </ul>	Firelight
1:50 - 2:00 PM	<p>Closing Remarks</p> <ul style="list-style-type: none"> <li>Thanks to community participants</li> <li>Information about future meetings</li> </ul> <p>Traditional closing by Metlakatla Elder or other appropriate member</p>	MSS

## Metlakatla-led Assessment of the Ksi Lisims LNG Project

### Focus Group Sessions

March 11-15, 2024

Prince Rupert, BC

#### What is the Metlakatla-led Assessment?

The Metlakatla Stewardship Society (MSS) is leading a Rights Impact Assessment of the proposed Ksi Lisims Floating Natural Gas Liquefaction and Marine Terminal (FLNG) Project. The goal of the assessment is to identify the potential impacts of the project on Metlakatla's Harvesting, Cultural Continuity, and Community Wellness Rights. MSS is leading this assessment to ensure that it aligns with Metlakatla's values, concerns, and priorities.

MSS is working with The Firelight Group to carry out community research and reporting for the Rights Impact Assessment.

#### What is the topic of this focus group?

We will be hosting Four Focus Groups lasting approximately 4 hours, and follow up interviews where desired, in order to assess the potential impacts of the Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project on Metlakatla First Nation's Rights. This information will be used to develop the Metlakatla-led Rights Impact Assessment that will be used to inform the BC Environmental Assessment process.

We will be holding a Focus Group for on each of the following "groups" of Metlakatla Rights:

- **Monday March 11<sup>th</sup>:** Harvesting Rights: This Focus Group will look at potential project impacts to marine and foreshore harvesting. We will look at how the project may impact access to harvesting areas, the availability of harvested species, enjoyment and safety of harvesting activities, and confidence in harvested resources.
- **Tuesday March 12<sup>th</sup>:** Cultural Continuity Rights: This Focus Group will look at potential project impacts to culture, including the ability to engage in cultural practices such as ceremony, the ability to pass down knowledge to



future generations, potential impacts to the Metlakatla cultural identity, and the overall feeling of connection to Metlakatla culture.

- **Wednesday March 13<sup>th</sup>:** Community Wellbeing Rights: This Focus Group will look at potential project impacts to the local economy, health care, and workforce, impacts to Indigenous women and girls as well as other identity groups, opportunities for education, training and jobs, and broad concerns about community safety.
- **Thursday March 14<sup>th</sup>:** Terrestrial Harvesting Rights: This Focus Group will look at potential project impacts to the terrestrial harvesting as a result of the project transmission line. We will look at how the project may impact access to harvesting areas, and the availability of harvested species. We will also explore concerns around climate change, and the electrification of the FLNG facility.

### What is the Project?

The Ksi Lisims LNG – Natural Gas Liquefaction and Marine Terminal Project (Project) is to be located at Wil Milit on the northern tip of Pearse Island in Portland Canal, north of Prince Rupert, BC. The Project, proposed by the Nisga'a Nation and its

partners, will consist of the following components:

- A Floating Natural Gas Liquefaction Facility
- Marine Terminal
- Related Infrastructure, including onshore components and underwater feed pipeline
- A transmission line, approximately 95km long, to bring energy from a new BC Hydro substation in the New Aiyansh area to arrive to the Project site

The Project will convert natural gas from the Western Canadian Sedimentary Basin to liquefied natural gas (LNG). The natural gas will arrive at the facility from either the Prince Rupert Gas Transmission Pipeline (PRGT) or the Westcoast Connector Gas Transmission Pipeline (WCGT).

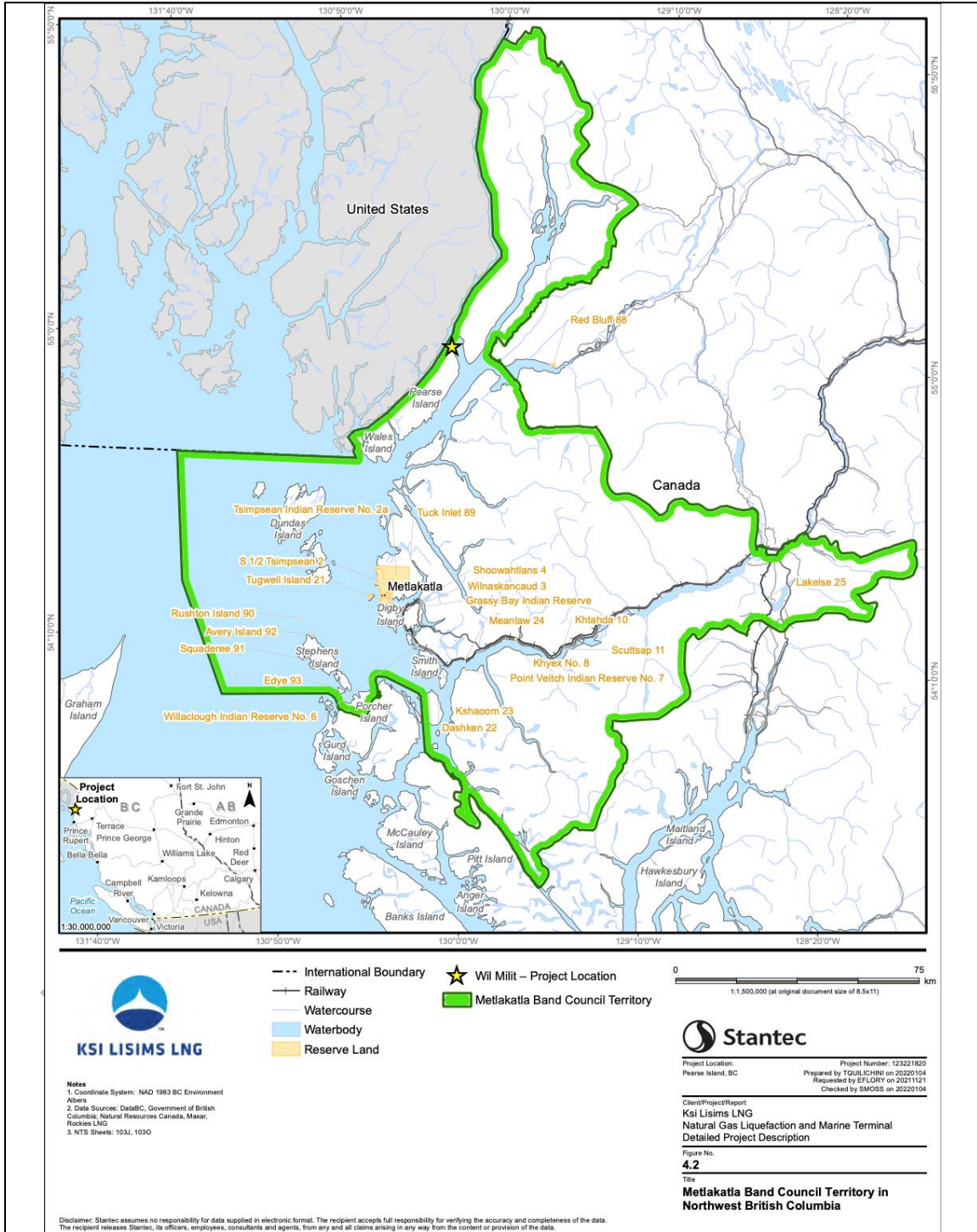
The Project is expected to produce up to 12 million tonnes of LNG each year. Over the expected 30-year lifespan of the project, it plans to process approximately 16,296

to 19,662 million cubic meters of natural gas annually. The LNG produced by the facility will be exported to Asia via third-party LNG carriers.

The project is subject to review under the 2018 BC *Environmental Assessment Act*, the federal *Impact Assessment Act* and Chapter 10 of the *Nisga'a Final Agreement*. The BC Environmental Assessment Office (EAO) is leading the environmental assessment on behalf of BC and the Impact Assessment Agency of Canada.



*Photo of the Project site at the Northern End of Pearse Island, View to the South (Ksi Lisims LNG, Detailed Project Description, 2022)*



## What are the Main Project Components?

### Floating Liquefied Natural Gas Barges (FLNGs)

The Project will have two floating LNG production, storage, and off-loading barges (FLNGs) with a total capacity of 12 million tons of LNG per year. Each FLNG will include various facilities like gas processing units, liquefaction trains, and storage systems. The gas pre-treatment systems will remove impurities, and the liquefaction trains will convert natural gas into liquefied natural gas (LNG). The FLNGs will also have mooring systems, emergency equipment, and off-loading equipment for transferring LNG to LNG carriers for export.

### Onshore Components

The onshore components of the Project will use around 164 hectares of land. Onshore components will be built off-site and then transported by barge to the Project site for installation.

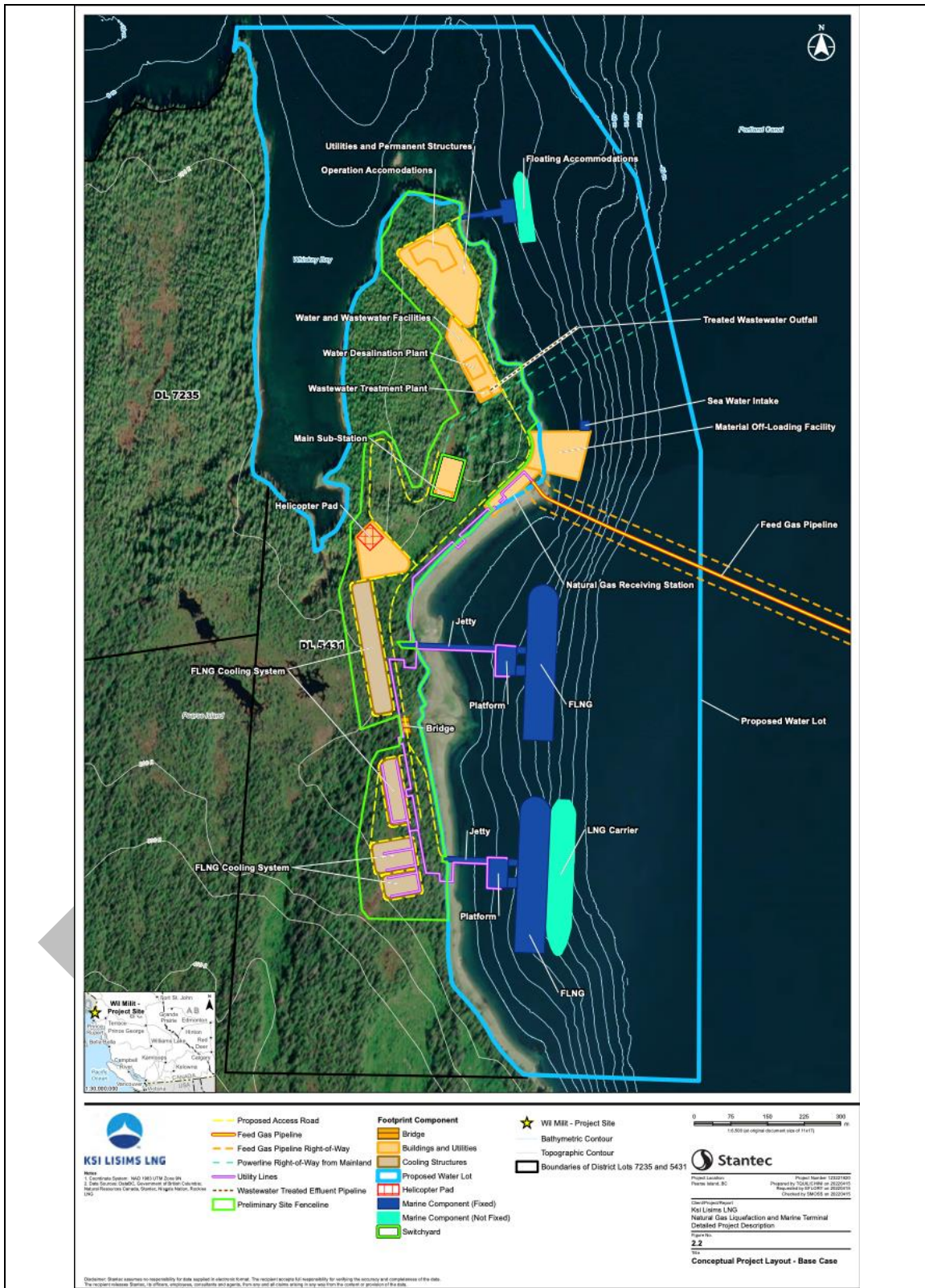
The onshore components for Ksi Lisims LNG are:

- Feed Gas pipeline receiving terminal
- Water and wastewater treatment plants with associated piping.
- Backup diesel power generation equipment and fuel storage tank(s).
- Treated effluent pipeline and diffuser in Portland Canal.
- Buildings: Control, Administrative, Maintenance, Workforce accommodations, Security, MOF, potential tug berths, supply/personnel jetty.
- Two jetties and platforms connecting each FLNG to the shore.
- Connecting roads and security fencing.
- Solid waste management facilities.
- Helipad.

### Underwater Feed Gas Pipeline

The underwater feed gas pipeline will start at the head of the Nasoga Gulf and follow a defined sub-sea route through the Nasoga Gulf up to Portland Inlet and Portland Canal to arrive to Ksi Lisims. The pipeline will be owned and operated by a third party.

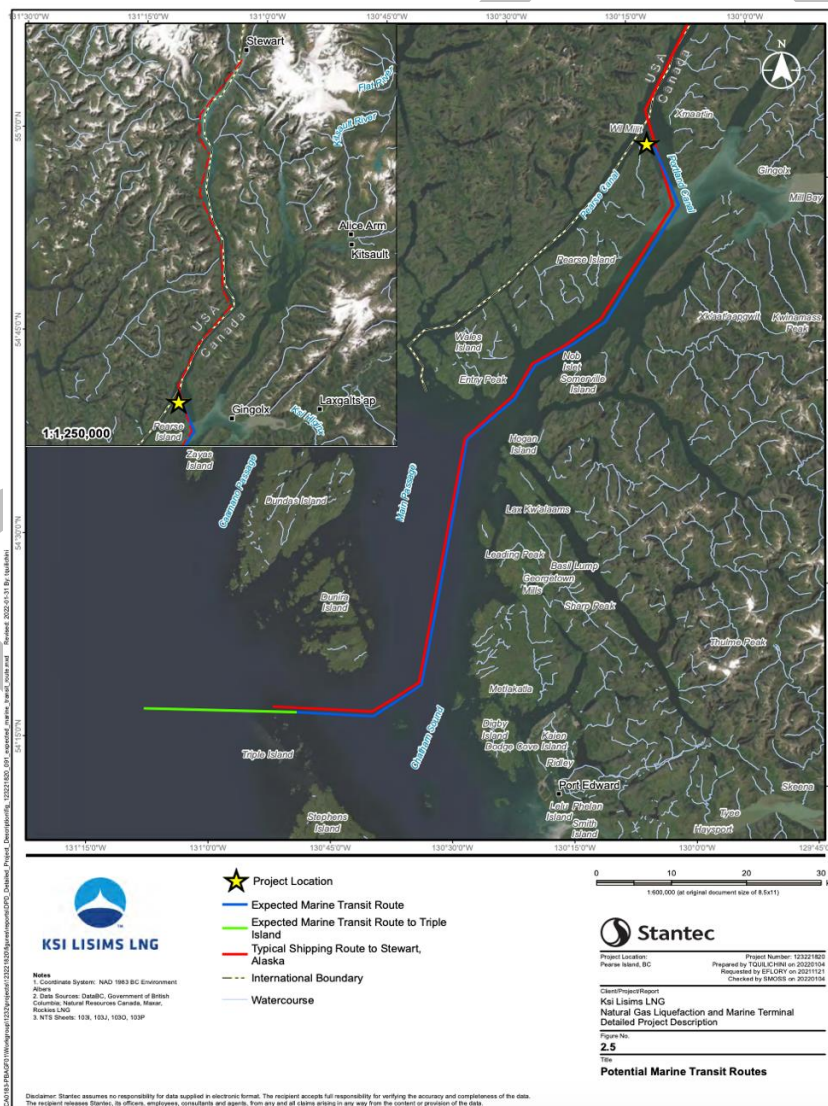
The exact length of the pipeline is still unconfirmed but is expected to be relatively short.



## Shipping Activity Associated with the Project

The estimated approximately 140 to 160 LNG carriers will access the facility annually, depending on the size of the LNG carriers and the total LNG produced by Ksi Lisims. LNG carriers will be owned, insured, and operated by third parties.

The shipping route for LNG carriers to access the facility is not yet confirmed but all LNG carriers are expected to follow the same route. The anticipated route, seen in the map below, will start at Dixon Entrance, north of Haida Gwaii. LNG Carriers will stop near Triple Island to pick up a BC Coast Pilot to assist with guiding the carrier to the Project's terminal. The route will go south of the Dundas Island group and then head north through Chatham Sound, Main Passage, Portland Inlet, and then northeast into Portland Canal.



## Next Steps

MSS and the Firelight Group will be hosting Focus Group Sessions and follow up interviews. At a later date, MSS and the Firelight Group will host Severity-Determination Sessions with Metlakatla Focus Group and interview participants to begin determining how severe potential impacts to Metlakatla First Nation Rights will be should the project be approved.

This information will be collected and used to develop a Metlakatla-led Rights Impact Assessment. Following the drafting of this assessment, a community verification meeting will be held where MSS and the Firelight Group will summarize the report findings for community members in order to ensure that all key concerns and values were accurately represented in the report.

Once the Rights Impact Assessment has been verified, the report will be finalized and provided to the BC Environmental Assessment Office to support their Environmental Assessment Decision on the Ksi Lisims Natural Gas Liquefaction and Marine Terminal Project.

## Questions?

**For additional information on the Project or focus group sessions, please contact:**

Jane Calvert  
Environmental Assessment Manager, Metlakatla Stewardship Society  
[EAManager@metlakatla.ca](mailto:EAManager@metlakatla.ca)  
250-622-2816

**Thank you for your time!**

## **METLAKATLA FIRST NATION**

### **RIGHTS IMPACT ASSESSMENT FOR THE KSI LISIMS LNG PROJECT**

#### **MARINE AND SHORELINE HARVESTING FOCUS GROUP GUIDE**

**This guide includes:**

- **Metlakatla First Nation** focus group guidelines for **Monday February 26, 2024**
- Pre-focus group interview setup
- Focus group interview questions

#### **FOCUS GROUP GUIDELINES - GENERAL**

- Speak slowly, avoid abbreviations/acronyms, do not use any scientific or technical terms.
- Allow for silence during the focus group, as appropriate.
- Keep questions simple and direct – avoid compound questions.
- Prompts are provided to help the facilitator move the conversation if it stalls. Always let participants provide responses in their own words and do not direct the conversation.
- Provide materials related to focus group to all participants at least a week in advance. These materials include:
  - Community Scoping Session Summary
  - Focus Group Participant Handout

#### **PRE-FOCUS GROUP INTRODUCTION (ESTIMATED 30 MIN)**

Before formally beginning the interview, ensure the following steps have been completed:

1. Introductions
  - Introduce yourself and the research team, who you work for, who you were hired by and who you report to.
    - Note: It is important to clearly communicate that for this focus group session you are working *for* Metlakatla First Nation, and that all information being collected will be used to help prepare a the Metlakatla-led Rights Impact Assessment which will document the effects of the Ksi Lisims Liquefied Natural Gas (also known as LNG) Project on Metlakatla First Nation's Rights and what needs to be done to protect them.



- Key points to raise during the introductions:
    - All information collected will be owned by Metlakatla First Nation.
    - Explain Firelight policy on confidentiality and anonymity of information collected (See consent form)
2. Explain the goals of the Metlakatla RIA and the purpose of the focus group.
- Our main goal today is to listen to you. We want to understand, from your perspective, how the Ksi Lisims project might impact Metlakatla's marine and shoreline harvesting practices.
  - The results from this focus group will feed into Metlakatla's own assessment of the potential impacts of the Project on Metlakatla's rights and interests. The assessment focuses on Metlakatla's values and concerns about the Project and assesses impacts using Metlakatla's own methods.
  - The assessment builds on information collected during the traditional use study, community scoping, and technical review of the proponent's EA materials.
  - The Metlakatla Rights Impact Assessment Report will be provided to Metlakatla leadership to inform their decision about the Ksi Lisims Project.
  - The Metlakatla Assessment Report will also be included in the BC Environmental Assessment Office's Assessment Report, which will be provided to provincial and federal ministers to inform their respective decisions about whether to approve the Ksi Lisims project and, if so, under what conditions.
  - Note that we are also conducting other focus groups and interviews on terrestrial harvesting, cultural continuity, community wellbeing, and stewardship and governance. All of this information will be used to assess the impacts of the Ksi Lisims project on Metlakatla's rights and interests.
  - Note that prior to the report being finalized and shared with Metlakatla leadership and the BC Environmental Assessment Office, a verification meeting will take place.
3. Explain that this focus group will take up to **4 hrs.** and remember to budget time to ensure all planned topics for the session will be covered. Let participants know that follow-up sessions and/or interviews can be arranged via Zoom video conferencing call.
4. Explain that the goal of the focus group is to collect participants' honest thoughts and perspectives based on their knowledge and experience. Our goal is to produce a rigorous assessment that can inform decision-making processes. We

will leave strategy and negotiations to others and focus on what we can confidently say based on what we know.

5. Provide an opportunity for the participants to ask questions.
  - Providing accurate answers to participants' questions is an important aspect of free, prior and informed consent.
  - Technical questions relating to the Ksi Lisims Project should only be answered if you have the necessary information.
  - Questions that you cannot answer should be directed to the community coordinator or principal investigator, as appropriate.
6. Obtain verbal consent.
  - Ensure the audio recorders are on.
  - Review the **consent form** with the participants.
  - Ask the participants if they have any questions.
  - Once the participants' questions have been answered, ask them if they give their consent, and have the participants provide their verbal consent for the recording. Please have them state their name, followed by "I consent" or "I do not consent."
  - If a participant does not provide recorded verbal consent, let them know that they are welcome to stay in the focus group, but anything they say will not be included in the report and they will not be asked to contribute input.
7. Review the Ksi Lisims Project Description using Presentation Slide Deck
  - Provide information about shipping volumes and routes during construction and operation
  - Provide information about the marine-based facility during construction and operation, including construction methods (e.g. piledriving), area of shoreline impacted, anchors, effluent (desalination, wastewater), lighting, visual changes
  - Provide information about the feed gas pipeline
  - Provide information about the transmission line
  - Show the Assessment Area

Note that all information about the Ksi Lisims Project has been provided by the proponent. [avoid answering questions about the Project that at all require you to estimate or speculate; provide factual information only]

**[10 min break]**

## **INTRODUCTION**

*[Complete the checklist and pre-interview section, above, then read the text below with recorders on at the start of each focus group.]*

Today is **Monday February 26, 2024**. We are conducting a focus group for the Metlakatla First Nation Rights Impact Assessment in relation to Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project. Thank you for coming.

My name is **[NAME]** and my co-researcher is **[NAME]**. The focus group is taking place in the **[LOCATION and COMMUNITY]**. We have explained the purpose of the assessment, described the Ksi Lisims LNG Project and outlined the focus group plan. We have gone over the consent form and will now be going around the room and having participants state their name and their verbal consent to engage in the focus group.

**The primary goal of the Metlakatla Assessment** is to predict and evaluate the Ksi Lisims Project's potential impacts on Metlakatla's rights and interests.

This focus group will focus on predicting the Ksi Lisims Project's impacts on Metlakatla's marine, shoreline and terrestrial harvesting rights. The following components of the Ksi Lisims Project will be considered:

- *Shipping Activity associated with the Ksi Lisims Project*
- *Marine-based Facility*
- *Feed gas Pipeline*
- *Transmission Line*

## **DETAILED DISCUSSION**

*Importance of the Assessment Area for Marine and Shoreline Harvesting*

- What does marine and shoreline harvesting mean to you and your community?  
*Prompts:*
  - *Can you describe the role that marine and shoreline harvesting plays in your cultural traditions and practices?*
  - *What personal memories or experiences do you associate with harvesting along the marine and shoreline areas?*
  - *How does harvesting from the sea and shoreline contribute to the identity of your community?*
  - *What is the importance of marine and shoreline harvesting for the local economy and livelihoods in your community?*

- *What kinds of knowledge and skills have been passed down through generations regarding harvesting practices?*
- *How does harvesting bring people together in your community?*
- *Can you talk about the significance of marine and shoreline resources in terms of nutrition and food security?*
- *What does the sustainable practice of marine and shoreline harvesting look like in your community?*
- *Could you share any spiritual or ceremonial aspects associated with the sea and shoreline harvesting?*
- *How do marine and shoreline harvesting activities serve as a form of education for younger generations?*
- What specific marine resources are most crucial for your community's wellbeing and cultural practices?
- What specific shoreline resources are most crucial for your community's wellbeing and cultural practices?
- In the Traditional Land Use Study and the Community Scoping Sessions, Observatory Inlet, Portland Inlet, Chatham Sound and Finalyson Island were identified as good areas for marine harvesting.
  - What makes these areas special? *[Prompts: abundance of resources, easy to access, detailed knowledge about the site, etc.]*
  - What do you harvest there?
  - Are there other key harvesting locations we have not identified in the vicinity of the Ksi Lisims Project? *[Prompts: FLNG site, pipeline area, transmission line area]*
- Shoreline harvesting sites mentioned in the Traditional Land Use Study and the Community Scoping Sessions include offshore islands, such as Tugwell Island.
  - What makes these areas special? *[Prompts: abundance of resources, easy to access, detailed knowledge about the site, etc.]*
  - What do you harvest there?
  - Are there other key harvesting locations we have not identified? *[Prompts: FLNG site, pipeline area, transmission line area]*
- What is it like to be out harvesting in these areas? How does it make you feel?
- Are there specific times of year where it is better to engage in marine and foreshore harvesting?

- If so, when?
- Can you identify specific locations that are used at different times of the year in the area near the Ksi Lisims Project?

*Marine and Shoreline Harvesting Conditions and Tolerance Thresholds*

- Think about a time when you had a good marine or shoreline harvesting trip. What factors contribute to a positive harvesting experience?
  - Do you pay attention to these conditions before going harvesting?
  - How do you know if those conditions exist?
  - What signs do you pay attention to when you are out harvesting?
- What would a bad marine or shoreline harvesting experience look like?
- What specific changes in the marine or shoreline environment would signal a significant problem or risk to your harvesting practices?
- Can you describe a situation where you had to adjust your harvesting techniques or locations due to changes in the marine or shoreline environment?

*Current Conditions, Cumulative Pressures and Change Over Time*

- Can you describe marine and shoreline harvesting conditions in the Assessment Area today? *Prompts:*
  - *Are areas such as Observatory Inlet, Portland Inlet, and Chatham Sound still good marine harvesting locations? If not, can you explain why?*
  - *Are offshore islands still good shoreline harvesting locations? If not, can you explain why?*
  - *What are the current environmental conditions like, and how do they affect your harvesting activities?*
  - *Can you share your observations on the availability of different marine resources in the area right now?*
  - *What methods or techniques are currently being used for marine harvesting, and have they evolved recently?*
  - *Are there any particular challenges that you or other harvesters are facing today?*
  - *How do current regulations and policies impact your harvesting activities?*

- *What economic factors are influencing marine harvesting conditions in the area?*
- *Has the introduction of new technologies or equipment changed the conditions for marine harvesting?*
- *Can you describe any issues related to access or harvesting rights that are affecting the community?*
- *How would you assess the health of the marine ecosystem in the Assessment Area based on your harvesting experiences?*
- *Are there any external factors, such as climate change, industrial activities, commercial fishing or tourism that you've noticed affecting the harvesting conditions?*
- *Have there been any notable successes or improvements in the conditions for marine harvesting recently?*
- How have these changes impacted:
  - *where you practice marine and foreshore harvesting?*
  - *what you harvest?*
  - *how you harvest?*
  - *your confidence in the safety of harvested resources?*
- Compared to conditions in the past, how would you rate current conditions for marine harvesting? Can you explain why you chose that rating?
  - Green – Better compared to the past.
  - Orange – Same compared to the past.
  - Red – Worse compared to the past.
- Do you feel that marine and foreshore harvesting in the Assessment Area today is meaningful or worthwhile? If not, can you explain why?

#### *Desired Future Conditions for Marine and Shoreline Harvesting*

- What are your hopes for the future of marine and shoreline harvesting in your community? *Prompts:*
  - *Do you think that specific harvesting sites in the Assessment Area will continue to be important in the future? If so, why?*

- *Imagining a future without the Ksi Lisims project, what do you anticipate will be the most pressing issues or changes affecting your marine and foreshore harvesting in the Assessment Area?*
- *What strategies do you think could be effective in addressing these issues?*
- *What kind of future do you think is desirable and possible for future generations harvesting in the Assessment Area?*

**[10 min break]**

*Project Impacts – Shipping Activity*

- **Summarize Proponent-identified impact pathways of shipping during construction and operations on VCs (air quality, noise, fish, marine mammals, marine birds, shellfish)**
- Drawing on your experience, do you anticipate that Ksi Lisims shipping activity would affect your ability to harvest in the Assessment Area?
- If so, how do you think Ksi Lisims shipping activity will cause these impacts?  
*Prompts:*
  - *Would shipping affect your ability to safely access harvesting sites (such as such as Observatory Inlet, Portland Inlet and offshore islands)?*
  - *Would shipping wake affect your ability to safely engage in harvesting activities?*
  - *Would the presence of Ksi Lisims ships affect where you fish and for how long?*
  - *Based on your experience, would Ksi Lisims project shipping pose risks to your fishing gear?*
  - *Based on your experience of marine vessel traffic elsewhere in your territory and your understanding of marine species behaviour, will project-related shipping affect the abundance of marine resources and where they are located (halibut, salmon, etc.)?*
  - *The shipping company will have to abide by Canadian shipping laws and regulations, which include measures to prevent invasive species. Based on your experience, will project shipping increase the risk of invasive species in the Assessment Area? If so, what impact might this have on marine resources?*
  - *Canadian shipping laws and regulations also include measures designed to prevent ship-related pollution. How confident are you that ship related pollution will be avoided? What are your reasons?*

- *Based on your experience and knowledge of the area, how likely is it that project shipping will result in marine mammal strikes?*
- *Would the presence of project ships change your experience while harvesting? If so, how? [noise, visual effects, wake, etc.]*
- *Are there certain time periods when impacts would be worse? [e.g. particular seasons, during limited DFO openings, etc.]*
- *Would you continue to harvest in the area in the presence of ships, or would you choose to avoid the area?*
- **What measures or strategies do you think could be implemented to mitigate the potential negative impacts of shipping on marine harvesting [considering issues of access, safety, pollution, invasive species, marine mammal strikes, underwater noise, and peaceful enjoyment while harvesting]?**

#### *Project Impacts – Marine-based Facility*

- **Summarize predicted impacts of construction and operation of the marine-based facility on pathway VCs (air quality, noise, fish, wildlife, marine birds, shellfish)**
- **Based on your experience and knowledge, do you anticipate that the marine-based facility would affect your ability to harvest in the Assessment Area?**
- **If so, how do you think Ksi Lisims Project shipping activity will cause these impacts? Prompts:**
  - *Would loss of access to the marine environment in and around the marine-based facility impact your ability to harvest marine resources in that area?*
  - *If you currently harvest resources in the vicinity of the facility, would you continue to harvest resources there during construction and operation? How far away would you stay?*
  - *Based on your knowledge and experience, would the marine-based facility affect the availability of important resources around the area (e.g., halibut, salmon, and seaweed)? [e.g. due to underwater noise, light, habitat loss, effluent]*
  - *Would you feel safe consuming harvested resources (e.g., halibut, salmon, and seaweed) from the area? [e.g. due to effluent, leaks and spills]*
  - *Do you think that the marine-based facility will change the methods you use harvest in the area (e.g., gillnetting, commercial fishing, picking)?*
  - *Would construction or operation of the marine-based facility affect your experience while harvesting in the area?*



- What strategies or measures do you suggest could be implemented to address potential negative impacts of the construction and operation of the marine-based facility on marine harvesting? [considering issues of access, safety, effluent, underwater noise, habitat loss, and the peaceful enjoyment while harvesting]

*Other Project Impacts – Feed Gas Pipeline and Power Transmission Line*

- Do you think the feed gas pipeline will affect your ability to harvest in the Study Area? How so? *Prompts:*
  - Do you think the feed gas pipeline will affect the availability of important resources (e.g., halibut, salmon, clams, shellfish) around the area?
  - Would you feel safe consuming harvested resources (e.g., halibut, salmon, seaweed, shellfish) harvested around the feed gas pipeline?
  - Do you think construction of the feed gas pipeline could restrict your ability access harvesting areas? If so, which areas?
  - Are there other areas you may be unable to access due to construction of the underwater pipeline?
- Do you think the transmission line will affect your ability to harvest in the Study Area? How so? *Prompts:*
  - Do you think the transmission line will affect the availability of important resources (e.g., halibut, seaweed, shellfish, salmon) around the area?
  - Would you feel safe consuming harvested resources (e.g., halibut seaweed, shellfish, salmon) harvested around the transmission line?
  - Are there other areas you may be unable to access due to construction of the transmission line?
- Do you think there will be any other impacts to your marine and foreshore Harvesting Rights as a result of the *Ksi Lisims* project that we haven't yet talked about?

**[10 min break]**

*Evaluating Project Impacts on Marine and Foreshore Harvesting*

- **Explain that we are now going to consider the combined impacts from all project components on marine and foreshore harvesting.**
- If the *Ksi Lisims* Project was constructed and operated, how much would this change your marine and foreshore harvesting practices in the Assessment Area in comparison with today?
  - Green – Marine and foreshore harvesting activities could continue much as they do today

- Orange – There would be some changes to marine and foreshore harvesting in the area, but harvesters would be able to adapt
- Red – Changes would be so great that marine and foreshore harvesting in the area would no longer be meaningful or worthwhile
- Provide reasons for your answer [keeping in mind issues about access, safety, availability of resources, confidence in the quality and safety of resources, and quality of experience while harvesting]
- Which aspects of the Ksi Lisims Project do you believe will have the greatest impact on harvesting practices in the assessment area?
- If your suggested measures to avoid or reduce the Ksi Lisims project's impacts on marine harvesting were implemented, would this change your ranking?
- **Show a map that displays the project footprint, LAA and RAA.**
- Looking at this map, which effects are you most concerned about in:
  - The project footprint?
  - The local assessment area?
  - The regional assessment area?
- Give reasons for your answers.
- How long do you think the Ksi Lisims Project's impacts on marine and shoreline harvesting last for?
  - Only during construction
  - During construction and operation
  - During construction, operation and decommissioning
  - The effects would linger even after the Ksi Lisims Project ends
  - Would impacts be felt by more than one generation?
- Give reasons for your answer
- Would some groups of Metlakatla people feel the effects of Ksi Lisims Project impacts on marine harvesting the most? If so, which groups?
- Give reasons for your answers.

**a. Wrap-up**

- Do you have any other concerns about impacts to your Harvesting Rights as a result of the project?
- Are there any other important places or species that we did not talk about today that you think are important?
- Do you have any final comments or concerns about how this project relates to your Harvesting Rights?

\*\*\*\*\* END OF FOCUS GROUP SESSION: HARVESTING \*\*\*\*\*

**2. CONCLUSION**

*Read with audio & video recorders on after every session.*

Today is [Monday February 26, 2024]. We have just finished a focus group with [participant name(s)] for the Metlakatla First Nation Rights Impact Assessment for the Ksi Lisims Project. Thank you for coming.

My name is [NAME] and my co-researcher is [NAME] and we have completed the focus group in [LOCATION].

Notes are recorded in/on [NAME]'s computer. This focus group has taken approximately [#] hours [#] minutes.

## **METLAKATLA FIRST NATION**

### **RIGHTS IMPACT ASSESSMENT FOR THE KSI LISIMS PROJECT**

#### **CULTURAL CONTINUITY FOCUS GROUP GUIDE**

**This guide includes:**

- **Metlakatla First Nation** focus group guidelines for Tuesday, February 27, 2024
- Pre-focus group interview setup
- Focus group interview questions

#### **FOCUS GROUP GUIDELINES - GENERAL**

- Speak slowly, avoid abbreviations/acronyms, do not use any scientific or technical terms.
- Allow for silence during the focus group, as appropriate.
- Keep questions simple and direct – avoid compound questions.
- Provide materials related to focus group at least a week in advance. These materials include:
  - Community Scoping Session Summary
  - Focus Group Participant Handout

#### **PRE-FOCUS GROUP INTRODUCTION (ESTIMATED 30 MINUTES)**

Before formally beginning the interview, ensure the following steps have been completed:

##### **2. Introductions**

- Introduce yourself and the research team, who you work for, who you were hired by and who you report to.
  - **Note:** It is important to clearly communicate that for this focus group session you are working for Metlakatla First Nation, and that all information being collected will be used to prepare a the Metlakatla-led Rights Impact Assessment which will document the effects of the Ksi Lisims Project on Metlakatla First Nation's Rights.
- Key points to raise during the introductions:
  - All information collected will be owned by Metlakatla First Nation.
  - Explain Firelight's policy on confidentiality and anonymity of information collected (see consent form).

3. Explain the goals of the Metlakatla RIA and the purpose of the focus group.
  - Our main goal today is to listen to you. We want to understand, from your perspective, how the Ksi Lisims project might impact your cultural continuity—that is, how you keep your cultural traditions, language, and practices alive and thriving for future generations.
  - Your views are really important because they will help others understand the importance of your way of life and how this project could affect it. We're here to listen and to make sure your voices are heard in this process.
  - The results from this focus group will feed into Metlakatla's own assessment of the potential impacts of the project on Metlakatla's rights and interests. The assessment focuses on Metlakatla's values and concerns about the project and assesses impacts using Metlakatla's own methods.
  - The assessment builds on information collected during the TUS, community scoping held on November 29, 2023, and technical review of the proponent's EA materials.
  - The Metlakatla Rights Impact Assessment Report will be provided to Metlakatla leadership to inform their decision about the project.
  - The Metlakatla Assessment Report will also be included in the BC Environmental Assessment Office's Assessment Report, which will be provided to provincial and federal ministers to inform their respective decisions about whether to approve the project and, if so, under what conditions.
  - Note that we are also conducting other focus groups and interviews on marine harvesting, terrestrial harvesting, community wellbeing, and stewardship and governance. All of this information will be used to assess the impacts of the project on Metlakatla's rights and interests.
  - Note that prior to the report being finalized and shared with Metlakatla leadership and the EAO, a verification meeting will take place.
4. Give the participants a brief overview of the focus group plan.
  - The focus group has four parts.
  - First, we will provide a brief background on the project so that you are familiar with its main components and activities.
  - Second, we'll ask you to describe what culture means to Metlakatla and any current pressures that you experience on your ability to stay connected to your culture in the area.

- Third, we'll ask you to consider how the Ksi Lisims project could impact Metlakatla's culture.
  - Fourth, we'll ask you to evaluate the Ksi Lisims project's overall potential impacts on Metlakatla culture. This will include ranking the anticipated amount of change from current conditions, and estimating how long the impacts could last for.
5. Explain that this focus group will take up to **4 hours (inclusive of breaks)**. Remember to budget time to ensure all planned topics for the session will be covered. Let participants know that follow-up sessions and/or interviews can be arranged via Zoom video conferencing call.
  6. Explain that the goal of the focus group is to collect participants' honest thoughts and perspectives based on their knowledge and experience. Our goal is to produce a rigorous assessment that can inform decision-making processes. We will leave strategy and negotiations to others and focus on what we can confidently say based on what we know.
    - Provide an opportunity for the participants to ask questions.
      - Providing accurate answers to participants' questions is an important aspect of free, prior and informed consent.
      - Technical questions relating to the project should only be answered if you have the necessary information.
      - Questions that you cannot answer should be directed to the community coordinator or principal investigator, as appropriate.
    - Obtain verbal consent.
      - Ensure the audio recorders are on.
      - Review the **consent form** with the participants.
      - Ask the participants if they have any questions.
      - Once the participants' questions have been answered, ask them if they give their consent, and have the participants provide their verbal consent for the recording. Please have them state their name, followed by "I consent" or "I do not consent."
      - If a participant does not provide recorded verbal consent, let them know that they are welcome to stay in the focus group, and that what they say will not be included in the report and they will not be asked to contribute input.
  7. Review the Ksi Lisims Project Description using Presentation Slide Deck

- Provide information about shipping volumes and routes during construction and operation.
- Provide information about the marine-based facility during construction and operation, including construction methods (e.g. piledriving), area of shoreline impacted, anchors, effluent (desalination, wastewater), lighting, visual changes.
- Provide information about the feed gas pipeline.
- Provide information about the transmission line.
- Show the Assessment Area.
- Note that all information about the Ksi Lisims project has been provided by the proponent. [avoid answering questions about the Project that, at all, require you to estimate or speculate; only provide factual information]

**[10-minute break]**

## **INTRODUCTION**

*[Complete the checklist and pre-interview section, above, then read the text below with recorders on at the start of each interview.]*

Today is **February 27, 2024**. We are conducting a focus group for the Metlakatla First Nation Rights Impact Assessment in relation to Ksi Lisims Floating Liquefied Natural Gas Liquefaction and Marine Terminal Project. Thank you for coming.

My name is **[NAME]** and my co-researcher is **[NAME]**. The focus group is taking place in the **[LOCATION]**. The Metlakatla First Nation members participating in this focus group are **[participant name(s)]**. They have read and signed the consent form. We have explained the purpose of the study and the focus group plan.

**Primary goal:** To document Metlakatla's members' knowledge related to how the exercise of their Indigenous rights within the Assessment Area has changed over time, and how the components of the Ksi Lisims Project could affect Metlakatla's rights.

This focus group will focus on the following components of the Ksi Lisims Project:

- *Project Infrastructure (e.g., land-based and water-based facilities)*
- *Project Activities (e.g., increased shipping activity)*

This focus group will focus on the following rights:

- *Cultural Continuity*

The following elements of cultural continuity will be discussed:

- *Identity*
- *Language*
- *Sense of Place*

- *Spirituality and Ceremony*
- *Knowledge Transmission*
- *Cultural Keystone Species: Orca*

## **DETAILED DISCUSSION OF RESEARCH QUESTIONS**

*First, locate the appropriate questions for the Nation's rights that are the focus of this session, and then proceed with the questions and discussion.*

### *Cultural Continuity Context*

#### *Importance of the Assessment Area for Cultural Continuity*

- Can you share what aspects of your culture are most important to you and your community, and why they matter?
- Could you tell us what keeping your culture alive means to you and the people in your community?
- Can you tell us about the importance of the Assessment Area to Metlakatla culture?

#### *Prompts:*

- *Could you describe some of your community's cultural traditions or activities that take place in the Assessment Area? [probe especially for traditions other than, or in addition to marine and shoreline harvesting]*
- *Are there stories or teachings that specifically mention areas within the Assessment Area that you could share with us?*
- *Are there particular places within the Area that hold special meaning for your community? What are these places, and what do they mean to you?*
- *Are there any spiritually significant species that occur in the Assessment Area? If so, what are they and why are they important to Metlakatla?*
- *Are there specific cultural ceremonies, rituals, or practices that can only take place within this Area? What makes this place special for these activities?*
- *What resources from the Assessment Area are used in cultural practices? How are these resources gathered and managed?*
- *Are there particular times of the year that are significant for your cultural practices in the Assessment Area? What environmental or social conditions are necessary during these times?*



- *How do the elders or knowledge keepers in your community use the Assessment Area to teach about your culture?*
- *Do you speak Sm'álg yax when you are out on the land/waters in the Assessment Area? Are there any important place names in the Assessment Area in your language?*
- *How do you feel when you are out on the land in the Assessment Area? Do you feel a spiritual or emotional connection to the Assessment Area? Can you describe this connection?*

#### *Cultural Continuity Conditions and Tolerance Thresholds*

- Think of a time when you had a really good cultural experience in the Assessment Area. What was it? What factors contributed to the positive experience?
  - Do you pay attention to these conditions before going out to engage in [mentioned activity]?
  - How do you know if those conditions exist?
  - What signs do you pay attention to when you are out engaging in [mentioned activity]?
- What would a bad cultural experience in the Assessment Area look like?
  - Can you describe a specific event or time when you felt that a cultural practice was negatively impacted in the Assessment Area? What happened?
  - What factors do you think contributed to this bad experience?
  - Did you need to change how you engage in these cultural practices as a result of this experience?
- What specific changes in the Assessment Area would signal a significant problem or risk to your cultural and spiritual practices? [Probe for why these changes would pose a risk]

#### *Prompts:*

- *Are there any particular species of plants or animals that, if affected, would disrupt your cultural practices?*
- *How do changes in the environment, like noise or pollution, affect your cultural and spiritual activities?*
- *How does the presence of outsiders in the Assessment Area impact your ability to engage in cultural practices?*

- *Are there any particular times of the year when the impact of these changes would be felt the most?*
- *Could you describe how the community reacts when cultural sites or resources are disturbed or damaged?*

*Current Conditions, Cumulative Pressures, and Changes Over Time*

- How well do the current conditions in the Assessment Area support the practice of your cultural, ceremonial, and spiritual activities? Can you share how these conditions affect your ability to carry out these practices?

*Prompts:*

- *What changes, if any, have you noticed in the Assessment Area that have affected your cultural practices?*
- *Could you describe any recent experiences where environmental or human-made changes in the Assessment Area affected your cultural or spiritual practices?*
- *In terms of access, how easy is it for community members to reach important sites for cultural activities within the Assessment Area?*
- *Has the availability of important resources, such as plants, animals, or materials needed for ceremonies, changed in the Assessment Area? Are these resources still readily available and accessible?*
- *In terms of peace and quiet, how would you describe the current state of the Assessment Area? Are there any disruptions or noises that affect your ceremonial activities?*
- *How has the presence of outsiders or tourists in the Assessment Area affected your cultural practices?"*
- *How adequate are the spaces for learning and cultural transmission?*
- *How do the current policies or management strategies of the Assessment Area impact your ability to practice your cultural and spiritual activities?*
- *How has your community adapted to these changes?*
- *Have there been any notable successes or improvements in the conditions for cultural continuity recently?*
- Have these changes in the Assessment Area impacted:
  - *where you engage in cultural practices?*

- *what* cultural practices you can engage in?
- *how* you engage in cultural practices?
- Compared to conditions in the past, how would you rate current conditions for cultural continuity? Can you explain why you chose that rating?
  - Green – Better, compared to the past.
  - Orange – Same, compared to the past.
  - Red – Worse, compared to the past.

### *Desired Future Conditions*

- How do you envision the role of the Assessment Area in maintaining your culture for future generations? What needs to be protected or enhanced to ensure this?

#### *Prompts:*

- *Do you think that [specific cultural sites/teaching sites] in the Assessment Area will continue to be important in the future? If so, why?*
- *Looking ahead, what do you anticipate will be the most pressing issues or changes affecting cultural continuity?*
- *What strategies do you think could be effective in addressing these issues?*
- *What kind of future do you think is desirable and possible for cultural continuity for future generations in the Assessment area?*

**[15-minute break]**

### *Project Impacts to Cultural Continuity*

#### *Project Impacts – Shipping Activity*

#### **Summarize Proponent-identified impact pathways of shipping during construction and operations on VCs (noise, air quality, marine traffic).**

- Drawing on your experience, do you anticipate that project shipping activity would affect your ability to practice your cultural continuity in the Assessment Area? How so?

*Prompts:*

- How might an increase in ship traffic affect the availability or condition of resources you use for cultural ceremonies?
- In what ways do you think the noise or movement from ships could interfere with your cultural or spiritual gatherings?
- Are there concerns about the impact of light or noise pollution from ships on the night-time or early morning cultural practices that require a certain ambiance or setting?
- Could the disturbance from shipping operations affect the ability to hold cultural camps or workshops that are essential for passing on traditional knowledge?
- How could increased shipping activity impact the quiet and concentration needed for storytelling and passing down knowledge in the Assessment Area?
- Are there any particular times of year or seasonal practices that might be more affected by shipping activity?
- Are there places within the Assessment Area traditionally used for teaching that might become less accessible or usable due to shipping?
- Could you discuss whether the presence of ships could interrupt the teaching of land- and water-based skills that are part of your culture?
- Do you have concerns about the impact of shipping on sacred sites within the Assessment Area? Can you elaborate on these concerns?
- How would increased interaction with non-community members, as a result of shipping, potentially affect your cultural practices?
- In what ways might the visual presence of ships impact your cultural connection to the landscape and the stories it holds?
- Would the increase in shipping activity affect the feeling of solitude or spiritual retreat that the Assessment Area currently provides?
- Can you discuss any concerns about the physical safety of community members engaging in cultural practices near the shipping routes?
- How might shipping affect places where your community gathers to speak and teach your language?
- Are there ways in which the community might adjust cultural activities to accommodate changes brought by shipping activities? What might these adjustments look like? [Probe for avoidance].

- Have you observed any changes already in the Assessment Area due to existing shipping or other industrial activities that could be similar to what might happen with this project?
- What measures or strategies do you think could be implemented to mitigate the potential negative impacts of shipping on cultural activities?

*Project Impacts – Marine- and Land-based Facility and other Project Infrastructure*

**Summarize Proponent-identified impact pathways of the floating LNG processing facility during construction and operations on VCs (noise, air quality, water quality).**

- Based on your experience and knowledge, do you anticipate that the marine- or land-based facility would affect your cultural continuity in the Assessment Area?
- If so, how do you think Ksi Lisims marine- or land-based facility will cause these impacts?
- *Prompts:*
  - *Is there anything unique or special about the location of the floating LNG facility from a cultural perspective? [Probe for sacred areas, teaching areas, cultural resources]*
  - *Can you describe how the construction phase of the floating LNG facility might affect the locations where cultural practices are held?*
  - *In terms of environmental changes that the LNG facility might bring, what are the potential impacts on the resources used in your cultural ceremonies and practices?*
  - *How might the visual presence of a floating LNG facility in the Assessment Area influence your traditional cultural practices?*
  - *Are there particular sounds, smells, or other sensory aspects associated with your cultural practices that might be affected by the LNG facility?*
- What strategies or measures do you suggest could be implemented to address potential negative impacts of the construction and operation of the marine-based facility on cultural continuity?

*Project Impacts – Other*

- Do you think there will be any other impacts to your cultural continuity as a result of the Project that we haven't yet talked about?

**[15-minute break]**

## *Evaluating Project Impacts on Cultural Continuity*

### **Explain that we are now going to consider the combined impacts from all project components on cultural continuity.**

- We'd like to understand your views on how the project's construction and operation might change cultural practices here. We'll use a colour system to describe the extent of these changes:
  - Green – Cultural activities could continue much as they do today in the Assessment Area.
  - Orange – There would be some changes to cultural activities in the Assessment Area, but community members would be able to adapt.
  - Red – Changes would be so great that it would no longer be possible to carry out cultural activities in the Assessment Area.
- Please indicate which colour best represents your feelings about the potential changes and explain your choice?
- Which aspects of the project do you believe will have the greatest impact on Metlakatla First Nation Cultural Continuity Rights?
- If the measures to avoid or reduce the project's impacts on cultural continuity that we discussed earlier were implemented, would this change your ranking?

### **Show a map that displays the project footprint, LAA and RAA.**

- Looking at this map, which effects are you most concerned about in:
  - The project footprint?
  - The local assessment area?
  - The regional assessment area?
- Give reasons for your answers.
- How long do you think the Ksi Lisims project's impacts on cultural continuity would last for?
  - Only during construction
  - During construction and operation
  - During construction, operation and decommissioning
  - The effects would linger even after the Ksi Lisims Project ends
  - Impacts would be felt by more than one generation

- Give reasons for your answer.
- Would some groups of Metlakatla people feel the effects of Ksi Lisims Project impacts on cultural continuity the most? If so, which groups?
- Give reasons for your answers.

*Wrap-up*

- Do you have any other concerns about impacts of the Ksi Lisims project on your culture?
- Are there any other important places that we did not talk about today that you think are important?
- Do you have any final comments or concerns about how this project relates to your cultural continuity rights?

\*\*\*\*\* END OF FOCUS GROUP SESSION: CULTURAL CONTINUITY \*\*\*\*\*

#### **4. CONCLUSION**

*Read with audio & video recorders on after every session.*

Today is **February 27, 2024**. We have just finished a focus group with **[participant name(s)]** for the Metlakatla First Nation Rights Impact Assessment for the Ksi Lisims Project. Thank you for coming.

My name is **[NAME]** and my co-researcher is **[NAME]** and we have completed the focus group in **[LOCATION]**.

Notes are recorded in/on **[NAME]**'s computer. This focus group has taken approximately **[#] hours [#] minutes**.

## **METLAKATLA FIRST NATION**

### **RIGHTS IMPACT ASSESSMENT FOR THE KSI LISIMS PROJECT**

#### **COMMUNITY WELLBEING FOCUS GROUP GUIDE**

**This guide includes:**

- **Metlakatla First Nation** focus group guidelines for February 28, 2024
- Pre-focus group interview setup
- Focus group interview questions

#### **FOCUS GROUP GUIDELINES - GENERAL**

- Speak slowly, avoid abbreviations/acronyms, do not use any scientific or technical terms.
- Allow for silence during the focus group, as appropriate.
- Keep questions simple and direct – avoid compound questions.
- Provide materials related to focus group at least a week in advance. These materials include:
  - Community Scoping Session Summary
  - Focus Group Participant Handout

#### **PRE-FOCUS GROUP INTRODUCTION (ESTIMATED 30 MINUTES)**

Before formally beginning the interview, ensure the following steps have been completed:

8. Introductions
  - Introduce yourself and the research team, who you work for, who you were hired by and who you report to.
    - Note: It is important to clearly communicate that for this focus group you are working for Metlakatla First Nation, and that all information being collected will be used to prepare a Metlakatla-led Rights Impact Assessment which will document the effects of the project on Metlakatla First Nation's Rights.
  - Key points to raise during the introductions:
    - All information collected will be owned by Metlakatla First Nation.
    - Explain Firelight's policy on confidentiality and anonymity of information collected (see consent form).
8. Explain the goals of the Metlakatla RIA and the purpose of the focus group.



- Our main goal today is to listen to you. We want to understand, from your perspective, how the Ksi Lisims project might impact Metlakatla's community wellbeing — that is, Metlakatla members' physical health, mental and emotional health, social cohesion and support, personal safety and security, and livelihood and economic development.
  - Your views are really important because they will help others understand the importance of your way of life and how this project could affect it. We're here to listen and to make sure your voices are heard in this process.
  - The results from this focus group will feed into Metlakatla's own assessment of the potential impacts of the project on Metlakatla's rights and interests. The assessment focuses on Metlakatla's values and concerns about the project and assesses impacts using Metlakatla's own methods.
  - The assessment builds on information collected during the TUS, community scoping held on November 29, 2023 and technical review of the proponent's EA materials.
  - The Metlakatla Rights Impact Assessment Report will be provided to Metlakatla leadership to inform their decision about the project.
  - The Metlakatla Assessment Report will also be included in the BC Environmental Assessment Office's Assessment Report, which will be provided to provincial and federal ministers to inform their respective decisions about whether to approve the project and, if so, under what conditions.
  - Note that we are also conducting other focus groups and interviews on marine harvesting, terrestrial harvesting, cultural continuity, and stewardship and governance. All of this information will be used to assess the impacts of the project on Metlakatla's rights and interests.
  - Note that prior to the report being finalized and shared with Metlakatla leadership and the EAO, a verification meeting will take place.
9. Give the participants a brief overview of the focus group plan.
- The focus group has four parts.
  - First, we will provide a brief background on the project so that you are familiar with its main components and activities.
  - Second, we'll ask you to describe what community wellbeing means to Metlakatla, and any current pressures that you experience on community wellbeing.
  - Third, we'll ask you to consider how the Ksi Lisims project could impact Metlakatla's community wellbeing.

- Fourth, we'll ask you to evaluate the Ksi Lisims project's overall potential impacts on Metlakatla community wellbeing. This will include ranking the anticipated amount of change from current conditions, and estimating how long the impacts could last for.
10. Explain that this focus group will take approximately **4 hours (inclusive of breaks)**. Remember to budget time to ensure all planned topics for the session will be covered. Let participants know that follow-up sessions and/or interviews can be arranged via Zoom video conferencing call.
11. Explain that the goal of the focus group is to collect participants' honest thoughts and perspectives based on their knowledge and experience. Our goal is to produce a rigorous assessment that can inform decision-making processes. We will leave strategy and negotiations to others and focus on what we can confidently say, based on what we know.
- Provide an opportunity for the participants to ask questions.
    - Providing accurate answers to participants' questions is an important aspect of free, prior and informed consent.
    - Technical questions relating to the project should only be answered if you have the necessary information.
    - Questions that you cannot answer should be directed to the community coordinator or principal investigator, as appropriate.
12. Obtain verbal consent.
- Ensure the audio recorders are on.
  - Review the **consent form** with the participants.
  - Ask the participants if they have any questions.
  - Once the participants' questions have been answered, ask them if they give their consent, and have the participants provide their verbal consent for the recording. Please have them state their name, followed by "I consent" or "I do not consent."
  - If a participant does not provide recorded verbal consent, let them know that they are welcome to stay in the focus group, and that what they say will not be included in the report and they will not be asked to contribute input.
13. Review the Ksi Lisims Project Description using Presentation Slide Deck
- Provide information about shipping volumes and routes during construction and operation.

- Provide information about the marine-based facility during construction and operation, including construction methods (e.g. piledriving), area of shoreline impacted, anchors, effluent (desalination, wastewater), lighting, visual changes.
- Provide information about the feed gas pipeline.
- Provide information about the transmission line.
- Show the Assessment Area.
- Note that all information about the Ksi Lisims project has been provided by the proponent. [avoid answering questions about the project that, at all, require you to estimate or speculate; only provide factual information]

## INTRODUCTION

[Complete the checklist and pre-interview section, above, then read the text below with recorders on at the start of each interview.]

Today is **February 28, 2024**. We are conducting a focus group for the Metlakatla First Nation Rights Impact Assessment in relation to Ksi Lisims Floating Liquefied Natural Gas Liquefaction and Marine Terminal Project. Thank you for coming.

My name is **[NAME]** and my co-researcher is **[NAME]**. The focus group is taking place in the **[LOCATION]**. We have explained the purpose of the assessment, described the project and outlined the focus group plan. We have gone over the consent form and will now be going around the room and having participants state their name and their verbal consent to engage in the focus group.

**The primary goal of the Metlakatla Assessment** is to predict and evaluate the project's potential impacts on Metlakatla's community wellbeing rights.

This focus group will focus on the following components of the Ksi Lisims project:

- *Project Activities (i.e., Shipping)*
- *Project Infrastructure (i.e., Marine-based and Land-based Facilities)*
- *Project Workforce*

This focus group will focus on the following rights:

- *Community Wellbeing*

The following elements of community wellbeing will be discussed:

- *Physical Health*
- *Mental and Emotional Health*
- *Social Cohesion and Support*
- *Personal Safety and Security*
- *Livelihood and Economic Development*

## DETAILED DISCUSSION OF RESEARCH QUESTIONS

*First, locate the appropriate questions for the Nation's rights that are the focus of this session, and then proceed with the questions and discussion.*

*Community Wellbeing Context*

*Importance of Assessment Area for Community Wellbeing:*

- What does community wellbeing mean to you and your community?

*Prompts:*

- *Can you describe the key elements that contribute to a good quality of life in your community?*
- *How do you define health and happiness in the context of your community's traditions and values?*
- *What roles do family, kinship, and community relationships play in your sense of collective wellbeing?*
- *How important is the connection to the land and environment for the wellbeing of your community? [Probe for connection to the Assessment Area]*
- *Could you share any traditional practices that your community believes are important for maintaining mental, physical, and spiritual health?*
- *In what ways does your community come together to support one another in times of need?*
- *Can you talk about any community-led initiatives or programs that have positively impacted the wellbeing of your community?*
- *How do external factors, such as policies or economic conditions, impact the overall wellbeing of your community?*
- *What does it mean for your community to thrive, not just survive, and what conditions help make this possible?*

#### *Conditions and Tolerance Thresholds*

- How does the community ensure access to healthy foods and physical activity?
- How do environmental conditions in the Assessment Area impact the physical health of community members?
- How accessible is healthcare in your community, and how does this affect your physical health?
- What resources are available for those who may be experiencing mental or emotional challenges?
- What does meaningful and fulfilling employment mean to you? Can this be achieved within Metlakatla territory?

- What opportunities exist for personal and economic growth within your community?
- Can you share how safe you feel in the community on a daily basis? What factors contribute to that feeling?
- What improvements would you like to see to increase the sense of security within the community?
- Can you describe a situation where a change in the community went from being manageable to being challenging? What made the difference?
- What are your thoughts on the balance between economic development and the preservation of cultural values? Is there a point at which economic growth could compromise cultural integrity?
- In terms of social cohesion, what kind of changes enhance community bonds? What changes have the potential to weaken these bonds?
- In terms of mental and emotional health, what specific events or situations have historically tested the community's resilience? How were these situations addressed?
- What are clear signs that the community's social support systems are being overstretched? How should the community respond to bolster these systems?
- Regarding personal safety, what specific changes in the community have led to increased concerns about safety? What measures were taken to restore a sense of security?
- What changes in physical health services or resources could the community tolerate without a significant impact on wellbeing?

### *iii. Current Conditions, Cumulative Pressures and Changes Over Time*

- Can you describe the current conditions of community wellbeing today?

*Prompts:*

- *How would you characterize the overall physical health of community members?*
- *How would you characterize the overall mental and emotional health of community members?*
- *What do you see as the biggest barriers to maintaining good health in the community right now?*

- *Are you able to access health resources (such as health centres, doctors, hospitals, mental health supports) as much and as easily as you'd like?*
- *How would you characterize the social cohesion and sense of community support among community members today?*
- *How accessible are educational and economic opportunities for the majority of community members?*
- *Reflecting on the past decade, what changes have you observed in community wellbeing, for better or worse?*
- *What role have external factors like major projects, government policies, economic shifts, or environmental changes played in the wellbeing of the community?*
- *How has the community come together to address wellbeing challenges, and what strategies have been most effective?*
- **Compared to conditions in the past, how would you rate current conditions for community wellbeing? Can you explain why you chose that rating?**
  - Green – Better, compared to the past.
  - Orange – Same, compared to the past.
  - Red – Worse, compared to the past.

#### *iv. Desired Future*

- **What are your hopes for the future of community wellness?**

##### *Prompts:*

- *When you envision good physical health, what does this look like?*
- *When you envision good mental and emotional health, what does this look like?*
- *What health services and resources would you like to see that are not currently available and/or reliable?*
- *What sort of community-based activities and gatherings would you like to see in the future?*
- *What sort of community-based supports would you like to see in the future?*

- *When you envision feeling safe and secure within Metlakatla territory, what does this look like?*
- *What would be your ideal form of livelihood? How do you envision participating in this?*
- Looking ahead, what do you anticipate will be the most pressing issues or changes affecting community wellbeing?
- What strategies do you think could be effective in addressing these issues?

**[15-minute break]**

*Project Impacts to Community Wellbeing*

**Summarize Proponent-identified impact pathways during construction and operations on VCs (air quality, noise, human health).**

- Drawing on your experience, do you anticipate that the construction and operation of the Ksi Lisims project will affect community wellbeing in the Assessment Area? How so?

*Prompts:*

- *Could the construction activities or the presence of the LNG facility change your daily routines or access to outdoor activities, affecting your physical health?*
- *Do you anticipate that consuming resources harvested near the project would pose a risk to your health?*
- *Would you change how much resources harvested from the Assessment area you consume?*
- *How does the prospect of an LNG facility and associated shipping make you feel, from an emotional perspective?*
- *Would increased activity levels due to the project, influence your feelings of peace or stress?*
- *If project activities caused you to change how you use the Assessment Area, would there be any knock-on effects for your relationships with family, friends and elders?*
- *Would shipping impact your physical health? How so?*



- *Would changes in the air quality, visual surroundings or sounds affect your experience being outdoors?*
- *Do you anticipate any changes to the quality of country foods you consume due to shipping?*
- *Would the Ksi Lisims project impact your ability to derive an economic livelihood from the Assessment Area? How so?*
- *Are there certain time periods when impacts would be worse (e.g., particular seasons)?*

***Summarize proponent-identified impact pathways during construction and operations on VCs (infrastructure and services, employment and economy, community health and wellness).***

- *Based on your experiences, do you think the presence of a project workforce will impact your community wellbeing? How so?*

*Prompts:*

- *What effects do you think the increased population will have on the availability and quality of community services, such as healthcare, education, and public spaces?*
- *How do you anticipate the demand for housing and local infrastructure (like roads, schools, healthcare) to change with the population influx due to the project?*
- *How do you think the arrival of new workers, or the creation of new job opportunities could affect community bonds and support networks?*
- *With the anticipated increase in population due to the project, what concerns, if any, do you have regarding the safety and wellbeing of Indigenous women and girls in the community? How might these concerns be addressed?*
- *How do you anticipate the increase in population from the project might affect local traffic conditions and transportation infrastructure?*
- *What types of job opportunities do you expect the project to create within the community? Who do you think will benefit the most from these opportunities?*
- *Are there concerns about these economic changes affecting local traditions or economies?*
- *How do you anticipate the construction and operation of the project will affect the overall cost of living in the community?*

- *Do you foresee any positive impacts on the local economy from the project?*
- What strategies or measures do you suggest could be implemented to address potential negative impacts of the project workforce on community wellbeing?
- Do you think there will be any other impacts to community wellbeing as a result of the Ksi Lisims project that we haven't yet talked about?

**[15-minute break]**

*Evaluating Project Impacts on Community Wellbeing*

***Explain that we are now going to consider the combined impacts from all project components on community wellbeing.***

- We'd like to understand your views on how the project's construction and operation might change community wellbeing here. We'll use a colour system to describe the extent of these changes.
  - Green – Community wellbeing would be similar to what it is today.
  - Orange – There would be some changes to community wellbeing, but community members would be able to adapt.
  - Red – Changes would be so great that community wellbeing would be irrevocably changed.
- Please indicate which colour best represents your feelings about the potential changes and explain your choice?
- Which aspects of the project do you believe will have the greatest impact on community wellbeing?
- If the measures to avoid or reduce the project's impacts on community wellbeing that we discussed earlier were implemented, would this change your ranking?

***Show a map that displays the project footprint, LAA and RAA.***

- Looking at this map, which effects are you most concerned about in:
  - The project footprint?
  - The local assessment area?
  - The regional assessment area?

- Give reasons for your answers.
- How long do you think the Ksi Lisims Project's impacts on community wellbeing would last for?
  - Only during construction
  - During construction and operation
  - During construction, operation and decommissioning
  - The effects would linger even after the Ksi Lisims Project ends
  - Impacts would be felt by more than one generation
- Give reasons for your answer.
- Would some groups of Metlakatla people feel the effects of Ksi Lisims project impacts on community wellbeing more than others? If so, which groups?
- Give reasons for your answers.

**Wrap-up**

- Do you have any other concerns about impacts to community wellbeing as a result of the project?
- Do you have any final comments or concerns about how this project relates to community wellbeing?

\*\*\*\*\* END OF FOCUS GROUP SESSION: COMMUNITY WELLBEING \*\*\*\*\*

**CONCLUSION**

*Read with audio & video recorders on after every session.*

Today is **February 28, 2024**. We have just finished a focus group with **[participant name(s)]** for the Metlakatla First Nation Rights Impact Assessment for the Ksi Lisims Project. Thank you for coming.

My name is **[NAME]** and my co-researcher is **[NAME]** and we have completed the focus group in **[LOCATION]**.

Notes are recorded in/on **[NAME]**'s computer. This focus group has taken approximately **[#] hours [#] minutes**.

## METLAKATLA FIRST NATION

### RIGHTS IMPACT ASSESSMENT FOR THE KSI LISIMS PROJECT

#### STEWARDSHIP AND GOVERNANCE INTERVIEW GUIDE

This guide includes:

- **Metlakatla First Nation** interview guide for **[DATE]**
- Pre-focus group interview setup
- Interview questions

#### INTERVIEW GUIDELINES - GENERAL

- Speak slowly, avoid abbreviations/acronyms, do not use any scientific or technical terms.
- Allow for silence during the focus group, as appropriate.
- Keep questions simple and direct – avoid compound questions.
- Provide materials related for interview at least a week in advance. These materials include:
  - Community Scoping Session Summary
  - Interview Participant Handout

#### PRE-INTERVIEW GROUP INTRODUCTION (ESTIMATED 30 MINUTES)

Before formally beginning the interview, ensure the following steps have been completed:

- Introductions
  - Introduce yourself and the research team, who you work for, who you were hired by and who you report to.
    - Note: It is important to clearly communicate that for this focus group session you are working *for* Metlakatla First Nation, and that all information being collected will be used to prepare a the Metlakatla-led Rights Impact Assessment which will document the effects of the Project on Metlakatla First Nation's Rights.
  - Key points to raise during the introductions:
    - All information collected will be owned by Metlakatla First Nation.
    - Explain Firelight policy on confidentiality and anonymity of information collected (See consent form)

14. Explain the goals of the Metlakatla RIA and the purpose of the focus group.

- Our main goal today is to listen to you. We want to understand, from your perspective, how the Ksi Lisims project might impact Metlakatla's [stewardship and/or governance practices] — that is, how it could affect [Metlakatla's ability to manage and protect lands, waters, and natural resources according to its traditions and laws, and/or how it might influence your community's decision-making processes and authority over these areas].
  - The results from this focus group will feed into Metlakatla's own assessment of the potential impacts of the Project on Metlakatla's rights and interests. The assessment focuses on Metlakatla's values and concerns about the Project and assesses impacts using Metlakatla's own methods.
  - The assessment builds on information collected during the traditional use study, community scoping, and technical review of the proponent's EA materials.
  - The Metlakatla Rights Impact Assessment Report will be provided to Metlakatla leadership to inform their decision about the Project.
  - The Metlakatla Assessment Report will also be included in the BC Environmental Assessment Office's Assessment Report, which will be provided to provincial and federal ministers to inform their respective decisions about whether to approve the project and, if so, under what conditions.
  - Note that we are also conducting focus groups on harvesting, cultural continuity, and community well-being. All of this information will be used to assess the impacts of the project on Metlakatla's rights and interests.
  - Note that prior to the report being finalized and shared with Metlakatla leadership and the EAO, a verification meeting will take place.
15. Explain that this interview will take approximately **XX hours (inclusive of breaks)** and remember to budget time to ensure all planned topics for the session will be covered. Let participants know that follow-up sessions and/or interviews can be arranged via Zoom video conferencing call.
16. Explain that the goal of the focus group is to collect participants' honest thoughts and perspectives based on their knowledge and experience. Our goal is to produce a rigorous assessment that can inform decision-making processes. We will leave strategy and negotiations to others and focus on what we can confidently say based on what we know.
17. Provide an opportunity for the interviewees to ask questions.
- Providing accurate answers to interviewees questions is an important aspect of free, prior and informed consent.

- Technical questions relating to the Projects should only be answered if you have the necessary information.
- Questions that you cannot answer should be directed to the community coordinator or principal investigator, as appropriate.

18. Obtain verbal consent.

- Ensure the audio recorders are on.
- Review the **consent form** with the participants.
- Ask the participants if they have any questions.
- Once the participants' questions have been answered, ask them if they give their consent, and have the participants provide their verbal consent for the recording. Please have them state their name, followed by "I consent" or "I do not consent."
- If a participant does not provide recorded verbal consent, let them know that they are welcome to stay in the focus group, but anything they say will not be included in the report and they will not be asked to contribute input.

19. Review the Ksi Lisims Project Description using Presentation Slide Deck

- Provide information about shipping volumes and routes during construction and operation
- Provide information about the marine-based facility during construction and operation
- Provide information about the feed gas pipeline
- Provide information about the transmission line
- Show the Assessment Area
- Note that all information about the Ksi Lisims Project has been provided by the proponent. [avoid answering questions about the Project that at all require you to estimate or speculate; provide factual information only]

**INTRODUCTION**

*[Complete the checklist and pre-interview section, above, then read the text below with recorders on at the start of each interview.]*

Today is **[DATE]**. We are conducting an interview for the Metlakatla First Nation Rights Impact Assessment in relation to Ksi Lisims Floating Liquefied Natural Gas Liquefaction and Marine Terminal Project. Thank you for coming.

My name is [NAME] and my co-researcher is [NAME]. This interview is taking place in the [LOCATION]. We have explained the purpose of the assessment, described the Project and outlined the focus group plan. [PARTICIPANT] has read and signed the consent form.

**The primary goal of the Metlakatla Assessment** is to predict and evaluate the Project's potential impacts on Metlakatla's stewardship and governance.



## DETAILED RESEARCH QUESTIONS

### *Stewardship Context*

- Tell me about your role in *[the Metlakatla Watchmen Program / Fisheries Program / Cumulative Effects Monitoring Program]*.
- What are the goals of *[your program]*?
- Can you describe the traditional stewardship practices that are central to Metlakatla's relationship with the land and resources?
- How is stewardship formally organized within your government? How does your department work with other government departments?
- In what ways does *[your program]* integrate Indigenous knowledge with contemporary environmental management practices?
- How does the community participate in stewardship decisions and activities? Can you provide examples of how community input has shaped stewardship practices?
- What role does education play in your stewardship practices? How is knowledge about stewardship passed down to younger generations?
- Could you discuss any partnerships or collaborations with external entities in stewardship activities (e.g., government agencies, NGOs, corporations)? How do these partnerships work?
- Can you describe the current stewardship initiatives that you are involved in?
- How does *[your program]* monitor the effectiveness of its stewardship practices, and what measures are used to evaluate success?

### *Governance Context*

- Tell me about your role *[in Metlakatla Council / as a Hereditary Leader]*
- What are the priorities of *[Metlakatla Council / your Hereditary leadership role]* with respect to land and marine use and governance?

- What is the relationship between elected and hereditary leadership?
- How does the community participate in governance decisions?
- How do government regulations and policies impact Metlakatla's ability to assert its governance structure in its traditional territory?
- How do you perceive the current level of collaboration and communication between Metlakatla and other agencies or communities regarding governance issues in the Project area?
- Could you discuss any co-management activities that Metlakatla is involved in? How do these partnerships work?

#### *Current Stewardship Conditions, Challenges, and Issues*

- Could you share a success story or a particularly effective stewardship initiative your community has undertaken in the assessment area?
- What are the most significant challenges that you face in implementing stewardship initiatives in the assessment area? How does *[your program]* address these challenges?
- How have past development projects in your territory impacted your stewardship practices, and how did you respond?
- Compared to conditions in the past, how would you rate current conditions for stewardship? Can you explain why you chose that rating?
  - Green – Better compared to the past.
  - Orange – Same compared to the past.
  - Red – Worse compared to the past.
- Are conditions for stewardship in the assessment area improving, staying the same or getting worse?
- Are there any particular initiatives or strategies that Metlakatla is currently undertaking to address the challenges related to stewardship within the assessment area?
  - If so, how effective have these efforts been thus far?

#### *Current Governance Conditions, Challenges, and Issues*

What extent of control does Metlakatla currently have over decision-making in the assessment area?



- Could you share a success story of Metlakatla governance in the assessment area?
- Can you provide examples of specific challenges that Metlakatla faces in exercising its governance rights within the assessment area?
- Compared to conditions in the past, how would you rate current conditions for Metlakatla governance? Can you explain why you chose that rating?
  - Green – Better compared to the past.
  - Orange – Same compared to the past.
  - Red – Worse compared to the past.
- Are conditions for stewardship in the assessment area improving, staying the same or getting worse?
- Are there any particular initiatives or strategies that Metlakatla is currently undertaking to address the challenges related to governance within the assessment area?
  - If so, how effective have these efforts been thus far?

#### *Stewardship - Vision for the Future*

- Looking ahead, how do you envision the future of stewardship in the assessment area?

#### *Prompts:*

- *Are there specific goals or outcomes you hope to achieve in the future through your stewardship efforts?*
- *Are there new initiatives or strategies you plan to implement?*
- *What sorts of resources are needed to accomplish your future vision? Are these currently accessible to Metlakatla First Nation?*
- *Are there any agreements that you would like Metlakatla First Nation to develop in the future with other governing bodies? If so, can you explain which ones?*
- Looking ahead, what do you anticipate will be the most pressing issues or changes affecting Metlakatla stewardship activities and/or initiatives?
- What strategies do you think could be effective in addressing these issues?

#### *Governance – Vision for the Future*

- Looking ahead, how do you envision the future governance in the assessment area?

*Prompts:*

- Are there specific goals or outcomes you hope to achieve in future governance efforts?
- What role would traditional leadership have in the assessment area?
- *What sorts of resources are needed to accomplish your future vision? Are these currently accessible to Metlakatla First Nation?*
- *Are there any agreements that you would like Metlakatla First Nation to develop in the future with other governing bodies? If so, can you explain which ones?*
- Looking ahead, what do you anticipate will be the most pressing issues or changes affecting Metlakatla governance in the assessment area?
- What strategies do you think could be effective in addressing these issues?

*Stewardship – Project Impacts*

- Do you anticipate that the project – including the floating LNG facility, land-based structures, the transmission line, and project-related shipping activity – will affect stewardship in the Assessment Area? How so?
- *Prompts:*
  - *Will the project impact access to and the integrity of specific stewardship sites that are important for conservation efforts within the community?*
  - *Will the project affect the passing down of traditional ecological knowledge essential for stewardship practices?*
  - *Will the project affect the community's ability to monitor and assess changes in the environment or species of concern?*
  - *Are there specific times or seasons when the impacts of project activities on stewardship would be worse? [i.e., particular seasons]*
- What strategies or measures do you suggest could be implemented to address potential negative impacts of the project-related shipping activity on stewardship?

*Governance – Project Impacts*

- Do you anticipate that the project – including the floating LNG facility, land-based structures, the transmission line, and project-related shipping activity – will affect governance in the Assessment Area? How so?

- *Prompts:*
  - *How might the project challenge the authority of leaders to make decisions about Metlakatla's territory?*
  - *To what extent does the Crown-led EA process recognize Metlakatla's authority and what are the key limitations?*
  - *Are there any traditional laws or protocols that the Project must adhere to? To what extent have these laws or protocols been respected by the proponent and government to date?*
  - *Are there any implications of the project for Metlakatla's Indigenous Title rights or treaty aspirations?*
  - *Does the Project hold any implications for any of Metlakatla's agreements with the Crown or other parties?*
  - *Does the Project have any potential to affect the relationship between elected and hereditary leadership?*
  - *What is the capacity of Metlakatla to engage in the governance of this project, including engaging in negotiations, managing financial benefits, overseeing environmental monitoring and enforcing compliance with agreements?*
  - *Does the Project have the potential to affect relationships between Metlakatla and other First Nations?*
  - *Would the Project affect Metlakatla's ability to balance immediate community needs with the long-term sustainability and health the community and its territory for future generations?*
- What strategies or measures do you suggest could be implemented to address potential negative impacts of the project-related shipping activity on governance?

## **EVALUATING PROJECT IMPACTS**

- **Explain that we are now going to consider the combined impacts from all project components on governance and stewardship**
- If the Project was constructed and operated, how much would this affect Metlakatla's ability to *[govern and/or steward]* lands, waters and resources in the Assessment Area in comparison with today?
  - Green – Metlakatla's ability to *[govern and/or steward this area of its territory]* would be similar to what it is today.

- Orange – There would be some changes to Metlakatla’s ability to *[govern and/or steward this area of its territory]* but Metlakatla would be able to adapt.
- Red – The impacts of the Project would be so great that Metlakatla would no longer be able to effectively govern and/or steward this area of its territory.
- Which aspects of the Project do you believe will have the greatest impact on Metlakatla *[Governance and/or Stewardship]* Rights?
- If the measures to avoid or reduce the project’s impacts on *[governance and/or stewardship]* that we discussed earlier were implemented, would this change your ranking?
- **Show a map that displays the project footprint, LAA and RAA.**
- Looking at this map, which effects are you most concerned about in:
  - The project footprint?
  - The local assessment area?
  - The regional assessment area?
- Can you give reasons for your answers?
- How long do you think the Ksi Lisims Project’s impacts on *[governance and/or stewardship]* would last for?
  - Only during construction
  - During construction and operation
  - During construction, operation and decommissioning
  - The effects would linger even after the Ksi Lisims Project ends
  - Would impacts be felt by more than one generation?
- Can you give reasons for your answer?
- Would some groups of Metlakatla people feel the effects of Ksi Lisims Project impacts on governance and stewardship more than others? If so, which groups?
- Give reasons for your answers.

## **CLOSING QUESTIONS**

- Do you have anything else you would like to discuss today?

- Do you have any closing remarks about Metlakatla stewardship and governance rights in relation to the Ksi Lisims Project?

## 2. CONCLUSION

*Read with audio & video recorders on after every session.*

Today is [DATE]. My name is [NAME] and my co-researcher is [NAME] and we have completed the interview in [LOCATION]. We have just finished an interview with [participant name(s)] for the Metlakatla First Nation Rights Impact Assessment for the Ksi Lisims Project.

We've recorded a total of [#] tracks on the digital recorders. Notes are recorded in/on [NAME]'s computer. This interview has taken approximately [#] hours [#] minutes.

Thank you again for coming.

### **Interview Closing**

1. Ask the participant if there is anything else they think is important for us to know.
2. Inform the participant that you have finished your questions and ask them if they have any questions about the study or project.
3. Ask them if there is anyone else they think we should be speaking with (record their name and contact information).
4. Ask them if there are any documents they could share or recommend for us to read to get a better understanding of the topic situation they are most familiar with / expert in.
- 5.. When finished, state the date, names of participants and interviewees for the audio recording.
6. Turn off the recorders and thank the participant for their time.
7. Make sure to leave your contact information with the participant.

**APPENDIX C: PAST, PRESENT AND REASONABLY FORESEEABLE  
PROJECTS AND PHYSICAL ACTIVITIES**

Project or Physical Activity	Description
I. Past and Present	
Prince Rupert Port Authority [PRPA])	<ul style="list-style-type: none"> <li>• Fairview Container Terminal (includes Stage 1A southern expansion) (DP World/PRPA)</li> <li>• Northland Cruise Terminal</li> <li>• Prince Rupert Ferry Terminal</li> <li>• Prince Rupert Grain Terminal (Prince Rupert Grain Ltd.)</li> <li>• Prince Rupert LGP Export Terminal (Pembina Pipeline Corp.)</li> <li>• Prince Rupert Marine Fuels Project (Wolverine Terminals ULC)</li> <li>• Trigon Pacific Terminals</li> <li>• Ridley Island Propane Export Terminal (AltaGas Ltd.)</li> <li>• Westview Wood Pellet Terminal (Pinnacle Renewable Energy Inc.)</li> </ul>
LNG Canada Export Terminal	LNG export facility including an LNG processing and storage site and marine terminal expected to export up to 38.056 x 109 m3 (as natural gas equivalent) per year of LNG over 25 years. Currently under construction and expected to begin operation in 2025. The project incorporates the footprint of the former Methanex industrial site.
Prince Rupert and Terrace Airports	Prince Rupert Airport is a 690-hectare operational airport located 9.3 kilometer (km) southwest of Prince Rupert. Terrace Regional Airport is located 5.6 km south of Terrace and serves the communities of Terrace, Kitimat and the Nass Valley.
Swamp Point – Sand and Gravel	Aggregate deposit located on the east side of Portland Canal, approximately 130 km from Prince Rupert and 50 km from Stewart, BC. Site includes a deep-water port that can accommodate Panamax class vessels and can be accessed by boat, float plane and helicopter. Project is in care and maintenance.
Stewart Bulk Terminals	Privately owned and operated port located at the end of Portland Canal. Capable of handling 50,000 deadweight tonne ships. Users include: <ul style="list-style-type: none"> <li>• Red Chris mine (Newcrest)</li> <li>• Brucejack mine (Newcrest)</li> <li>• Kerr-Sulpherets-Mitchell (KSM) (Seabridge)</li> </ul>
Stewart World Port	Multipurpose port facility located at the end of

	Portland Canal.
Port of Hyder, Alaska	Small port located at the end of Portland Canal, approximately 4 km south of Stewart, BC.
Kitsault Mine	Open-pit molybdenum mine located approximately 140 km north of Prince Rupert at the head of Alice Arm. Access is via existing roads connecting to New Aiyansh BC, and marine transport along Portland Canal. Mine is currently under care and Maintenance
Tru Grit Abrasives	Tru-Grit Abrasives is recycling slagheap at the historic Anyox site, located at the base of Observatory Inlet, BC. The slag is mined, cleaned, separated, and barged south.
All West Trading	Log dump
Various forestry activities	Forestry activities including existing cut blocks; includes the northern extent of the Great Bear Rainforest North Timber Supply Area.
Various fishing and aquaculture activities	Commercial, recreational, and Indigenous fishing and harvesting.
Marine shipping activities	Boat traffic in the Gingolx and Prince Rupert areas - includes commercial vessels, commercial and recreational fishing, and recreational boating.
Coastal GasLink	Approximately 670 km natural gas pipeline from Dawson Creek to Kitimat, BC. Currently under construction and expected source of feed gas for the LNG Canada Export Terminal in 2025.
<b>II. Reasonably Foreseeable</b>	
Third-party powerline	A powerline from a BC Hydro substation near New Aiyansh on Nisga'a Treaty lands and then potentially through the Nass Wildlife Area through Portland Inlet and Canal to northern Pearse Island.
Port of Prince Rupert	<ul style="list-style-type: none"> <li>• Fairview Container Terminal Expansion – Phase 2B, Stage 1B Northern Expansion (DP World/PRPA)</li> <li>• Ridley Island Export Logistics Platform Project (Prince Rupert Port Authority)</li> <li>• Trigon Pacific Terminals Limited (formerly Ridley Terminals Berth Expansion Project)</li> <li>• Ridley Island Energy Export Facility (formerly Vopak Pacific Canada Storage and Export Facility) (Royal Vopak and AltaGas Ltd. )</li> <li>• South Kaien Island Terminal (DP World)</li> <li>• Trigon LPG (Liquid Petroleum Gas)</li> </ul>
Port Edward Small Scale LNG (Port Edward LNG)	Proposed small scale LNG facility in Port Edward that will export 300,000 tonnes of LNG per year via ISO containers shipped out of the Port of Prince Rupert. The first phase (150,000 tonnes/year) was planned to be operational in December 2022 and the second train is planned to be operational in July 2024. The project will employ 64 people during

	operation of the first phase.
Prince Rupert Gas Transmission Project (TransCanada Corp.)	Proposed 750 km natural gas pipeline system from northeastern BC to Prince Rupert. The project was granted an Environmental Assessment Certificate (EAC) in 2017 but has yet to proceed. In 2019, the BC EAO granted an extension to the deadline in the EAC to substantially start the project; the current substantial start deadline is November 2024.
Westcoast Connector Gas Transmission Project (Enbridge Inc.)	Proposed natural gas pipeline system consisting of two adjacent pipelines from northeastern BC to Prince Rupert. The project was granted an EAC in 2014 but has yet to proceed. In 2019, the BC EAO granted an extension to the deadline in the EAC to substantially start the project; the current substantial start deadline is November 2024.
Kinskuch Lake Hydro (Wind River Power Corporation)	Proposed 80-megawatt capacity hydroelectric project on Kinskuch Lake near Alice Arm. Major components include a small concrete dam, tunnel, penstocks, powerhouse and tailrace, and a 39 km 138 kV transmission line connecting with the existing transmission line along Highway 37. The provincial EA process is currently underway for this project.
Cedar LNG	A proposed floating LNG facility near Kitimat, BC. Shipping activities may interact cumulatively near the Triple Island BC Coast Pilots boarding station.
Skeena LNG	A proposed LNG facility adjacent to the Northwest Regional Airport in Terrace.
Totem LNG	A proposed LNG facility in Prince Rupert.
BC Hydro transmission line upgrades and expansion	BC Hydro is proposing upgrades to the Terrace substation and twinning of the 287,000 kv transmission line between Terrace and New Aiyansh, as well as Terrace and Kitimat



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## APPENDIX D: PAST, PRESENT AND FUTURE CONDITIONS

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This section traces the historical, current, and anticipated future conditions of Metlakatla's lands, waters, and way of life, providing the foundation for assessing the potential impacts of the Ksi Lisims LNG Project. By analyzing these conditions over time, this section establishes the context within which Metlakatla's rights are practiced and highlights the cumulative pressures that have shaped the landscape.

Understanding these past, present, and future conditions is critical to evaluating how external pressures, such as colonization and industrial development, have already constrained Metlakatla's ability to exercise its rights. By comparing past conditions with current realities and projecting future trends, the assessment identifies how Metlakatla's rights and interests have been and will continue to be affected by cumulative pressures, even without Ksi Lisims LNG.

The analysis also considers Metlakatla's aspirations for future generations, framing Ksi Lisims LNG's potential impacts considering Metlakatla's long-term stewardship responsibilities and vision for cultural revitalization. Comparing Ksi Lisims LNG's effects against aspired future conditions reveals not only how the Ksi Lisims Project may affect Metlakatla now, but also how it could shape or hinder Metlakatla's efforts toward reconciliation, cultural revitalization, and self-determination. By incorporating this forward-looking approach, the assessment measures the true significance of Ksi Lisims LNG's impacts, not just in terms of current conditions but in terms of community members' goals for a just and resilient future.

### HARVESTING

#### *Overview*

*You think about eulachons right now, that – we call that our saviour fish. Because that was the first fish that we were able to harvest after the winter months [...], – there's legends that – that's why they're so oily and fatty is to bulk us back up. (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024)*

Marine harvesting has been and remains an integral component of Metlakatla's seasonal cycle, deeply woven into the fabric of Metlakatla's subsistence economy, cultural identity, and social structures. Metlakatla has always relied on the abundant coastal waters to provide a consistent and diverse supply of resources that supported both their dietary needs and their extensive trade networks.

The marine harvesting seasonal round began in early spring when the Metlakatla would gather eulachon from the lower Nass River and the Observatory Inlet/Portland Canal areas (Kwon and Roberts 2019). These small, oily fish were highly valued not only for their nutritional content but also for their role in producing eulachon grease, a prized trade commodity. As spring progressed, some groups moved to Prince Rupert Harbour and its offshore areas to harvest seaweed and herring roe. These resources were essential not only for food but also for their cultural and ceremonial significance (Polden 2022; Kwon and Roberts 2019).

In summer, the focus shifted to the rich salmon runs in the Skeena River and its tributaries (Kwon and Roberts 2019). From June to September or October, Metlakatla harvested all five species of salmon (Chinook, Chum, Coho, Pink, and Sockeye) each species holding unique importance within their diet and economy. Salmon was not only a staple food but also a cornerstone of social gatherings and trade, with dried and smoked salmon being exchanged both within and beyond the community (Kwon and Roberts 2019).

During the winter months, attention turned to harvesting marine invertebrates and shellfish from the permanent winter villages in the Prince Rupert Harbour area (Kwon and Roberts 2019). The winter season also marked the time for hunting marine mammals such as sea lions, seals, and sea otters, species that provided both food and materials for clothing, tools, and trade (Kwon and Roberts 2019).

The importance of these marine resources extended far beyond their role in sustenance. They were deeply embedded in the cultural and spiritual practices of Metlakatla First Nation, reflecting a profound connection to the land and sea. Marine harvesting practices were carefully managed and passed down through generations, ensuring the sustainable use of these resources and the protection of important harvesting areas.

The species harvested by Metlakatla included a broad range of marine life, each contributing to the community's economy and well-being. Key species included several varieties of salmon (chinook, chum, coho, pink, sockeye, and steelhead), which were central to both subsistence and trade (Polden 2022; Kwon and Roberts 2019). Other important fish species included halibut, cod (including black cod and grey cod), herring, eulachon, and a variety of other fish such as char, trout, sturgeon, red snapper, flounder, and rockfish. Shellfish were another vital component, with species like butter clams, chinese slippers, cockles, crabs, and mussels being harvested extensively. Marine mammals such as seals, sea lions, and sea otters were hunted, and their products were used for food, tools, and trade. Marine plants, including several types of seaweed (red laver, bull kelp, giant kelp, and seagrass), were gathered for both dietary and medicinal purposes, highlighting their significance in the Metlakatla's cultural practices (Polden 2022; Kwon and Roberts 2019).

Among the many important harvesting areas, the marine region between Triple Island and the northern tip of Pearse Island holds particular significance for Metlakatla, as do Mylor Peninsula, and other areas at Portland Inlet and Portland Canal, and at the mouth of the Nass River, especially Nass Bay and Fishery Bay. This area has long been recognized for its rich and diverse marine life, historically providing an abundant source of key resources that are central to community members' traditional practices. The cultural heritage and connection to these waters remains strong, underscoring their critical role in sustaining Metlakatla's way of life. Efforts continue to preserve, revive, and sustain traditional practices in these waters for both current and future generations.

### *Current Conditions*

Marine harvesting continues to be a vital part of the Metlakatla's cultural practices and subsistence economy within the LAA and RAA (Polden, 2022). Fishing, particularly for salmon, is at the heart of these activities. Species such as chinook, chum, coho, pink, and sockeye are harvested throughout the LAA and RAA, including throughout the environs of Portland Inlet, with locations like Chatham Sound, Observatory Inlet, and Triple Island being particularly important. Knowledge of specific salmon runs, and their timing is integral

to successful harvesting, reflecting a deep connection to the land and sea that has been passed down through generations. As noted by one participant, early summer brings the first salmon runs and different species arrive through until October (M20, Interview, 28 May 2024).

Commercial fishing also plays a significant role, providing income while also supporting subsistence needs. Fish caught during commercial operations are often shared among extended families, ensuring food security. As one community member described,

*We always take some fish home from commercial [fishing]... usually we went for our Section 35 [rights] when [commercial] fishing closed down, but when you don't have enough time, you gotta take home part of your [catch] for sale... My immediate family—there's 45 in my immediate family. My brother and my father, they were also doing out there doing the same thing. So between us we managed to always bring home enough.* (M09, TUS, 2022)

This practice of sharing underscores the importance of marine harvesting in sustaining not just individual households but the broader community.

Harvesters target a variety of marine species in the assessment area, including “sea cucumbers, sea urchins, clack cod, [and] rock cod. That could be summer or winter [but] they're more prominent in summer” (M12, Marine Harvesting Focus Group, 11 March 2024). Crabbing and the harvesting of herring roe on kelp are also significant activities, with specific ‘hot spots’ like those in Chatham Sound being central to these practices. The communal aspect of harvesting roe on kelp is particularly notable, with one participant recalling the hard work and collaboration involved: “We were there till wee hours of morning... It was a real lot of fun. We were all working together” (M06, TUS, 2022).

Triple Island stands out as a particularly important and valuable site within Metlakatla's territory. Described as “a titan of our territory” and “a life giver,” this island provides a wide range of resources throughout the year (M12, Marine Harvesting Focus Group, 11 March 2024). Its “clean” environment, with low toxin levels, makes it ideal for harvesting marine life and medicinal plants. As one community member noted, “In that area by Triple Island things are always harvestable” (M12, Marine Harvesting Focus Group, 11 March 2024). This island's significance is further emphasized by its role in providing diverse resources, including not only food but also medicinal plants like cedar, devil's club, Labrador tea, and various types of mint and berries.

However, not all traditional practices continue as they once did. The harvesting of eulachon, a species historically crucial for producing eulachon grease and a valued trade commodity has significantly declined. The Nass River was once a key site for eulachon fishing, with large gatherings of community members participating in this essential activity. One elder recalled, “I've got a story where they say up to 500 canoes were on the beach up the Nass [...] to harvest eulachons. 500 canoes” (M01, TUS, 2022). Today, this practice is much reduced, carefully managed by only a few members, reflecting the challenges of maintaining this tradition amid declining populations and other pressures. The Ksi Lisims Project would further increase these pressures.

Other marine resources have also become difficult to harvest. Seaweed, for example, “isn't even considered abundant now” (M13, Marine Harvesting Focus Group, 11 March 2024) and “some of the stuff that we used to get, even as a kid going out to gather certain

*things for certain medicine, you can't find now. They're not there. And that's probably from the pesticides and everything*" (M12, Cultural Continuity Focus Group, 12 March 2024). As a result, *"we don't harvest as much or they're just not present"* (M14, Interview, 20 March 2024). Some harvesting activities have also gotten too expensive to participate in without working with other community members: *"If you're a good fisherman, you go with the tide, you know what you're doing [...] you're usually able to do it, but it does cost a lot of money. Like what we do is we will get a group together, and everybody chips in, and then we go out for the day"* (M12, Cultural Continuity Focus Group, 12 March 2024). Nonetheless, some participants felt that they are still able to harvest enough to satisfy their needs: *"[Interviewer: Are the resources harvested enough to sustain your family?] M12: It has since – since long before we were here"* (M12, Marine Harvesting Focus Group, 11 March 2024).

The enduring significance of marine harvesting within the assessment area highlights both the continuity and the adaptations that Metlakatla has made in response to changing conditions. The current state of Metlakatla's harvesting practices reflects a landscape that has been significantly shaped by centuries of colonial impacts and industrial activities. These practices, whether sustained or diminished, are crucial to understanding the potential impacts of Ksi Lisims LNG on Metlakatla's way of life. The next section describes the cumulative pressures that have contributed to the currently impacted harvesting conditions.

#### *Cumulative Pressures and Change over Time*

Over time, Metlakatla has faced significant cumulative pressures that have drastically impacted marine harvesting. Following contact, the introduction of diseases, the shift to a land-based fur trade, and the establishment of commercial canneries in the 1800s initiated a transformation from a traditional subsistence economy to a wage-based economy (Kwon and Roberts 2019). These historical changes were compounded by modern pressures, including commercial and sport fishing, urban development, increased boat traffic, and habitat decline (Kwon and Roberts 2019). The cumulative impact of these factors has been a marked reduction in the quantity and health of marine species compared to pre-contact and pre-industrial levels (Kwon and Roberts 2019).

Community members frequently noted the decreasing abundance of key species, with one participant reflecting, *"We used to get [an] abundance of everything. Fish, seaweed. Now we're just scratching and scrapping around to get what we need to last us from one season to the other"* (M06, TUS, 2022). This loss is compounded by the destruction of historic harvesting sites, where plants like salmonberries and raspberries once thrived, but have since been decimated by industrial activities (M06, TUS, 2022). To harvest the same quantities of marine resources as their ancestors, Metlakatla harvesters now have to increase their efforts or move to more distant harvesting areas (Kwon and Roberts 2019). This trend is evident in both terrestrial and marine environments, where species closer to the community may be *"stunted because of the pollution,"* while those further afield, particularly on offshore islands, are healthier and more abundant (M12, Cultural Continuity Focus Group, 12 March 2024). *"When you get farther out everything is giant – there's more abundance [...] the farther out you go the cleaner the water is,"* explained one participant (M12, Cultural Continuity Focus Group, 12 March 2024).

The depletion of culturally important species like salmon, eulachon, and herring has had a profound impact on community members' ability to sustain traditional harvesting

practices. “*Salmon numbers have depleted since I was a child [...] There were years where we couldn't even harvest sockeye,*” shared one participant (M12, Marine Harvesting Focus Group, 11 March 2024), highlighting the drastic reduction in salmon populations over recent decades. Eulachon, once a vital resource for producing grease, has also seen its annual run completely absent in some years, further stressing community members' food security (M12, Marine Harvesting Focus Group, 11 March 2024).

Industrialization has played a significant role in the contamination of Metlakatla's traditional territories. Legacy pollutants from shipping, pulp mills, and the forestry industry have infiltrated the local food chain, forcing community members to seek out cleaner, albeit more distant, harvesting sites (M14, Interview, 20 March 2024). For example, the harvesting of Dungeness crab, one of the most consumed species by Metlakatla members, has been closed in areas like Wainright Bain and Porpoise Harbour for decades due to historic contamination from the pulp mill. This has led to a significant reduction in access to this critical resource (Kwon and Roberts 2019).

The rise of sports fishing charters and recreational marine traffic has further complicated the Metlakatla's ability to harvest. Advanced technology used by these charters often results in overfishing, out-competing local harvesters who rely on traditional methods. “*Recreation and sports fishery is getting so big now it's starting to impact our halibut fishing [...] they come into our area, and they've got all the latest technology,*” noted one participant (M09, TUS, 2022). This increased competition, combined with the general decline in fish stocks, has led to a noticeable reduction in the number of community members who can rely on fishing as a livelihood (M09, TUS, 2022). Moreover, restrictions on Metlakatla's harvesting activities, especially when commercial fishing is allowed in their traditional areas, have created additional challenges. “*We're not allowed to fish at the same time as the commercial fishery for food fish [...] we have to work around commercial things,*” explained one member (M12, Cultural Continuity Focus Group, 12 March 2024), highlighting the conflicts between traditional practices and commercial operations.

Climate change adds another layer of pressure, exacerbating existing challenges. Unpredictable weather patterns and warming waters have affected the growth cycles of seaweed and other marine resources. “*It's actually taking forever [for water] to get warm here [...] you need the warm weather [for seaweed] to grow faster*” one member explained, highlighting the tangible effects of climate change on traditional harvesting practices (M17, Interview, 24 May 2024). The community also faces the introduction of invasive species, such as the green crab, which disrupts local ecosystems and further threatens the availability of traditional foods (M12, Marine Harvesting Focus Group, 11 March 2024).

The combined impact of these pressures has profoundly altered Metlakatla's ability to exercise their marine harvesting rights. The cumulative effects of industrial pollution, overfishing, climate change, and invasive species have diminished community members' confidence in the safety and sustainability of their traditional practices, forcing them to adapt to an increasingly challenging environment (Kwon and Roberts 2019; Vopak Development Canada Inc. 2020).

### *Anticipated Future Conditions*

Based on the current development environment, Metlakatla anticipates that ongoing and future industrial developments will significantly increase the existing pressures on their ability to exercise traditional harvesting rights. Key projects such as the Ridley Island

Energy Export Facility (REEF), Cedar LNG and the ongoing expansion of the Port of Prince Rupert are expected to drive a substantial increase in marine traffic, with projections of up to 150 vessels per year at full capacity for REEF alone. The expansion of the Port of Prince Rupert and other related infrastructure developments will likely result in more underwater noise, potential contamination from spills, and greater restrictions on access to important harvesting areas, particularly around Prince Rupert Harbour and Ridley Island (Kwon and Roberts 2019; Polden 2022).

Community members have expressed significant concern about the future availability of key marine resources. The cumulative impacts of increased marine traffic, pollution, and habitat destruction are expected to further deplete species such as salmon, eulachon, halibut, and shellfish. The fear is that these species could become as scarce as abalone, which has already seen drastic declines. The quality of remaining resources is also at risk, with potential contamination from industrial pollutants further compromising their viability for traditional use (Kwon and Roberts 2019; Polden 2022).

The anticipated increase in industrial operations poses significant health and safety risks to community members engaged in traditional harvesting. There are concerns about the potential for accidents, such as oil spills or vessel collisions, which could in turn cause devastating impacts on the marine environment and the well-being of Metlakatla members. Additionally, the degradation of environmental quality, including air and water pollution, raises concerns about the long-term health implications for those relying on these resources for sustenance (Kwon and Roberts 2019; Polden 2022).

#### *Preferred Future Conditions*

Metlakatla members envision a future in which the trends described above are reversed and members can resume the meaningful exercise of their harvesting rights.

A central aspect of Metlakatla's preferred future conditions is ensuring that younger generations can learn how to practice and themselves continue community members' traditional harvesting practices without further degradation. One participant emphasized this by stating, "*I want my children and grandchildren to be able to do what we do today. And I've already taken a loss from [the previous] generation where they were able to go out and do so many things and harvest so many things and have it easily accessible*" (M12, Marine Harvesting Focus Group, 11 March 2024). This highlights the importance of not only maintaining current conditions, but also restoring and enhancing the environment to secure these practices for future generations (Kwon and Roberts 2019).

Maintaining existing harvesting sites is crucial to Metlakatla's vision for the future. It stresses the need to protect these areas from industrial encroachment and to ensure their continued availability for traditional harvesting activities (Polden 2022). This includes preserving the conditions that allow community members to exercise their harvesting rights meaningfully. Privacy during harvesting, especially when ceremony is involved, is a significant concern. One participant noted, "*Everything is ceremony when I harvest so when I go out and I want to make sure that I'm able to pick and harvest and do my thing without myself being disturbed*" (M12, Cultural Continuity Focus Group, 12 March 2024). To support this, Metlakatla is planning to build more harvesting cabins to facilitate access to these sites, allowing people to "go out" and engage in traditional practices more easily (M01, Interview, 4 April 2024).

Specific sites, such as Triple and Dundas Islands, are identified as critical to maintaining preferred harvesting conditions. These areas are described as “breadbaskets” and “one stop shops” where community members can obtain the highest quality resources (M12, Cultural Continuity Focus Group, 12 March 2024; M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). Protecting these sites from industrial encroachment and ensuring their continued availability is essential to Metlakatla’s vision. Additionally, the protection of key species that have been displaced within the territory is a priority. For example, one participant expressed concern about the displacement of wolves due to industrial activities around Prince Rupert, emphasizing the need to protect these species within their natural habitats (M12, Cultural Continuity Focus Group, 12 March 2024).

Metlakatla also recognizes the importance of stewardship, for example enforcing existing restrictions to maintain or achieve their preferred harvesting conditions. This includes more robust monitoring and enforcement of measures related to waterway traffic, such as speed limits and noise controls. One community member highlighted the impact of increased water traffic, noting that “more things can be done” to enforce these laws and minimize disruptions to harvesting activities (M18, Interview, 27 May 2024).

## CULTURAL CONTINUITY

### Overview

Culture is at the core of Metlakatla’s identity, encompassing the values, beliefs, and practices that define who they are as a people. It is not merely a collection of traditions, but the living essence that connects community members to their ancestors, their lands and waters, and each other. For Metlakatla, culture is a dynamic force that is continuously passed down through generations, adapting to changing circumstances while maintaining its fundamental identity. This continuity is crucial for the survival of Metlakatla’s unique way of life and is deeply intertwined with their spiritual and material well-being.

The concept of cultural continuity captures this ongoing process of transmission and adaptation. It involves the preservation and renewal of Metlakatla’s language, sense of place, identity, spirituality, and knowledge systems. Cultural preservation and renewal takes place in relation to cultural keystone species and places. Each of these components is a vital thread in the fabric of the Metlakatla’s culture:

- **Language:** Language is more than a means of communication; it is the vessel of Metlakatla’s worldview, carrying within it the knowledge, stories, and teachings of their ancestors. Through language, community members connect with their past and affirm their identity in the present.
- **Sense of Place:** Metlakatla’s relationship with their land is foundational to their culture. Every landmark, river, island, and mountain within their traditional territories holds deep significance, embodying the stories and experiences of countless generations. This sense of place is central to their identity, providing a spiritual and physical grounding for community members.
- **Identity:** Cultural continuity is essential to maintaining Metlakatla’s collective identity. It is through the ongoing practice of cultural traditions, ceremonies, and social structures that the community reaffirms who they are and how they relate to the world around them.

- **Spirituality and Ceremony:** Spiritual beliefs and ceremonial practices are integral to Metlakatla’s culture. These practices and specific sites, including *spanaxnox* sites, connect community members to the spiritual realm and to the cycles of the natural world. Ceremonies are not just events but sacred acts that sustain community members’ spiritual life and reinforce their connection to their ancestors and the lands and waters of the territory.
- **Knowledge Transmission:** The passing of knowledge from one generation to the next is at the heart of cultural continuity. This includes practical skills, such as fishing and hunting techniques, as well as the deeper wisdom embedded in stories, songs, and teachings. Elders play a key role in this process, ensuring that cultural knowledge is preserved and adapted for future generations. As explained by one community member, “*the more we learn about our culture, the more we’re going to carry it on, the more they’re going to pass it down from one generation to another*” (M07, TUS, 2022).
- **Cultural Keystone Species and Areas:** Certain species and areas hold particular importance in Metlakatla’s culture. These **cultural keystone species**, such as whales, are also central to cultural practices and spiritual beliefs. As described by one community member, the relationship with whales and the people of Metlakatla is familial: “*It’s not just our friendship with the whales but those are our family, they’re our ancestors*” (M13, Marine Harvesting Focus Group, 11 March 2024). Similarly, **cultural keystone areas** (specific sites within the territory) are essential for the performance of ceremonies and the practice of traditional ways of life.

Understanding the cultural dimensions of impacts is key to assessing how proposed developments may affect Metlakatla’s ability to sustain their identity, maintain their way of life, and ensure the well-being of future generations.

### *Current Conditions*

The current state of cultural continuity within Metlakatla reflects both resilience and challenge. While many traditional practices continue to be upheld, they are increasingly influenced by external pressures that threaten to erode Metlakatla’s cultural fabric. This section explores how key elements of Metlakatla’s culture are currently experienced and transmitted, particularly within the assessment area.

### *Language*

The current state of Sm’algyax language use in Metlakatla reflects a significant decline in fluency, particularly among younger generations (Rubin 1999). Although the language remains a revered component of cultural identity, its everyday use has diminished considerably. This decline is largely due to historical and ongoing pressures, such as the legacy of residential schools and the dominance of English in education and media. While efforts are currently underway to revive the language through community programs, the language remains at risk, mirroring broader trends among Indigenous languages in British Columbia and across Canada.

### *Spirituality and Ceremony*

Tsimshian spirituality is tied, among other things, to *spanaxnox*, or specific locations in the territory that are inhabited by spirit beings. *Spanaxnox* provide an “opening, or gateway, between the human and spirit worlds” (Marsden 2002, p. 103) and “are places where the



[Coast Tsimshian's] ancestors connected with the divine, and where they can return to reproduce this relationship" (Martindale 2021). The *adawx* of *Nispilax*, which tells of a foundational relationship between the Gitxazial tribe and the *spanaxnox* Lutguts'm'aws (Kts'm'aws), identifies several *spanaxnox* in the vicinity of the Ksi Lisims LNG shipping route, FLNG and transmission line (Marsden 2002). These *spanaxnox* include *Lgu'ol* (north Somerville Island), *tsəmsqæ'o* (Nasoga Gulf), and *wil'nlabalga s'hoks* (Ten Mile Point on Mylor Peninsula). As detailed throughout this report, an ancient *adawx* also details a powerful supernatural being, T'soode, carving a protected path for the Coast Tsimshian to access the eulachon fishery at the mouth of the Nass River (Masden 2002, Martindale 2021). This ancient right of passage for the Coast Tsimshian is mirrored in significant respects by the marine shipping route proposed by the proponents of Ksi Lisims LNG.

Spirituality and ceremonial practices are deeply rooted in Metlakatla's culture, yet they are often private and not readily shared with outsiders. As explained by one community member, "[P]art of harvesting is the ceremony when you do harvest because you have to be in the right mindset. You have to, you know, praying to the plant and you have to give your offerings, and I have my ceremonies with everything that I harvest, so I always try to go somewhere that's secluded and I know that we're going to be the only ones there" (M12, Cultural Continuity Focus Group, 12 March 2024). This makes it challenging to gather comprehensive information about these practices. Spiritual beliefs are closely tied to the land and the natural cycles, with certain sites within the assessment area holding particular spiritual significance. However, the impact of industrialization and the disruption of sacred sites have led to a decline in the visible practice of certain ceremonies.

### *Sense of Place and Identity*

Metlakatla members' sense of place remains strong, with the land, waters, and specific sites within the assessment area continuing to play a central role in community members' identity. This connection is expressed through the stories, songs, and practices that are tied to particular locations. The land is seen not just as a resource but as an integral part of community members' being. As noted by one community member, "*I am Tsimshian...I love Metlakatla, it is my home – it is my place – but I am Tsimshian*" (M12, Cultural Continuity Focus Group, 12 March 2024).

Sense of place is inherently based on the sensorial experience of being on the land and waters. When members travel to and spend time in important places in the territory, they rely on their senses to inform their experience of what they see, hear, smell and feel. One community member describes how they consciously foster their experience of the land while spending time in special places, and contrasts this with experience with being in the built environment, "*I walk through the forest, and I make sure that I have a skirt on so that I feel everything as I'm going through [...] You get the earth's energy when you touch it. [While] you can take your shoes off and walk down the street on concrete and feel nothing, [...] you can't not feel something when you're walking through...even on a beach*" (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 12 March 2024).

However, the intrusion of industrial activities has begun to erode this connection. Access to important sites is becoming increasingly restricted, and the environmental degradation of certain areas has made it difficult to continue traditional practices. Despite these challenges, community members remain committed to maintaining their sense of place, though it is becoming increasingly difficult to do so.

### *Knowledge Transmission*

Knowledge transmission within the Metlakatla community is a vital process that ensures the continuity of cultural practices, values, and traditions across generations. This transmission primarily occurs through experiential and hands-on learning, often taking place on the land and waters of their traditional territory. Elders and other knowledgeable community members play a crucial role in this process, passing down skills, stories, and cultural knowledge to younger generations.

One of the key ways that knowledge is transmitted is through family-based activities. Several participants recalled their childhood experiences of learning from family members during trips to harvest or spend time on the land. For example, one community member described how the entire family would “*pile on the boat*” and head out on the water, where their grandfather would teach them about salmon and other aspects of fishing, and the kids would fish and “*be getting little lessons. We didn’t realize it, but we were getting little lessons from [my grandfather] as we travelled*” (M19, Interview, 27 May 2024). These family outings are not only opportunities for learning practical skills but also for reinforcing cultural identity and connection to the land.

Teaching and learning on the land remain important family activities. Community members continue to pass on knowledge through direct engagement with younger generations during harvesting activities. One member shared how they bring their children along when harvesting cedar, mints, and other plants, noting that their child has gained significant knowledge about plant uses through these experiences: “*If you went for a walk with my son through the forest, he would be able to sit there and point out all different kinds of plants and what their – what their uses are*” (M12, Cultural Continuity Focus Group, 12 March 2024). Another participant emphasized the importance of such hands-on learning, noting, “*Our history is not taught in schools,*” highlighting the crucial role of in-person teaching and learning in maintaining cultural continuity (M11, Cultural Continuity Focus Group, 12 March 2024).

However, there is some concern within the community regarding knowledge gaps, particularly among younger generations. One community member observed that “*culture is really lacking in Metlakatla*” and noted that younger people often do not fully understand traditional harvesting practices, such as where and when to harvest (M12, Cultural Continuity Focus Group, 12 March 2024). This gap is partly attributed to the fact that much of the knowledge transmission happens within families rather than at the community level. As one member explained, “*Certain families do certain things [...] I just teach them what I was taught [...] it’s not so much of a community thing*” (M12 Cultural Continuity Focus Group, 12 March 2024).

### *Cultural Keystone Species and Landscapes*

Cultural keystone species and areas play a critical role in the cultural identity, practices, and well-being of a community. The concept of cultural keystone species, as introduced by Garibaldi and Turner (2004), highlights species that hold exceptional cultural significance, often being integral to the diet, economy, or spirituality of Indigenous peoples. Similarly, cultural keystone areas are places of profound importance, where cultural practices, ceremonies, and traditions are deeply rooted (Currier et al. 2015). In the context of this assessment, these species and landscapes are examined to understand their current conditions and the role they play in sustaining the cultural continuity of Metlakatla.

The LAA and RAA contain several cultural landscapes, including the site of a mythical “double feast” that took place between the ancestors of the Coast Tsimshian and a number of *spanaxnox*. As recounted in the *adawx* of *Nispilax*, chief Yagawin'usk, the son of a Tsimshian princess and the *spanaxnox* Lutguts'm'aws' son, held a feast for both *spanaxnox* and human guests at Atkusooxs (Red Bluff), near the proposed Ksi Lisims LNG site. At the feast, chief Yagawin'usk asked the *spanaxnox* to stop harming people who travel in their areas, who agreed thus forming an alliance between the human and spirit worlds. Some *spanaxnox* were relocated to other parts of the territory, both close and distant, following this event (Marsden, 2002; Martindale, 2021).

The entirety of the Portland Inlet itself, including Pearse, Wales, Hogan Truro, and Somerville Islands and the marine path to that area and to parts beyond, including Portland Canal and areas at the mouth of the Nass River such as Nass Bay and Fishery Bay, and Observatory Inlet, forms an important cultural landscape for Metlakatla. As detailed throughout this report, an ancient *adawx* recounts how a supernatural being named Ts'ode carved a protected path from the Coast Tsimshian villages at Metlakatla to those at the Nass River to access the eulachon fishery (Martindale, 2021). This right of passage is mirrored in significant respects by the marine shipping route proposed by the proponents of Ksi Lisims LNG.

Other sites within the Metlakatla's traditional territory, such as Triple Island, Stevens Island, Dundas Islands, Somerville Island, and Mylor Peninsula also hold significant cultural, spiritual, and practical value. These cultural keystone areas are essential for community members' identity, as they are locations where traditional practices, ceremonies, and knowledge transmission take place. For example, Triple Island is both a place of personal meaning and a site for traditional practices like cedar harvesting. A community member shared their intention to scatter a loved one's ashes on the island, emphasizing its dual significance as both a sacred and practical space (M12, Cultural Continuity Focus Group, 12 March 2024). Some of these islands are also camping locations for travel to other and most distant areas, such as Nass Bay and Fishery Bay. Again, this landscape also includes several *spanaxnox* sites which are noted throughout the relevant geography. These sites relate to the worldview and connection Coast Tsimshian have with the entirety of their territory, in addition to a connection with the specific areas where *spanaxnox* are located (Marsden 2002, Martindale 2021).

Historical sites, such as those on Stevens Island, Dundas Islands, Somerville Island, and Mylor Peninsula, and various sites at the mouth of the Nass River at Nass Bay and Fishery Bay, continue to be vital to community members' cultural identity. Evidence of ancient village sites in these areas and the presence of culturally significant plants, like yew trees and Devil's Club, used for medicinal purposes, demonstrate the long-standing knowledge and traditions that persist in the community. “*They found a big village there last year [...] that goes back 10,000 years [...] [T]hey found a huge stand of yew trees at this village site so maybe years ago the people knew the value of the medicinal purpose of it*” (M01, Interview, 4 April 2024). These sites are crucial for maintaining community members' connection to their ancestors and their cultural practices.

Locations of the annual eulachon run, including the Nass River, were also described as sites of importance both for contemporary First Nations – “*[the run is] a huge cultural piece to the Nisga'a, the Tsimshian, and so many Nations*” (M14, Interview, 20 March 2024) – and their ancestors: “*Historically, as the eulachon are so important, and Tsimshian did harvest more eulachon in the past along the Nass – but I know these areas because this*

*is where the eulachon would also come through*" (M14, Interview, 20 March 2024). The cultural and historical importance of these areas has been extensively described in the literature (Marsden, 1997).

Camps and cabins within the Metlakatla's traditional territory are highly significant markers of cultural keystone areas. These structures are vital spaces for the transmission of cultural knowledge, spirituality, and community bonding, marking locations where important cultural practices occur. Time spent on the land at these sites is essential for sharing and learning traditional skills. One participant described the importance of these spaces, stating, *"They [cabins] are for togetherness. That's your education; that's your spirituality time. That's everything"* (M11, Marine Harvesting Focus Group, 11 March 2024).

While camps and cabins themselves are not necessarily cultural keystone areas, they denote places of cultural significance where language sharing and traditional knowledge transmission occur. Campsites, such as those used for youth camps and Language Immersion Camps, are particularly crucial in passing down cultural skills to younger generations. A community member fondly recalled, *"We spent ten days there. Just living off the island [...] We taught them how to dig a hole in the ground [...] We wrapped [the fish] in kelp... You should've seen the kids eating"* (M06, TUS, 2022). These experiences ensure that cultural knowledge is not only preserved but actively practiced and adapted by the younger members of the community. Campsites, such as the one at Mylor Peninsula, also form part of the Coast Tsimshian cultural landscape in the sense of being settlements or stopping places situated along the protected route carved by T'soode for the Coast Tsimshian to travel to their spring villages at Nass Bay and Fishery Bay (Martindale 2019, 2020, 2021).

Orcas, or killer whales, hold a profound place with respect to cultural identity, symbolizing more than just marine life: they are seen as family, as ancestors. This deep connection is evident in community members' stories and experiences, where orcas are perceived not just as animals but as spiritual beings that guide and protect their people. As one community member expressed, *"It's not just our friendship with the whales but those are our family; they're our ancestors"* (M13, Marine Harvesting Focus Group, 11 March 2024).

Several participants recounted personal experiences where orcas accompanied the return of a deceased community member, escorting them back to their final resting place. These stories underscore the spiritual and familial bond with the orcas. For instance, one member recalled, *"When [my mother] passed away and we were going back to Metlakatla with her casket [...] five killer whales came and they went on the sides of the boat [...] the front and the back. They traveled with us all the way to the old dock"* (M11, Marine Harvesting Focus Group, 11 March 2024). These encounters highlight the ongoing cultural significance of orcas, even as new threats from commercial and recreational watercraft pose challenges to their well-being (M20, Interview, 28 May 2024).

#### *Cumulative Pressures and Change over Time*

Community members have faced a range of cumulative pressures that have significantly altered their relationship with the land, their cultural practices, and their ability to pass on cultural knowledge to future generations. These pressures, driven by colonial policies, industrial development, and environmental degradation, have had profound and lasting impacts on community members' identity and cultural continuity.

Colonial policies, from the earliest days of contact, imposed severe restrictions on traditional ways of life. Historically, Metlakatla members moved throughout their territory according to the rhythm of seasonal harvests, maintaining a deep connection to the land. However, colonization forced a more sedentary lifestyle and restricted their access to traditional lands. One community member reflected on this forced change, noting, *“Everybody used to travel around the year. Metlakatla wasn’t Metlakatla back in the day. It was the settlement camp for a while, yeah, but nobody actually lived there 365 [days a year] until contact”* (M12, Marine Harvesting Focus Group, 11 March 2024). This loss of mobility not only disrupted community members’ connection to their land but also led to a fragmentation of cultural identity. The imposition of a fixed settlement at Metlakatla, rather than the broader identity of being Tsimshian, was a direct consequence of colonial influence.

The impact of these colonial policies extended beyond physical displacement. The introduction of Christianity and the pressure to abandon traditional practices further eroded the Coast Tsimshian’s cultural foundations. The deliberate suppression of Indigenous identity by figures like William Duncan led to a loss of traditional knowledge and practices, as community members were coerced into adopting Christian beliefs and abandoning their cultural heritage. One member recounted the ongoing loss of cultural items, stating, *“The loss of stuff for all our First Nations people is still going on today. Like back in the 80s still our people were being told that if you wanted to be a Christian you had to get rid of Indian jewelry. You couldn’t have a drum, you couldn’t do this, you couldn’t do that”* (M11, Cultural Continuity Focus Group, 12 March 2024).

Language, a core component of cultural continuity, was also heavily impacted by colonial policies, particularly through the residential school system. Children were removed from their families and prohibited from speaking their mother tongue, resulting in a devastating loss of language fluency within the community. As one survivor shared, *“I was a survivor of Indian Residential School [...] Two years of it. But the only thing I lost and was afraid up to this day was my Sm’algyax language. I couldn’t speak it”* (M06, TUS, 2022). This loss of language was accompanied by a broader loss of cultural practices and ceremonies, as the suppression of the language also meant the suppression of the cultural knowledge embedded within it.

The ongoing industrialization of the region has compounded these pressures by disrupting traditional territories and impacting the environment in ways that directly affect cultural practices. Industrial development, including port-related activities, pipelines, and other resource extraction projects, has led to the degradation of key cultural landscapes and the disruption of natural cycles that have traditionally supported Metlakatla’s way of life. The development of areas like Ridley Island, as part of the broader industrial expansion in Prince Rupert Harbour, has not only altered the physical environment but also diminished the availability and quality of resources that are vital for sustaining cultural practices (Kwon and Roberts 2019).

The cumulative effect of these pressures has been a significant change in Metlakatla members’ ability to maintain their cultural practices and transmit knowledge to younger generations. As elders grow older and become less able to participate in traditional activities, the transmission of knowledge becomes increasingly difficult. Younger generations, already distanced from their cultural roots by the pressures of the wage economy and the high cost of engaging in traditional practices, find it challenging to

sustain these practices. This erosion of cultural continuity is not just a loss of tradition but a loss of identity and connection to the land that has sustained Metlakatla for generations.

The impacts of industrial development have also extended to Metlakatla's material heritage. For example, instances such as the disturbance of ancestral remains during a port expansion project have deeply affected community members, leading to fears that future developments will continue to disrespect their lands and cultural heritage. One community member expressed this concern, stating, "*I don't want them to destroy anymore to keep taking from us – they've already destroyed too much*" (M12 Cultural Continuity Focus Group 12 March 2024).

Cumulative pressures have fundamentally changed members' culture and relationship to the land. These changes are not just historical; they continue to shape the present and future, creating a new baseline that departs significantly from the past. As one elder noted with concern, "*I think the next generation will grow up with [this] being the de facto standard. And the Elders talking about how it was the 'good old days.' The 'good old days' are gone*" (M19 Interview 27 May 2024).

#### *Anticipated Future Conditions*

As community members continue to navigate the challenges posed by ongoing industrialization, environmental degradation, and the residual impacts of colonial policies, the anticipated future conditions are expected to further challenge community members' ability to maintain and transmit cultural knowledge, practices, and identity.

Future industrial developments, including port expansion, pipelines, electrification projects, and ongoing resource extraction activities, are likely to continue altering the landscape and seascape, with significant implications for cultural continuity. The degradation of key cultural landscapes and the disruption of natural cycles that have supported the traditional way of life may exacerbate the already strained relationship with traditional lands and waters.

The ability to practice and transmit cultural traditions, particularly those tied to specific locations or species, may be further eroded. This is particularly concerning given the strong connection between cultural practices and the physical environment in which they occur. For example, the ongoing disturbances to culturally significant species, such as orcas, diminish opportunities for knowledge transmission and cultural expression. The loss of these practices, which are central to community members' identity, could lead to a further weakening of cultural continuity.

Moreover, the anticipated increase in industrial activities may lead to further encroachment on sacred sites and cultural keystone areas, diminishing the privacy and sanctity required for the continuation of spiritual practices and ceremonies. The loss of these spaces could hinder community members' ability to perform rituals that are essential for maintaining cultural identity and continuity.

#### *Preferred Future Conditions*

Metlakatla envisions a future where culture is not only preserved but revitalized and strengthened for future generations. Central to this vision is the reinvigoration of language

and knowledge transmission, the resurgence of traditional practices, and the restoration and protection of cultural keystone species.

Language revitalization is at the heart of Metlakatla's cultural revival efforts. Metlakatla aspires to restore fluency in their traditional language, which is seen as the key to unlocking and maintaining cultural knowledge. Efforts are being made to develop language immersion programs and to incorporate the language into daily life and educational curricula (M19, Interview, 27 May 2024). Alongside language revitalization, there is a strong commitment to reviving traditional practices, such as fishing, hunting, and ceremonial activities, which are deeply connected to the land and essential for the transmission of cultural knowledge.

Metlakatla envisions a future where the transmission of cultural knowledge is strengthened through the active involvement of youth and the support of interconnected families and community networks. Camps and cabins, which are vital markers of cultural keystone areas, will continue to be central locations where knowledge is shared, and cultural practices are taught. Engaging youth in these activities is seen as essential, with the hope that future generations will not only learn but actively participate in and sustain these traditions. For example, summer programs for youth focus on teaching skills like jarring and cutting fish, allowing children to learn directly from elders and other community members (M17, Interview, 24 May 2024). Additionally, community harvesting days provide opportunities for members to acquire new skills, such as clam digging and seaweed gathering, with experienced individuals guiding those less familiar with these practices. These events are crucial for keeping traditions alive and ensuring that cultural techniques are passed on to the next generation.

Another key aspect of the preferred future conditions is the protection of sacred sites from further encroachment or disturbance. Metlakatla seeks to ensure that these areas remain intact and undisturbed, providing the privacy and sanctity required for spiritual practices and ceremonies. The protection of these sites is seen as fundamental to maintaining Metlakatla's spiritual health and cultural identity.

Ultimately, Metlakatla's vision for the future is one of resilience and renewal. By reclaiming and revitalizing their cultural practices, protecting their lands, and empowering their youth, Metlakatla members hope to create a future where their culture not only survives but thrives. This vision is rooted in a deep respect for their ancestors and a commitment to ensuring that the knowledge, practices, and identity of Metlakatla are passed on to future generations in a way that is vibrant, living, and connected to the land.

## **COMMUNITY WELLBEING**

### *Overview*

Community wellbeing is an integral aspect of Metlakatla's collective identity and resilience. Rooted in Indigenous perspectives, community wellbeing extends beyond individual health to encompass the physical, mental, emotional, social, and economic wellness of Metlakatla as a whole. The literature on Indigenous community wellbeing highlights the interconnectedness of these dimensions and the importance of maintaining cultural continuity, self-determination, and a strong relationship with the land and waters that sustain Metlakatla (Greenwood et al. 2018).

For Metlakatla members, the value of community wellbeing is in its role as the foundation for community members' long-term resilience and cultural preservation. This wellbeing is closely tied to their traditional practices, land, and waters, which provide not only physical sustenance but also spiritual and cultural grounding. The importance of community wellbeing is reflected in Metlakatla's aspirations for health, prosperity, and the ability to pass on their cultural heritage to future generations.

Ensuring wellbeing is central to Metlakatla's vision for the future. It involves not only addressing immediate health and economic needs but also fostering a sustainable and vibrant future where Metlakatla members can thrive on their terms.

### *Current Conditions*

The current state of community wellbeing in Metlakatla is marked by significant challenges, with many community members experiencing difficulties across various dimensions of life, including economic stability, physical and environmental health, housing, and social cohesion.

Economic opportunities within Metlakatla are limited today, with many residents relying on jobs that may offer little opportunity for upward mobility. Unemployment rates in Metlakatla are notably higher than the provincial average, reflecting limited availability of full-time, year-round jobs within Metlakatla (Metlakatla CEM, 2024c). As one community member noted, "*Metlakatla does a lot for our people in the sense of creating places to get jobs, but as for management positions, nobody from Metlakatla is in any management positions*" (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). The decline of traditional economic practices, such as fishing, has exacerbated these challenges. Metlakatla's ability to engage in fishing has been particularly constrained by regulatory barriers, which limit access and profitability. "*Over the last decade, they're closing the fishing – the salmon industry down prematurely when there's fish, and they're opening it when there's none,*" a participant shared, highlighting the misalignment between regulatory decisions and Metlakatla's needs (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This situation has forced many community members to seek work outside Metlakatla, weakening the social fabric and leading to economic marginalization.

In addition to economic challenges, community members' physical health is compromised by inadequate access to healthcare and environmental degradation. Access to a primary care provider is much lower than the provincial average (Metlakatla CEM, 2024a). Chronic conditions such as diabetes and hypertension are more prevalent, and there is a lack of regular physician access, contributing to poorer health outcomes compared to provincial standards (Metlakatla CEM, 2024b). Although there is a nursing station in Metlakatla, residents often have to travel to Prince Rupert for more significant medical care, which can be problematic in emergencies. One community member shared a tragic example: "*An Elder was sick and he went [to the hospital] [...] Brought him up there. They didn't even check him over. They sent him home with some pain pills. He went home and a few hours later he's dead. he had cancer*" (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Environmental degradation also poses a serious threat to physical health. Pollution from past industrial activities has left the land and waters around Metlakatla contaminated, making it unsafe to consume traditional foods like clams. "*I'm scared to eat clams now*



from Tugwell [Island] because of pollution from [the] Rupert area,” one member expressed (M10, Marine Harvesting Focus Group, 11 March 2024). This fear affects not only physical health but also mental health, emotional health and community members’ connection to their land and traditional practices.

Housing issues also contribute to the current challenges, with many homes in Metlakatla suffering from mold and structural instability, posing significant health risks. Approximately 42-50% of Metlakatla renter households in Prince Rupert are in core housing need, primarily due to affordability issues. In addition, 13% of these households report that their homes require major repairs, while 15% experience significant overcrowding (Metlakatla CEM, 2024d). The lack of suitable land for new housing in Metlakatla further exacerbates these problems, often forcing residents to relocate to Prince Rupert. “*There’s no good land in Metlakatla to build [on],*” a participant explained, “*and that available space is unstable [...] it can’t be built on*” (M11, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This situation strains social ties and community cohesion, as those who leave often struggle to maintain their connections to the community.

Despite these challenges, social networks in Metlakatla remain strong. Community members continue to support one another, helping to mitigate some of the adverse effects of economic and environmental pressures. However, the ongoing struggles, combined with the legacy of historical trauma, contribute to heightened stress and anxiety. The pressure to maintain cultural practices amid these difficulties is a central concern, as these practices are crucial to community members’ mental and emotional wellbeing.

#### *Cumulative Pressures and Change over Time*

The current challenges in Metlakatla are the result of long-term pressures that have gradually eroded community members’ wellbeing over time. These pressures, including declines in the natural resource economy, regulatory changes, environmental degradation, and the lasting impacts of colonial policies, have profoundly affected community members’ economic, physical, and cultural health, creating the complex challenges faced by community members today.

Economic conditions in Metlakatla have shifted dramatically over time. In earlier decades, community members experienced a period of relative prosperity, driven by employment opportunities in industries such as commercial fishing and the local mill. As one community member recalled, “*Back then you worked at the mill, you were a fisherman, and you were rich*” (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This period of wealth allowed community members to live comfortably, with some describing how they were “*treated like royalty*” due to their economic success (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). However, the decline of these industries, particularly the mill and commercial fishing, led to a significant loss of income for many community members.

The decline in traditional economic practices, such as fishing and shellfish harvesting, has been particularly devastating for Metlakatla’s economy. Over the past several decades, regulatory restrictions and environmental changes have made it increasingly difficult to sustain these practices. Reflecting on the impact of these changes, a community member noted, “*DFO [Fisheries and Oceans Canada] has such a stronghold over us that they tell us when we’re allowed to fish,*” highlighting the restrictive nature of the regulations that have progressively undermined community members’ ability to engage in traditional

economic activities (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This loss of traditional livelihoods has not only reduced income but also weakened community members' connection to cultural heritage.

Environmental degradation has further compounded these economic challenges. Industrial activities over the years have left a legacy of pollution that continues to affect Metlakatla. Contamination of local waters and lands has disrupted the harvesting of plant foods and medicines, as well as the safety of traditional subsistence food sources like clams and other shellfish. One community member described the impact of pesticide use, noting how *"the city purposely goes out [...] and purposely sprays everything [...] all those pesticides get washed in [...] and everything goes right into our ocean"* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). These ongoing environmental changes have significantly altered community members' ability to engage in traditional practices, forcing a greater reliance on market foods to replace those that are no longer safe to consume. This shift not only increases the cost of living but also weakens the cultural and economic foundations that are deeply tied to subsistence practices, thereby having a lasting impact on both economic and cultural wellbeing.

In addition to economic and environmental challenges, the cost of living in the region has increased significantly over time, particularly in nearby Prince Rupert. One participant observed, *"Rent in Prince Rupert has rapidly increased [...] rent has tripled [since 2010]"* (M11, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). This increase in living costs has contributed to a growing number of unhoused people in the area, which one community member linked to the arrival of new industries: *"In the last 10 years since the industry, since LNG and those other industries have shown up, our homelessness has skyrocketed"* (M12, Cultural Continuity Focus Group, 12 March 2024).

The cumulative impact of these economic and environmental pressures has been exacerbated by social and cultural disruptions rooted in Metlakatla's colonial history. The imposition of residential schools, land dispossession, and other colonial practices have left deep scars on the community, contributing to ongoing issues of intergenerational trauma, social fragmentation, and cultural loss. One community member described the enduring fear and trauma passed down through generations, stating, *"So when we say that we have fear it's because of all of the fears that [previous generations] lived through they told us about. And like I said, they told us to keep protecting, do what [the previous generation] couldn't do"* (M12, Cultural Continuity Focus Group, 12 March 2024). These historical pressures continue to influence the community today, affecting how members relate to one another and their cultural heritage.

As these pressures have evolved over time, so too has Metlakatla's response. Despite the ongoing challenges, Metlakatla has shown remarkable resilience, adapting to the changing circumstances in various ways. However, the cumulative effects of these challenges have created a complex and difficult environment for maintaining wellbeing. The decline in traditional economic practices, ongoing environmental issues, and the lasting impacts of colonialism have all contributed to the current state of community wellbeing in Metlakatla.

### *Anticipated Future Conditions*

The future of community wellbeing in Metlakatla is likely to be shaped by the continuation of current trends and the influence of reasonably anticipated future projects. As Metlakatla faces ongoing economic, environmental, and social pressures, the projected conditions reflect the challenges and opportunities that these factors will present.

The continued decline of traditional economic practices, such as fishing and shellfish harvesting, is expected to exacerbate economic instability within Metlakatla. As regulatory restrictions and environmental degradation persist, community members will likely become increasingly reliant on market-purchased foods and external employment opportunities. The rising cost of living, particularly in nearby Prince Rupert, is anticipated to further strain household incomes, potentially leading to greater economic disparities within Metlakatla. Without significant economic diversification or the development of new local industries, economic conditions are projected to remain challenging, with limited opportunities for growth and stability.

Environmental degradation is expected to continue impacting community members' physical health and access to traditional food sources. Contaminated water and lands are likely to further reduce the availability of safe, subsistence foods, increasing dependence on market foods with associated nutritional and financial consequences. If no significant environmental remediation efforts are undertaken, the community may face worsening health outcomes related to diet and exposure to pollutants. The anticipated future projects in the region, such as industrial expansions, could exacerbate these environmental challenges, making it even more difficult to maintain traditional practices and ensure community health.

As economic and environmental pressures persist, Metlakatla may experience increased challenges in maintaining social cohesion. The ongoing erosion of traditional practices, coupled with economic hardships, could lead to a weakening of cultural ties, particularly among younger generations. The anticipated future conditions suggest that social networks within the community could become increasingly strained as members navigate the complexities of modern life and external influences. Without proactive measures to preserve cultural practices and strengthen social bonds, these trends are likely to continue, potentially leading to further cultural fragmentation.

Future conditions in community safety and social wellbeing are expected to be influenced by the broader socio-political context and the effectiveness of current initiatives. If current trends continue, challenges related to safety, mental health, and social fragmentation may persist or worsen. The presence of new industrial projects in the region could contribute to increased social pressures and a heightened sense of insecurity within Metlakatla. However, the extent of these impacts will largely depend on Metlakatla's ability to assert its rights and influence decision-making processes at the regional level.

### *Preferred Future Conditions*

The Metlakatla community envisions a future where wellbeing is restored and strengthened through economic resilience, enhanced social cohesion, and improved health outcomes. These aspirations are driven by ongoing initiatives that reflect Metlakatla's commitment to ensuring a thriving, self-sufficient, and culturally vibrant Nation.

Metlakatla aims to build a resilient local economy that reduces reliance on external markets and fosters self-sufficiency. This vision is supported by the work of the Metlakatla Development Corporation (MDC), which is involved in diverse business ventures, including partnerships in transportation, heavy construction, and tourism. The MDC integrates social, cultural, economic, and environmental considerations into its activities, ensuring that economic growth is aligned with sustainable development principles and contributes to community wellbeing. By creating meaningful employment opportunities and supporting local enterprises, Metlakatla seeks to reduce economic disparities and ensure that all members have access to stable livelihoods, further enhancing overall wellbeing (Metlakatla First Nation, n.d.c). Metlakatla members also emphasize the importance of proactive training and education initiatives, noting that companies should engage early to help train and prepare community members for future opportunities: *“A lot of these companies really need to come in the area 10-15 years earlier [...] and they need to have their pocketbooks open so that they can help us train and retrain our people, so that we do have jobs”* (M11, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Building on this economic foundation, Metlakatla’s vision for social cohesion and overall wellbeing is equally robust. The Metlakatla Governing Council plays a crucial role in overseeing a variety of social services aimed at improving the quality of life for community members. These services include healthcare programs, mental health initiatives, and financial support services. Programs like Aboriginal Head Start, the Alcohol & Drug Program, and the Brighter Futures program address both physical and mental health needs, fostering a community where all members feel safe, supported, and connected (Metlakatla First Nation, n.d.h). Additionally, community members believe that enhancing cultural and community support structures can significantly reduce social challenges like addiction: *“If we had more culture and community within Metlakatla there wouldn’t be so much addiction...people thrive when we’re in group settings [...] learning together, working together, processing together”* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). There is also a strong desire for projects that promote health and well-being rather than contribute to harm: *“[I]f there were Projects around that promoted health and well-being rather than rape and decimation, then definitely we would prosper more”* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024).

Health outcomes are a crucial part of this vision, closely tied to community members’ economic and social initiatives. Metlakatla’s preferred future includes a significant focus on improving health outcomes through better access to healthcare, nutrition, and safe living conditions. Currently, there is a serious shortage of medical professionals, which has led to tragic outcomes: *“[W]e have eight doctors that live in Prince Rupert right now [...] so that’s thousands of people without doctors”* (M12, Community Wellbeing and Terrestrial Harvesting Focus Group, 13 March 2024). The community envisions a future where comprehensive healthcare services are available, addressing both physical and mental health needs. This vision includes the integration of traditional support structures alongside ‘western’ medical practices, ensuring that health services are holistic and culturally appropriate. The Coastal Training Centre supports these health goals by offering educational programs that prepare community members for health-related careers and empower them to contribute to community members’ wellbeing (Metlakatla First Nation, n.d.j).

Underlying all these efforts is a strong focus on resilience and adaptation. The Metlakatla membership recognizes the need to adapt to changing circumstances while staying true to its cultural roots and long-term goals. This adaptability is evident in Metlakatla's proactive approach to tackling current challenges, whether economic or health-related, and turning these into opportunities for improvement. The preferred future conditions reflect Metlakatla's aim to build a stable, self-sufficient, and culturally grounded future that respects its history while navigating the path forward.

## **STEWARDSHIP AND GOVERNANCE**

### *Overview*

For thousands of years before contact and colonization, the ancestors of the Metlakatla First Nation, known as the nine tribes of the Coast Tsimshian, governed and stewarded their territories through deeply rooted traditional systems. These governance structures were centered around the *adaawx* (oral histories) and *ayaawx* (laws and customs), which guided not only the social and political organization of the tribes but also their stewardship of the land and resources (Martindale et al. 2017).

Stewardship, in this context, was not merely about the sustainable management of resources but was intrinsically linked to cultural wellbeing (Martindale 2019). The Coast Tsimshian's stewardship practices were guided by the principle that the house group is responsible for protecting its area of responsibility and advancing its interests, which include the interests of the tribe, nation and larger community of nations (Martindale 2019).

Governance, on the other hand, was exercised through a traditional house-based system, where each house group (*wilp*) owned specific territories and carried out responsibilities in connection with those territories. These traditional governance structures and practices have been adapted over time to include modern governance practices, enabling the Tsimshian to navigate contemporary challenges while maintaining the core principles of their cultural heritage. This adaptation has allowed Metlakatla to assert jurisdictional rights and engage in contemporary resource management effectively, while staying true to their traditional values.

The interconnectedness of stewardship and governance remains central to Metlakatla's approach to managing their lands and resources today. Effective stewardship requires strong governance structures to guide and enforce sustainable practices, while governance is often exercised through stewardship, reflecting a holistic understanding of their rights and responsibilities.

Together, stewardship and governance form an important part of Metlakatla's approach to ensuring the long-term health and prosperity of their lands, waters, and members.

### *Current Conditions*

Metlakatla's stewardship and governance practices are deeply rooted in traditional values while finding modern expression in frameworks designed to address contemporary challenges. These practices are directed to ensuring the protection and sustainable management of Metlakatla's lands and resources, reflecting Metlakatla's commitment to ancestral responsibilities.

One of the central pillars of these stewardship efforts is the Metlakatla Stewardship Society, which plays a crucial role in environmental monitoring and management. The Society is responsible for overseeing the health of the land and waters, particularly in the context of development projects that might impact these resources (Metlakatla First Nation, n.d.i). As a community member explained, *“We monitor projects from the first days of development right through construction and operations, ensuring the water quality, air, and other vital elements are protected”* (M05, FG2, 2023). This work is vital to maintaining the ecological balance and ensuring that the natural environment remains sustainable for future generations.

Complementing the work of the Stewardship Society is the Metlakatla Guardian Program, which involves community members in the active protection and management of the territory (Metlakatla First Nation, n.d.f). Guardians patrol important areas, conduct research, and ensure that community laws and protocols are respected, integrating traditional knowledge into the management of natural resources. This program is a testament to Metlakatla’s commitment to upholding their stewardship responsibilities, as the Guardians play a key role in preserving the integrity of the land and waters. *“The Guardians patrol important areas in Metlakatla, ensuring people aren’t doing things they shouldn’t be, and report any issues to the appropriate authorities”* (M08, FG1, 2023).

In addition to these programs, the Metlakatla community places a strong emphasis on the transmission of traditional knowledge, which is both a stewardship and governance practice. Initiatives like harvesting camps are central to this effort, where youth are taught traditional practices such as harvesting seaweed and seafood. These camps not only ensure that these important cultural practices are passed down to future generations but also reinforce the governance role of the community in managing their resources. By maintaining control over how and where harvesting takes place, and by educating the next generation in these practices, the community is exercising its governance over the land and resources. *“We’re putting some cabins on different sites where we harvest our seafood [...] so young people can go out and harvest the seaweed and other foods, keeping these traditions alive”* (M12, FG3, 2024). This approach sustains cultural practices while also asserting Metlakatla’s governance authority and deep connection to their lands and waters.

Metlakatla’s stewardship also extends to specific programs like Marine Use Planning and Fisheries Management. The Marine Use Plan integrates traditional knowledge with scientific research to guide sustainable marine resource use and protect key habitats (Metlakatla First Nation, n.d.g). The Fisheries Program ensures sustainable fishing practices, supports food security, and monitors fish populations and habitat health, reflecting Metlakatla’s deep connection to marine resources (Metlakatla First Nation n.d.d).

Cultural Heritage Protection is another vital aspect of Metlakatla’s stewardship efforts. This initiative focuses on preserving cultural sites, traditional practices, and artifacts, ensuring that the cultural heritage of the community is protected and passed down to future generations (Metlakatla First Nation, n.d.a).

The Cumulative Effects Monitoring initiative plays a critical role in assessing the long-term impacts of multiple projects on the environment and community. This ensures that development does not compromise the ecological and cultural integrity of Metlakatla’s lands and waters (Metlakatla First Nation, n.d.b).

Governance within Metlakatla is characterized by a blend of traditional house-based systems and modern administrative structures. The MFN Governing Council, guided by the Custom Election Code and Metlakatla Land Code, handles political and administrative matters, ensuring that decisions are made in alignment with both traditional values and contemporary needs (Metlakatla First Nation, n.d.e). The Land Code specifically emphasizes sustainable land use and self-governance, enabling the community to manage their resources effectively. Additionally, Metlakatla's proactive stance in asserting their jurisdictional rights is reflected in initiatives like the Treaty Negotiations team and the Metlakatla Development Corporation, which address both governance and economic concerns. Collaborative management of shared territories, particularly in cooperation with neighboring communities, is also a key feature of Metlakatla governance. *"We work a lot with our neighboring community—it's a shared territory between the two communities. If we can't get involved or don't have the capacity, they will step in, and we share information and responsibilities"* (M09, FG2, 2023).

### *Cumulative Pressures and Change over Time*

Significant changes to Metlakatla's ability to steward their resources and govern their territory began with the arrival of European traders in the 18<sup>th</sup> century. Initially, Metlakatla maintained control over their territory, operating a complex commercial and subsistence economy that included trade with newcomers. However, as colonial influences grew, Metlakatla's traditional governance and stewardship systems were increasingly undermined. By the 19<sup>th</sup> century, these influences took on a more overtly colonial character, leading to significant reductions in the amount of land, water, and resources that Metlakatla could control and steward (Martindale and Marsden 2011).

Colonial policies and practices imposed by Canada from the late 19<sup>th</sup> century onwards further eroded Metlakatla's governance and stewardship rights. The creation and subsequent reduction in the size of reserves, along with laws like the Indian Act of 1876, which criminalized traditional Indigenous governance practices, severely impacted Metlakatla's ability to manage their lands and resources. The Potlatch or feast, a crucial cultural practice for exercising social, political, and economic rights, was banned in 1884, further disrupting traditional governance structures. These changes were compounded by resource management policies that favored non-Indigenous interests at the expense of Metlakatla's stewardship rights (Martindale and Marsden 2011).

As a result of these historical pressures, the Metlakatla community has experienced a long-term decline in its ability to practice stewardship and governance rights, a trend exacerbated by modern challenges, including increased industrial activity in their territory. Community members have expressed concerns about the cumulative impacts of these activities, *"I'd say in the past ten years, there's been a lot of that going on and every year it keeps getting worse. With more people coming into our territory taking our natural resources"* (MFN, TUS, 2022).

These cumulative pressures have contributed to a growing lack of trust and confidence in the systems that govern resource management and development projects. Mistrust of Crown-led resource management runs deep, based on historical experiences of racism and unequal treatment. One participant illustrated this mistrust, stating *"Well, I hate blaming anybody, but it's the way industries were managed. And basically, it was the commercial fisheries had a lot to say within the Department of Fisheries. They basically got what they wanted, and it had the opposite effect for First Nations' Section 35 [rights]"*

(MFN, TUS, 2022). Furthermore, community members often feel that the large, resource-intensive decision-making processes that they are drawn into, such as the environmental assessment process, can be a distraction. As one community member noted, *“I think [the community has] already seen a number of large projects just go ahead anyways. There’s a lack of confidence in the system that any of their concerns will be effectively heard and implemented”* (M16, Interview, 2024). These issues have left the community feeling sidelined in decisions that directly affect their lands and resources.

In response to the cumulative pressures on their lands and waters, Metlakatla has made significant efforts to reassert its stewardship and governance rights. However, the community continues to face significant barriers, including insufficient capacity to manage and protect their territory effectively. As one participant noted, *“We’re completely understaffed and at capacity”* (M16, Interview 2024). For example, the Metlakatla Guardian Program, which plays a critical role in monitoring and protecting Metlakatla’s lands and waters, is often stretched thin, making it difficult to address the scale of the challenges they face.

While the community continues to work towards regaining control over their territory, the combined effects of historical and contemporary challenges have made this an ongoing struggle. The trajectory of these pressures suggests that without significant changes, the ability of Metlakatla to exercise their rights may continue to diminish in the future.

#### *Anticipated Future Conditions*

Given the current trajectory of cumulative pressures and the challenges faced by the Metlakatla in asserting their stewardship and governance rights, the anticipated future conditions for the community are complex and uncertain. If current trends continue, the ability of the Metlakatla to effectively manage and protect their lands and waters may be further compromised. The expansion of industrial activities, particularly in resource extraction and development projects, is likely to continue in and around Metlakatla’s territory. Without significant changes in the regulatory framework and more robust involvement of Metlakatla in decision-making processes, these developments are expected to exacerbate the existing pressures on the environment, resulting in further degradation of critical ecosystems, which are essential for traditional practices and Metlakatla’s cultural survival.

As industrial development activities intensify, the strain on stewardship programs is expected to grow. Programs like the Metlakatla Guardian Program, which are already stretched thin, will likely face even greater challenges. The Guardians will be expected to monitor and protect increasingly larger areas with the same or even diminished resources. This could lead to a decrease in the effectiveness of stewardship efforts, making it harder for Metlakatla to safeguard their lands and waters from the impacts of industrial activities.

The anticipated future also includes the risk of further erosion of governance rights. The ongoing marginalization of Metlakatla in resource management decisions is anticipated to continue if the current regulatory and governance systems remain unchanged. The lack of trust and confidence in these systems, as expressed by community members, suggests that Metlakatla may continue to be sidelined in decisions that affect their territory. This could lead to a further erosion of their governance rights, weakening their ability to assert control over their lands and resources.



As these challenges accumulate, environmental degradation threatens the foundation of Metlakatla's governance and stewardship. The relationship between the Metlakatla Nation and their lands and waters is one of mutual care, where stewardship of a healthy ecosystem affirms Metlakatla's rightful authority as traditional caretakers. As critical habitats and species are lost, this relationship and, by extension, Metlakatla's capacity to govern and steward their territories will be severely compromised. The degradation of the environment undermines Metlakatla's ability to exercise effective governance, making it increasingly difficult to sustain their stewardship responsibilities.

### *Preferred Conditions*

Metlakatla envisions a future where their stewardship and governance rights are fully respected and integrated into all decisions affecting their lands and waters. Members of Metlakatla have articulated clear objectives for how their territory should be managed to ensure its long-term health and the well-being of the community. A key aspiration is the protection of specific locations within their territory, as expressed by one participant: *"When we say the whole area, it is every single little island. Rachel Island, Triple Island, Melville [...] that is where everything we harvest – all of those islands"* (M12, Marine Harvesting Focus Group, 11 March 2024). This reflects a holistic vision where every part of their territory is safeguarded for future generations.

In this future, the Metlakatla community sees themselves playing a leading role in the protection, monitoring, preservation, and restoration of their lands and waters. The importance of increased Metlakatla presence and stewardship, particularly in areas facing significant development pressures, is emphasized. As one member noted, *"I think having more of a presence on the river would ensure that Metlakatla's doing more to steward the Skeena River than we currently are"* (M16, Interview, May 2024). This reflects a desire for proactive involvement in managing and protecting their territory, particularly in the face of external development pressures.

A preventative approach is also central to Metlakatla's vision for the future. The community aspires to be directly involved in spill prevention and response work, including tug operations and response efforts, to ensure they are not dependent on external entities. As one participant explained, *"We want to be doing all of the marine work – the tug work – all of that stuff. The response work, [...] if something happens, we are not depending on others. We – we are part of the prevention side, and we are part of the – you know – response side, right?"* (M15, Interview, 25 March 2024). This highlights the importance of building local capacity to manage risks and respond effectively to potential environmental threats.

The community also envisions a future where their governance systems, rooted in traditional practices, are recognized and respected in all decision-making processes. However, achieving this vision requires increased capacity, particularly in terms of funding and resources. Participants have expressed the need for secure and sustained funding to support their stewardship efforts. *"[F]irst and foremost though, it's that capacity – you need the funds – you need to build that capacity, but you also need the funds to do those things?"* (M15, Interview, 25 March 2024).

Alongside this, there is a strong desire for greater involvement in co-governance processes. One participant emphasized the importance of more direct engagement: *"There needs to be much, much more engagement with communities within those*

*organizations [i.e., Coast Guard, DFO]. They need to really make it a priority and put people within communities within those organizations and make them feel a part of those organizations” (M15, Interview, 25 March 2024). This highlights the aspiration for a shift in government-to-government relations, where Metlakatla authority is not only respected but also integrated into broader governance frameworks.*

Ultimately, the preferred future conditions reflect a vision of Metlakatla as the primary stewards and decision-makers over their lands and waters, with the resources and authority needed to protect and manage their territory in accordance with their values and traditional knowledge. The community aspires to a future where their stewardship and governance rights are not only recognized but are central to all activities within their territory, ensuring the health and resilience of their lands and waters for generations to come.

## 17.11. Gitanyow Hereditary Chiefs

### 17.11.1. Community Profile

Gitanyow is a Gitksan group of Tsimshian and Athapaskan heritage who speak a dialect of the Nass-Gitksan division of the Tsimshian language family. Historically, Gitanyow was one of seven Gitksan village groups located in the middle Skeena Valley. Gitanyow never participated in the historical nation-level political organization undertaken by the other Gitksan villages and has long maintained a separate political identity. The Gitanyow Lax'yip (territory) is approximately 6,200 square kilometers in the Upper Nass and upper Skeena (Kitwanga and Kispiox) Watersheds. Hunting, fishing and harvesting plants were important traditional activities undertaken by Gitanyow. As of October 2024, Statistics Canada reports 861 registered Gitanyow members living on and off reserve.

The basic social, territorial and political unit of Gitksan society (including Gitanyow) is the House or Wilp. The Gitanyow Huwilp are a collective of eight historic Wilp or house groups. The eight Hereditary Chiefs, representing the eight Huwilp, are appointed through a hereditary system and work collectively under the Gitaynow Hereditary Chiefs Office. For the purposes of this Assessment Report, "Gitanyow" will generally refer to the eight Huwilp of the Gitanyow Lax'yip as a single Aboriginal Group, represented by the Gitanyow Hereditary Chiefs.

### 17.11.2. Gitanyow Involvement in the Environmental Assessment

#### 17.11.2.1. Application Development and Review Phase

On November 24, 2023, Gitanyow sent a letter to the Proponents of Ksi Lisims LNG regarding potential project impacts on Gitanyow Huwilp. Gitanyow stated that although they were not listed as a participating Indigenous nation in the provincial Environmental Assessment (EA) process, they had conducted a preliminary review of the Ksi Lisims LNG Application and identified potential impacts to Gitanyow rights and interests. Gitanyow brought forward concerns about the connection between Ksi Lisims LNG and the Prince Rupert Gas Transmission Pipeline (PRGT), the lack of contact from the EAO on the project, climate impacts from well-head to terminal and greenhouse gas (GHG) emissions, impacts to salmon fisheries in the Nass Watershed, and the potential application of the Gitanyow Wilp Sustainability Assessment Process (WSAP).

On December 22, 2023, the Proponents provided a technical response to Gitanyow's questions and concerns pertaining to climate change, emissions targets and fisheries in the Nass Watershed, including information on the Proponent's Strategic Assessment of Climate Change (SACC), and project-specific field programs that were conducted in 2021 and 2022 to supplement the existing information on marine resources.

On February 8, 2024, Gitanyow sent a follow-up response to the Proponents reiterating their concerns over climate impacts from well-head to terminal, the potential impacts of the Project to Nass River salmon and inadequacy of the information and studies included in the Project Application. Gitanyow stated that the inadequacy of the Proponents' response to their November 24, 2023 letter impeded their ability to make a decision about whether to initiate a WSAP assessment for the Project. Gitanyow requested that the Ksi Lisims LNG EA be paused until such a time as fisheries genetic studies, climate impacts information and other proponent information responses were provided to Gitanyow; and, to allow time for Gitanyow to initiate their own assessment under the Gitanyow WSAP should it be triggered.

On March 11, 2024, the EAO responded to Gitanyow's letters of November 24, 2023 and February 8, 2024 to address their concerns with the EAO's process and engagement and the PRGT Project. The EAO shared that during the Early Engagement phase of the Ksi Lisims LNG EA, the EAO reached out to those First Nations whose asserted territory overlapped with the assessment area of Ksi Lisims LNG based on the EAO's understanding of the Project and its effects. Gitanyow's Consultative Areas Database boundary did not overlap with Project components or any anticipated effects from Ksi Lisims LNG; therefore, the EAO did not notify Gitanyow regarding the Project. The EAO also shared that the EAO advertised the opportunity to comment on the EA for Ksi Lisims LNG during two public comment periods, one on the

Initial Project Description from August to September 2021, and one on the Process Order (including the Application Information Requirements and the Assessment Plan) from April to May 2023.

Further in its letter of March 11, 2024, the EAO clarified the independence of the Ksi Lisims LNG EA from the PRGT Project and confirmed that should an amendment application be received, the EAO would consider the nature of the proposed physical changes to the project, the potential effects to impacted First Nations and their rights, and other matters prescribed under Section 25 of the *Environmental Assessment Act*, 2018 (the Act), including the assessment of GHG emissions. The EAO responded that climate change is being assessed through an assessment of GHG emissions of the Project, including upstream activities such as the PRGT pipeline. The EAO noted the importance of the Nass Watershed to Gitanyow and the ability of Gitanyow to have a food, social, ceremonial and economic fishery on the Nass mainstem and at Lax an Zok on the Meziadin River. The EAO shared that the EA for Ksi Lisims LNG was scoped to assess the potential adverse effects of the Project on Marine Resources, which includes juvenile salmon and related habitat in the area of the Project footprint. The EAO confirmed that it would be conducting an effects assessment based on the information provided in the Proponents' Application, and any additional information provided by the Technical Advisory Committee (TAC) and by First Nations to understand any potential effects and residual effects.

In the conclusion of its March 11, 2024 letter, the EAO confirmed that it would not be pausing the current EA process to align with the work that Gitanyow is considering undertaking with respect to the WSAP. The EAO explained that the EA is focused on mitigating the impacts to salmon regardless of their origins and offered to continue engaging Gitanyow on effects to juvenile salmon and salmon habitat on Ksi Lisims LNG, including the opportunity for Gitanyow to provide comments on the EAO's draft assessment report and proposed conditions relating to juvenile salmon and salmon habitat during the public comment period during the Effects Assessment phase of the EA. The EAO confirmed that it would notify Gitanyow when the documents are posted and available for review and consider any comments submitted by Gitanyow, including any work undertaken with respect to Gitanyow's WSAP, when finalizing the assessment report and proposed conditions before referral to provincial ministers for decision.

On March 20, 2024, Gitanyow submitted a report to the EAO, Minister of Environment and Climate Change Strategy, and the Ksi Lisims LNG Proponents, entitled "Ksi Lisims LNG and Associated Development: Review of Climate Impacts" (Climate Impacts Report), which provides a review of Ksi Lisims LNG in terms of potential climate impacts to help inform the Gitanyow WSAP. The report outlines concerns with Ksi Lisims LNG's stated climate performance, uncertainty of the proposed mitigation measures to address climate impacts, and the exclusion of development activities from the scope of the Project, thereby excluding some of the Project's climate impacts.

The Proponents responded to Gitanyow's concerns on March 20, 2024, regarding PRGT, effects of Ksi Lisims LNG on fisheries in the Nass watershed and climate change. The Proponent stated that, based on 30 years of data collection and Project specific field studies, there is a substantial amount of information available on salmon presence and use within and around the Project site and that with this information it was possible to complete a fulsome assessment of potential effects of the Project on salmon stocks, and specifically Nass Chinook in the Nass Estuary. The Proponent also stated that a single band of bull kelp is anticipated to be within the planned footprint of the Project, that it is anticipated that this band of bull kelp will experience temporary losses due to Project works and will naturally recolonize, and that bands of bull kelp can be found throughout the Nass Estuary.

On April 9, 2024, Gitanyow addressed a response to the EAO and Minister of Environment and Climate Change Strategy citing concern over the lack of consultation by the EAO or the Proponents with the Gitanyow Hereditary Chiefs regarding potential impacts to their rights and title, including their fisheries interests and rights in the Nass Watershed.

On May 15, 2024, the EAO responded to Gitanyow's letter of March 20, 2024 regarding the Climate Impacts Report and letter of April 9, 2024 regarding Gitanyow's participation in the EA. The EAO shared its understanding that the Proponents would provide a technical response to the concerns raised in the Climate Impacts Report. The EAO repeated its conclusion

that there are no anticipated effects to Gitanyow's rights from the proposed Ksi Lisims LNG project and clarified that this conclusion is not influenced by whether Gitanyow is participating as a participating Indigenous nation. The EAO confirmed that it will reconsider the duty to consult Gitanyow on Ksi Lisims LNG with any new information that Gitanyow provides. In response to Gitanyow's interests in potential effects to juvenile salmon and climate effects, the EAO stated that it welcomes engagement with Gitanyow on Ksi Lisims LNG and is open to further learning about Gitanyow's views regarding potential impacts to Gitanyow's rights. The EAO confirmed that it would amend the Process Order (Schedule B, the Assessment Plan) to reflect its engagement with Gitanyow, and its consideration of information brought forward by Gitanyow during the Effects Assessment Phase and when finalizing the EAO's draft assessment report and proposed conditions.

On July 1, 2024, Gitanyow addressed a letter to the EAO and Minister of Environment and Climate Change Strategy requesting it reconsider its conclusion that there are no potential effects to Gitanyow's rights from Ksi Lisims LNG triggering a duty of consultation. Gitanyow included a technical expert memo in response to the EAO's statement in its letter of May 15, 2024, that "The EAO will reconsider the duty to consult Gitanyow on the Ksi Lisims LNG Project with any new information that Gitanyow provides". The expert memo put forward the recommendation for completion of genetic testing of juvenile salmon at the project site and surrounding area, a detailed assessment of juvenile salmon utilization of Bull Kelp habitat at the project site, and a completed habitat destruction and alteration offset plan that includes evidence of efficacy of offset methods. Gitanyow included federal Impact Assessment Agency (IAA) representatives responsible for the Project in their correspondence to reflect their concern that the federal Crown fulfills its unique duty of consultation to the Gitanyow related to fisheries in the Nass Watershed. Gitanyow also requested that the EAO provide Gitanyow's letter to the Department of Fisheries and Oceans Canada (DFO).

On August 20, 2024, the Proponents issued a response to the Climate Impacts Report and critique, stating that most of the content of the report is out of scope of the Project's Application, and where questions, concerns, or issues have been identified that are in-scope, they had provided supplementary responses in previous letters to address those areas of concern. The Proponent's responses to specific concerns raised in the Climate Impacts Report were detailed in an appended table.

#### **17.11.2.2. Effects Assessment Phase**

On September 11, 2024, the EAO responded to Gitanyow's July 1, 2024 letter and June 2024 technical expert memo. In its response, the EAO confirmed that it sent Gitanyow's July 1, 2024 letter and technical expert memo to DFO and the IAA for their review. The EAO elaborated on the scope of the assessment of the Marine Resources Valued Component (VC), and shared its understanding of the available scientific information, including the Proponent's project-specific field programs, and a report titled *Juvenile Pacific Salmon Ecology in the Nass River Estuary*, which was appended for Gitanyow's review. The EAO shared the Proponent's assessment of residual effects for change in behaviour and risk of injury or mortality of salmonids due to underwater noise from construction activities to be moderate in magnitude and confined to the Marine Terminal local assessment area. The EAO also informed Gitanyow that it had reviewed the Application which indicated that, given the distance between construction activities and large spawning rivers like the Nass River (approximately 30 km), fish returning to that system are not anticipated to be affected by underwater noise from the Project. Regarding Gitanyow's request for genetic analysis of juvenile salmon, the EAO responded that it is focused on mitigating the impacts to salmon regardless of their origins, and that this level of detail in the EA would not provide any additional information to inform the types of mitigation measures used to mitigate potential Project impacts on salmon. In response to Gitanyow's concerns regarding potential effects to bull kelp habitat, the EAO shared its understanding that the Application and the Proponents habitat surveys show a fringe band of bull within the northern tip of Pearse Island. The Proponents' Application indicated that the fringe band of bull kelp is expected to experience some temporary loss due to Project works; however, losses are anticipated to be a small fraction of the total amount of the bull kelp present throughout the local area. The EAO confirmed that on April 20, 2023, DFO determined that the Project is likely to result in fish mortality

and/or the harmful alteration, disruption or destruction of fish habitat (HADD) and therefore requires authorization from DFO under the *Fisheries Act*, which would include the need for adequate and appropriate habitat offsetting and conditions for the protection of marine life, including salmon, that must be implemented.

Further in its letter of September 11, 2024, the EAO articulated that the duty to consult is triggered where there is a potential adverse effect to Section 35 rights. The EAO elaborated that Crown conduct that has the potential to cause an adverse effect can trigger the duty to consult, but this does not include a duty to consult on speculative impacts. The EAO reviewed the June technical expert memo provided by Gitanyow, and found that there was no additional information that was provided that would indicate that there will be an impact to Gitanyow fisheries, interests and rights. The EAO clarified that it is not saying that no information means no impact; rather, its view is that the potential impacts identified are speculative because there is no information to suggest that effects to juvenile salmon in the Project area will result in impacts to the Nass River fisheries, including in the Upper Nass where Gitanyow Hereditary Chiefs territories are located. The EAO concluded that where there may be potential impacts at the project site, mitigations will be in place to ensure Ksi Lisims LNG would not have significant adverse residual or cumulative effects on salmon and other marine resources; therefore, there is no indication that there will be a subsequent impact on Gitanyow's rights to fish in the Upper Nass. The EAO shared that it continues to welcome engagement with Gitanyow on Ksi Lisims LNG, specifically on Gitanyow's concerns raised regarding greenhouse gases and effects to juvenile salmon and salmon habitat, and the EAO is open to further learning about Gitanyow's views regarding potential impacts to Gitanyow's rights.

On October 11, 2024, Gitanyow issued a follow-up letter, including a technical review of the Proponents' response to Gitanyow's Climate Impacts Report. Gitanyow expressed that the Proponents' response did not adequately address the critiques raised in the Climate Impacts Report and that they were seeking a response to outstanding questions. Gitanyow also noted that they continue to call on the EAO to recognize the duty of consultation owed to the Gitanyow for Ksi Lisims LNG.

On October 17, 2024, the EAO issued an order under 19(2) of the Act amending the Process Order for Ksi Lisims LNG to add Gitanyow Hereditary Chiefs to Schedule B (Assessment Plan) of the Process Order. The EAO committed to notifying Gitanyow at key milestones and reviewing and assessing any comments submitted by Gitanyow Hereditary Chiefs during the Effects Assessment phase, including any work undertaken with respect to the Gitanyow WSAP, which will be considered when finalizing the EAO's draft assessment report and proposed conditions. The EAO will also meet with Gitanyow on request.

On October 25, 2024 Gitanyow issued a response to the EAO's September 11, 2024 letter and October 17, 2024 amendment to the Ksi Lisims LNG Process Order. The letter was supported by a second Technical Expert Memo dated October 21, 2024 regarding fisheries impacts of the proposed Ksi Lisims LNG terminal.

The EAO used the following sources in drafting this assessment chapter:

- The Proponents' Revised Application
- Information submitted during the EA by the Proponents
- Information submitted during the EA by Gitanyow
- Conclusions from the EAO's assessment of Valued Components

### 17.11.3. Assessment Boundaries

In correspondence from the Gitanyow Hereditary Chiefs Office to the EAO dated July 31, 2008, the Gitanyow Wilp Lax'yip are described as follows: "The Lax Yip covers the area from Kitwancool Lake, or Gitanyow Lake in the south, north to the Bell One Bridge on the Bell-Irving River and from Kitsault Lake in the west to Bonny Lakes in the east, for a total of

approximately 6,200 square kilometres. Gitanyow’s main village is situated on Hwy 37, approximately 20 kilometres north of Kitwanga Junction.”

Spatial boundaries for the project assessment are divided into project footprint, marine shipping route (MSR), materials and supply shipping routes (MSSR), an open water assessment area, as well as a transmission line assessment area. The Ksi Lisims LNG Project site is located approximately 80 kilometres from Gitanyow Lax’yip in the Upper Nass watershed.

Gitanyow raised concerns about impacts to salmon fisheries in the Nass Watershed. As part of the Application for an EAC, Ksi Lisims LNG included an assessment of juvenile salmon and salmon habitat in the Marine Resources Valued Component (VC) assessment. The scope of the local and regional assessment areas for the Marine Resources VC are laid out in the [Application Information Requirements](#), which were set to capture the furthest extent of anticipated effects. The EAO selected the temporal and spatial assessment boundaries for each VC, including Marine Resources, based on consideration of the extent of potential effects of the Project, with feedback from technical experts (including DFO), First Nations, and the public.

The Marine Resources VC local assessment area incorporates a 500-metre buffer around marine-based components of the Project site. The regional assessment area for the Marine Resources VC incorporates a 15-kilometre buffer around the Project site, which includes portions of Pearse Canal, Portland Canal, Observatory Inlet, Nass Bay, and Portland Inlet. Gitanyow Lax’yip does not overlap with the RAA, the LAA, or any other assessment boundaries set for the Project. Fishing in the Upper Nass by Gitanyow is approximately 80 kilometers away from the proposed Project and any potential measurable effect.

#### **17.11.4. Key Issues Raised**

##### **17.11.4.1. Climate Change**

Gitanyow raised concerns about the impacts of fossil fuel projects on the global carbon budget, and the implications for increasing drought, wildfire, and glacial recession within their territories. Gitanyow highlighted concerns regarding the assessment scope and exclusion of activities related to upstream natural gas development, natural gas pipelines, and demand for electricity; exclusion of downstream activities; and, a lack of confidence in Ksi Lisims LNG’s stated climate performance and use of carbon offsets.

The Proponents responded that Ksi Lisims LNG will be the lowest GHG-emission large-scale LNG facility in the world, and that they are committed to being net-zero ready by 2030 as detailed in their Strategic Assessment of Climate Change (SACC) document submitted as part of the Application. The SACC lays out a path to net-zero that focuses on three pillars in order of significance: 1. Avoidance of GHG emissions through design and engineering with a focus on electrification, 2. Mitigation – consideration for future mitigation opportunities as policy and technologies are expected to change; and then lastly, 3. Offsetting – the offsetting of hard-to-abate residual emissions through stringent carbon offsets purchased from credible standards and protocols. The SACC states that the first two pillars would remove 95 per cent of the project’s emissions compared to similar facilities, meaning a comparatively small number of offsets would be required. The SACC also includes estimation of upstream GHG emissions, a discussion on the Project’s impacts on provincial and federal climate targets, and the likelihood of global carbon leakage. The Proponents confirmed that the recommendations provided in Gitanyow’s Climate Impacts Report would be taken into consideration to meet collective objectives of the Project and its net-zero intentions.

The Proponents also confirmed that downstream emissions were excluded as per the expectations of the SACC due to these emissions being outside the control and scope of the Project. Regarding marine shipping, The Proponents confirmed that the scope was limited to Canada’s nautical limit, which is in line with the Application Information Requirements and in line with the SACC’s expectation that emissions that occur in Canada are accounted for.

Regarding carbon offsets, the Proponents acknowledged that the scale of available offsets will need to expand rapidly, as indicated in the Project's SACC, and various organizations have been doing significant work to address this challenge. The Proponents responded that they are currently exploring other credit development opportunities and remain committed to working with Indigenous nations and interested parties that may have desired offset projects under consideration.

Climate change was assessed through an assessment of GHG emissions of Ksi Lisims LNG, which included a full assessment of upstream activities such as the PRGT pipeline. Ksi Lisims LNG was assessed against the requirements of the Application Information Requirements to include credible plans that describes the mitigation measures that must be taken to minimize GHG emissions throughout all phases of the Project and achieve net-zero by 2030, per BC's Energy Framework, and net zero by 2050, per *Canada's Canadian Net Zero Emissions Accountability Act* (2021).

As required for designated projects under the IAA, the Proponents prepared their Revised Application to provide the information required by Environment and Climate Change Canada's (ECCC) Strategic Assessment of Climate Change, including a credible net-zero emissions plan describing how Ksi Lisims LNG would achieve net-zero emissions by the year 2050. Two scenarios were considered by the Proponents when calculating GHG emissions for Ksi Lisims LNG:

- a Base Case for when the electricity from the transmission line is in use at the start of the Operations phase; and
- an Alternative Case for generating electricity from temporary natural gas-fired power barges (power barges) if the connection to the BC Hydro grid is not complete at the start of the Operations phase. The Alternative Case assessed GHG emissions for a period of up to five years, but the Proponents expect that connection would take place in 2032. Based on the EAO's current understanding, this would mean that Ksi Lisims LNG would generate electricity through temporary power barges for approximately five years during the Operations phase, from 2028 to 2032.

The EAO has assessed the potential effects of Ksi Lisims LNG on GHG emissions in Appendix 12. The EAO proposed Certificate Condition 12 (Greenhouse Gas Emissions and Net-Zero Plan) requiring the Proponents to implement, to the satisfaction of the EAO, the Greenhouse Gas Emissions and Net-Zero Plan. The EAO also proposed Certificate Condition 19 (Project Electrification) requiring the Proponents to discontinue the use of power barges as a supplemental source of power for the Project once the Project is connected and commissioned to the BC Hydro grid and sufficient electrical capacity for Project Operations is available and supplied to the Project by BC Hydro.

In recognition that electrification of Ksi Lisims LNG will be a key aspect of the Proponents reaching a positive final investment decision on the Project, the requirements for the Proponents to adhere to the Net-Zero New Industry policy, the implementation of a net-zero plan, and the assumption that BC Hydro would be able to provide sufficient power to the Project the EAO is satisfied that should the Base Case scenario be achieved, Ksi Lisims LNG would not have significant adverse effects on GHG emissions.

#### **17.11.4.2. Fisheries in the Nass Watershed**

Gitanyow stated that Gitanyow food security, mental, physical and spiritual well-being, and cultural knowledge transmission rely on thriving salmon populations in the Nass and Skeena Watersheds. Gitanyow reported having multiple fishing sites throughout the Gitanyow Lax'yip, including on the Nass mainstem and at Lax and Zok on the Meziadin River.

Through a series of letters and scientific memos between the EAO, Gitanyow and the Proponents, Gitanyow expressed concerns regarding potential impacts of Ksi Lisims LNG on salmon fisheries in the Nass Watershed. Gitanyow pointed to the need for further research to reach a scientifically defensible conclusion on whether salmon in the Nass Watershed, and in turn the Gitanyow's right to fish, will be affected by Ksi Lisims LNG.

Gitanyow submitted a Technical Expert Memo in July 2024, which put forward recommendations for a more thorough review of the existing literature and additional studies, including completion of genetic testing of juvenile salmon at the



project site and surrounding area, a detailed assessment of juvenile salmon utilization of Bull Kelp habitat at the project site, and a completed habitat destruction and alteration offset plan that includes evidence of efficacy of offset methods.

The Proponents responded to Gitanyow that based on recent studies, 30 years of data collection, and Project specific field studies they believe there is a substantial amount of information available on salmon presence and use within and around the Project site and that with this information it was possible to complete a fulsome assessment of potential effects of the Project on salmon stocks, and specifically Nass Chinook in the Nass Estuary.

The Proponents conducted project-specific field programs in 2021 and 2022, that included marine fish and fish habitat surveys. Project activities were assessed in the Proponents' Application which included a focus on salmon habitat and their populations and change in injury or mortality risk. The potential residual effects for change in behaviour and risk of injury or mortality of salmonids due to underwater noise from construction activities was assessed by the Proponents to be moderate in magnitude and confined to the Marine Terminal local assessment area. In its Application, the Proponents outlined that the Project is not predicted to result in an impact that would affect the long-term persistence of any marine fish population, including the Nass River salmon populations.

With respect to bull kelp habitat, the Proponents conducted habitat surveys on the east side of Pearse Island, where Project development is planned, and did not find eelgrass and observed a fringe band of bull kelp within the northern tip of Pearse Island. The Proponents' Application indicated that the fringe band of bull kelp is expected to experience some temporary loss due to Project works; however, losses are anticipated to be a small fraction of the total amount of the bull kelp present throughout the local area.

Construction of Ksi Lisims LNG is expected to result in the permanent destruction of 32,229 m<sup>2</sup> of marine riparian vegetation, 15,086 m<sup>2</sup> of intertidal, and 6,166 m<sup>2</sup> of subtidal habitat due to the terrestrial Project footprint, pile installation, mooring anchors, and the infilling of the marine offloading facility. The Proponents plan to implement habitat restoration projects, including a habitat offsetting plan to compensate for any habitat loss. Specific measures may include transplanting eelgrass beds, restoring damaged kelp forests, and creating artificial reefs at the project site to enhance habitat complexity. Additionally, the Proponents proposed conducting regular habitat monitoring and engaging with local First Nations to ensure the effectiveness of these measures.

Regarding Gitanyow's request for genetic analysis of juvenile salmon, the EAO responded that the EA is focused on mitigating the impacts to salmon regardless of their origins, and this level of detail in the EA would not provide any additional information to inform the types of mitigation measures used to mitigate potential Project impacts on salmon, and therefore the EAO will not require the Proponents to carry out genetic testing.

The Technical Advisory Committee, including the DFO and participating Indigenous nations, reviewed the information the Proponents provided, and the Proponents addressed the feedback in the Revised Application. The [Issues Tracking Table](#) outlines the feedback received, the Proponents responses, and how the Application was updated to resolve the concerns.

DFO has an important role in the EA and permitting processes for reviewing the Project. DFO is participating as a member of the EAO's Technical Advisory Committee for the Project and is responsible for providing technical expertise and advice in relation to fish and fish habitat, including advice on proposed measures for avoiding or mitigating potential impacts to salmon. DFO determined that the project would result in harmful alteration, disruption or destruction of fish habitat (HADD) and must proceed with a *Fisheries Act* Authorization. If an authorization is granted by DFO for the Project, it will include conditions required for the protection of marine life, including salmon, that must be implemented. Ksi Lisims LNG has provided a [Conceptual Habitat Offsetting Plan](#) as part of their Revised Application, which was reviewed and commented on by the Technical Advisory Committee as part of the EA.

The Ksi Lisims LNG EA included as assessment of potential adverse effects of the Project on Marine Resources, which includes juvenile salmon and related habitat within the Project footprint. The scope of the local and regional assessment

areas for the Marine Resources VC are laid out in the [Application Information Requirements](#), which were set to capture the furthest extent of anticipated effects. The Marine Resources VC local assessment area incorporates a 500-metre buffer around marine-based components of the Project site. The regional assessment area for the Marine Resources VC incorporates a 15-kilometre buffer around the Project site, which includes portions of Pearse Canal, Portland Canal, Observatory Inlet, Nass Bay, and Portland Inlet. The EAO concludes that the Project would result in the following residual adverse effects on the Marine Resources VC:

- Change in water and sediment quality during all phases of the Project;
- Change in habitat during all phases of the Project;
- Change in behaviour caused by sensory disturbances; and
- Change in injury or mortality risk.

EAO identified the following proposed provincial conditions that would mitigate potential effects to juvenile salmon and salmon habitat:

- Certificate Condition 9 (Construction Environmental Management Plan) including a Marine Resource Monitoring and Management Plan that would include measures to protect marine mammals and fish and mitigate the underwater noise and to develop follow-up programs regarding the continuous monitoring of effluents discharge and marine intakes;
- Certificate Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to juvenile salmon and salmon habitat:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal;
- Implement an accidents and malfunctions response plan in consultation with First Nations, including a communication plan with notification methods and opportunities for First Nations to assist in the response;
- Vibration and blasting measures to reduce disturbance to fish, wildlife, and migratory birds; and
- Implement community feedback protocol in consultation with First Nations to address adverse federal effects; and

- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes.

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the Marine Resources VC, which includes effects to juvenile salmon and associated habitat. This conclusion considers the information and analysis presented in the Marine Resources chapter; the views of the TAC, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction.

Based on EAO's review of the Revised Application and the information provided by Gitanyow, there is no information to suggest that effects to juvenile salmon and salmon habitat in the Project area will result in effects to the Nass River fisheries at large, including in Upper Nass Watershed where Gitanyow Lax'yip is located. Based on the EAO's review, it finds no indication that there will be a subsequent impact on Gitanyow's rights to fish in the Upper Nass. The federal mitigation measures, follow-up programs and provincial conditions outlined above would mitigate anticipated impacts to juvenile salmon and salmon habitat and an adaptive management approach and monitoring will help ensure that any effects are being mitigated adequately.

#### **17.11.4.3. Gitanyow Wilp Sustainability Process**

The Gitanyow Wilp Sustainability Assessment Process (WSAP) was developed by the Gitanyow Hereditary Chiefs to parallel provincial and federal environmental assessment processes and to enact Gitanyow Ayookxw (laws) in a modern context responding to cumulative impacts, climate change, and recognizing and upholding the *United Nations Declaration on the Rights of Indigenous Peoples*.

The EAO communicated to Gitanyow that it welcomes engagement with Gitanyow on Ksi Lisims LNG, specifically on Gitanyow's concerns raised regarding greenhouse gases and effects to juvenile salmon and salmon habitat, and the EAO is open to further learning about Gitanyow's views regarding potential impacts to Gitanyow's rights. EAO issued an order under 19(2) of the Act amending the Process Order to add Gitanyow Hereditary Chiefs to Schedule B (Assessment Plan). As such, the EAO will notify Gitanyow at key milestones and will review and assess any comments submitted by Gitanyow Hereditary Chiefs during the Effects Assessment phase, including any work undertaken with respect to the Gitanyow WSAP, which will be considered when finalizing the EAO's draft assessment report and proposed conditions. The EAO will also meet with Gitanyow on request.

#### **17.11.4.4. Prince Rupert Gas Transmission Project**

Gitanyow raised concerns that Ksi Lisims LNG project is directly linked to the PRGT and that the two projects are significantly or wholly inter-dependent. Gitanyow cited that the narrow scoping of Ksi Lisims LNG, and the narrow scope of the climate assessment in the Application prevents one from seeing the full extent of incremental climate impacts of the project, which necessitates inclusion of PRGT and PRGT's impacts in the Ksi Lisims LNG EA.

The EAO understands that Gitanyow has concerns regarding PRGT and the linkages of PRGT to the Ksi Lisims LNG Project. While the Ksi Lisims LNG Project did indicate in its Application that they have entered into an agreement with PRGT, this agreement does not increase the scope of the EA for Ksi Lisims LNG. The scope of Ksi Lisims LNG and the scope of the EA are defined in the Process Order (including the Application Information Requirements and Assessment Plan) which clearly outline PRGT is a separate project from Ksi Lisims LNG. PRGT received an environmental assessment certificate (EAC) in 2014 and was granted an extension to their EAC in 2019.

The EAO consulted with Gitanyow on the potential effects from PRGT during the original EA process for PRGT. A summary of that consultation, along with how the EAO addressed impacts to rights and title, and other concerns raised by Gitanyow, are set out on pages 641 to 677 of the [PRGT Assessment Report](#).

When existing projects with EACs are going to be utilized for a proposed project undergoing an EA, that project is included in the cumulative effects assessment of a project undergoing an EA. PRGT was included in the cumulative effects assessment for Ksi Lisims LNG.

#### **17.11.4.5. Consultation & Engagement with Gitanyow**

During the Early Engagement phase of the Ksi Lisims LNG Environmental Assessment (EA) in 2021, the EAO reached out to those First Nations whose asserted territory overlapped with the assessment area of Ksi Lisims LNG based on the EAO's understanding of the Project and its effects. Gitanyow's Consultative Areas Database boundary does not overlap with Project components or any anticipated effects from Ksi Lisims LNG and the Province understands that Gitanyow fishing in the Upper Nass is approximately 80 kilometers away from the project site; therefore, the EAO did not notify Gitanyow regarding the Project.

In subsequent correspondence from Gitanyow in 2023, they raised concerns with the EAO's view that there are no anticipated effects to Gitanyow's rights from the proposed Ksi Lisims LNG project. Gitanyow stated that they are seeking a scientifically defensible conclusion on whether salmon in the Nass and Skeena Watersheds, and in turn the Gitanyow's right to fish, will be affected by Ksi Lisims LNG.

The EAO reviewed the information submitted by Gitanyow and concludes that no additional information was provided that would indicate an impact to Gitanyow fisheries, interests and rights. The EAO's view is that the potential impacts identified are speculative; there is no information to suggest that effects to juvenile salmon in the Project area will result in impacts to the Nass River fisheries, including in the Upper Nass where Gitanyow Lax'yip is located. Furthermore, where there may be potential impacts at the Project site, mitigations will be in place to ensure Ksi Lisims LNG would not have significant adverse residual or cumulative effects on salmon and other marine resources. Based on this, there is no indication that there will be a subsequent impact on Gitanyow's rights to fish in the Upper Nass.

The EAO continues to welcome engagement with Gitanyow on Ksi Lisims LNG, specifically on Gitanyow's concerns related to greenhouse gas emissions and effects to juvenile salmon and salmon habitat. The EAO is open to further learning about Gitanyow's views regarding potential impacts to Gitanyow's rights.

#### **17.11.5. Conclusions**

EAO considered the following factors and concerns brought forward in its consultation and engagement with Gitanyow:

- The scope of the assessment, assessment boundaries and Marine Resources VC which was scoped to capture the furthest extent of anticipated effects
- Distance from the project site to Gitanyow Lax'yip and Gitanyow fishing in the Upper Nass Watershed (approximately 80 kilometers)
- Distance of project site from large spawning rivers like the Nass River
- Information, including technical memos, provided by Gitanyow during the EA
- Information in the Proponents' Revised Application
- Nature of anticipated impacts to juvenile salmon during construction of the project
- Lack of supporting information to demonstrate there could be an impact to Gitanyow's rights
- DFO authorizations required to construct the project
- Provincial and federal proposed conditions to mitigate anticipated impacts to juvenile salmon and habitat, which the proponent would be required to implement if the EAC is approved.

The EAO responded to concerns raised by Gitanyow and required the Proponents to respond to technical questions related to the project provided by Gitanyow. The EAO continued to engage with Gitanyow throughout the EA and amended the Process Order documents to capture the engagement and consultation activities.

## 17.12. Gitxsan Laxyip Management Office

### 17.12.1. Community Profile

The Gitxsan Laxyip Management Office (GLMO) was established by the Gitxsan Simgigyat (chiefs) as a result of the 2023 Gitxsan Watershed Strategic Engagement Agreement, to provide technical advice to signatory hereditary Gitxsan Chiefs and coordinate consultation. 38 huwilp are represented by the GLMO, including in the upper Nass River: Luus, Niist/Baskyelaxha, Kliiyem Lax Haa, Djogaslee, Baskyelaxha, Delgamuukw, Wii Minosik and, Gyologyet.

### 17.12.2. Gitxsan Laxyip Management Office Involvement in the Environmental Assessment

On December 1, 2023, GLMO requested to participate as a participating Indigenous nation on behalf of the Simgigyat that GLMO represents, in the Ksi Lisims LNG environmental assessment, alleging potential project impacts on Nass River fisheries and on Gitxsan's Section 35 rights. GLMO also expressed concerns with climate change and the connection of Ksi Lisims LNG with the Prince Rupert Gas Transmission Project (PRGT). Under Section 14(2) of the *Environmental Assessment Act* (2018) (the Act), the Chief Executive Assessment Officer (CEAO) can make a determination about whether or not there is a reasonable possibility the Indigenous nation or its rights recognized and affirmed by section 35 of the *Constitution Act, 1982* will be adversely affected by the project.

On March 8, 2024, the EAO responded to GLMO and indicated that, through the review of the information provided in the Application and the information that GLMO provided, there is no information to suggest that effects to juvenile salmon in the Project area will result in effects to the Nass River fisheries at large, including in the Upper Nass where Gitxsan Nation territories are located. Based on this, the EAO's view was that there is no reasonable possibility that Gitxsan Nation or its Section 35 rights will be adversely affected by Ksi Lisims LNG. In its response, the EAO provided an opportunity to be heard, which is a required step prior to making a determination under Section 14(2) of the Act.

The Proponents responded to GLMO's concerns on December 22, 2023, regarding PRGT, effects of Ksi Lisims LNG on fisheries in the Nass watershed and climate change. The Proponent stated that, based on 30 years of data collection and Project specific field studies, there is a substantial amount of information available on salmon presence and use within and around the Project site and that with this information it was possible to complete a fulsome assessment of potential effects of the Project on salmon stocks, and specifically Nass Chinook in the Nass Estuary. The Proponent also stated that a single band of bull kelp is anticipated to be within the planned footprint of the Project, that it is anticipated that this band of bull kelp will experience temporary losses due to Project works and will naturally recolonize, and that bands of bull kelp can be found throughout the Nass Estuary.

On May 9, 2024, the GLMO provided a follow-up letter to the EAO that disagreed with the EAO's initial views on the effects to juvenile salmon. The GLMO stated that the Gitxsan Area of Interest extends far beyond Gitxsan territorial boundaries to encompass all habitat used by fish and wildlife to which the Gitxsan hold Indigenous rights, wherever that habitat may be, and the need for the EAO to engage GLMO on the potential impacts to juvenile salmon from Ksi Lisims LNG.

On July 11, 2024, the GLMO met with EAO and shared its perspectives on the project with the CEAO, including potential impacts to Gitxsan's rights. During this meeting, Gitxsan Simgigyat shared concerns about the pressures on salmon in the north coast, impacts on the land as a result of climate change, an overview of the Upper Nass Lax Yip Land Use Plan, the current state of fisheries in Gitxsan laxyip, and concerns with the EAO's current scoping of assessment boundaries and impacts to Gitxsan's Section 35 Rights.

On September 11, 2024, the CEAO responded to the GLMO and set out the reasons for making a determination under Section 14(2) of the Act. In making a determination whether there is a reasonable possibility that the Gitxsan Nation or its

Section 35 Rights will be adversely affected by Ksi Lisims LNG, the EAO considered the information brought forward through correspondence from the GLMO, as well as the information provided at the July 11, 2024, meeting.

The EAO considered the information provided by the GLMO including the Upper Nass Land Use Plan and concluded that the potential impacts identified by Gitxsan are speculative, as there is no information to suggest that effects to juvenile salmon in the Project area will result in impacts to the Nass River fisheries, including in the Upper Nass where Gitxsan Nation laxyip are located. Furthermore, where there may be potential impacts at the project site, mitigations will be in place to ensure Ksi Lisims LNG would not have significant adverse residual or cumulative effects on salmon and other marine resources. In making the 14(2) determination that there is no reasonable possibility that the Gitxsan Nation or its Section 35 rights will be adversely affected by Ksi Lisims LNG, the EAO considered the Act in its entirety, relevant common law, the United Nations Declaration on the Rights of Indigenous Peoples, past EAO practice, all relevant information and submissions from participants in the EA, including submissions provided by the GLMO and the Gitxsan, and the potential impacts of the decision on Gitxsan Nation and its asserted rights or interests.

The EAO [amended the Process Order](#) for the Project, specifically Schedule B or the Assessment Plan, which sets out how First Nations will be engaged and consulted on the Project to include the GLMO. The EAO committed to notifying the GLMO at key milestones and reviewing and assessing any comments submitted by the GLMO during the Effects Assessment phase.

### 17.12.3. Assessment boundaries

Gitxsan Laxyip is 33,000 square kilometers in size situated in the Middle and Upper Skeena and Upper Nass watersheds. Spatial boundaries for the project assessment are divided into project footprint, marine shipping route (MSR), materials and supply shipping routes (MSSR), an open water assessment area, as well as a transmission line assessment area. The Ksi Lisims LNG Project site is located approximately 130 kilometers from Gitxsan's laxyip in the Upper Nass watershed. Gitxsan Nation's territory does not overlap with the Regional Assessment Area, the Local Assessment Area, or any other assessment boundaries set for the Project.

### 17.12.4. Key Issues Raised

#### 17.12.4.1. Prince Rupert Gas Transmission Pipeline (PRGT)

In its letter on December 1, 2023, GLMO voiced concerns regarding a lack of engagement on PRGT.

In response to this concern, the EAO communicated that the PRGT received an Environmental Assessment Certificate (EAC) in 2014 and was granted an extension to its Certificate in 2019. The PRGT project is a separate project from Ksi Lisims LNG and EAO communicated that the PRGT project was not currently undergoing an EA review process. The EAO also noted its consultation with the 13 Gitxsan Simgigyet whose huwilp could be impacted by PRGT during the EA process of PRGT. As PRGT is going to be utilized for Ksi Lisims LNG, it is included in the cumulative effects assessment of the Ksi Lisims LNG for relevant Valued Components.

#### 17.12.4.2. Fisheries in the Nass Watershed

GLMO and the Gitxsan Watershed Authorities raised concerns about juvenile salmon and salmon habitat, including bull kelp and eelgrass ecosystems, and how potential impacts to this habitat will impact juvenile salmon and Gitxsan Nation's rights to fish in the upper Nass River. Concerns were also provided regarding the current status of salmon in the Upper Nass River and Gitxsan's connection to those salmon. GLMO requested an in-depth examination of juvenile salmon's habitat usage within the marine terminal proposed footprint.

During the Process Planning phase of the environmental assessment of Ksi Lisims LNG, the EAO determined the scope of a project assessment set to capture the furthest extent of anticipated effects. This scope for Ksi Lisims LNG was determined

with feedback from technical experts, First Nations and the public, and is captured in the Application Information Requirements. Potential impacts to salmon are assessed through the Marine Resources Valued Component, which includes a local assessment area with a 500-metre buffer around marine-based components of the Project site, and a regional assessment area which includes a 15 km buffer around the Project site including portions of Pearse Canal, Portland Canal, Observatory Inlet, Nass Bay, and Portland Inlet.

In responding to GLMO, the EAO noted that as part of the Application for an EAC, Ksi Lisims LNG included an assessment of juvenile salmon and salmon habitat in the Marine Resources Valued Component assessment. The EAO selected the temporal and spatial assessment boundaries for each VC, including Marine Resources, based on consideration of the extent of potential effects of the Project, with feedback from technical experts, First Nations, and the public.

The Proponents conducted project-specific field programs in 2021 and 2022 including marine fish and fish habitat surveys. Project activities were assessed in the Proponents' Application with a specific focus on salmon and their populations and change in injury or mortality risk. As a result of these surveys, the Proponents did not find eelgrass and observed a fringe band of bull kelp within the northern tip of Pearse Island. The fringe band of bull kelp is expected to experience some temporary loss due to Project works; however, losses are anticipated to be a small fraction of the total amount of this species present throughout the local area. The assessment conducted, based on the respective information, was reviewed by the Technical Advisory Committee, including review by DFO and participating Indigenous nations.

Regarding GLMO's request for genetic analysis of juvenile salmon, the EAO responded that the EA is focused on mitigating the impacts to salmon regardless of their origins, and this level of detail in the EA would not provide any additional information to inform the types of mitigation measures used to mitigate potential Project impacts on salmon, and therefore the EAO will not require the Proponents to carry out genetic testing.

The Technical Advisory Committee, including the DFO and participating Indigenous nations, reviewed the information the Proponents provided, and the Proponents addressed the feedback in the Revised Application. The Issues Tracking Table outlines the feedback received, the Proponents responses, and how the Application was updated to resolve the concerns. DFO has an important role in the EA and permitting processes for reviewing the Project. DFO is participating as a member of the EAO's Technical Advisory Committee for the Project and is responsible for providing technical expertise and advice in relation to fish and fish habitat, including advice on proposed measures for avoiding or mitigating potential impacts to salmon. DFO determined that the project would result in a harmful alteration, disruption or destruction (HADD) and offsetting or compensation measure would be implemented by the Proponents to comply with a Fisheries Act Authorization. If an authorization is granted by DFO for the Project, it will include conditions required for the protection of marine life, including salmon, that must be implemented. Ksi Lisims LNG has provided a Conceptual Habitat Offsetting Plan as part of their Revised Application, which was reviewed and commented on by the Technical Advisory Committee as part of the EA.

The Ksi Lisims LNG EA included an assessment of potential adverse effects of the Project on Marine Resources, which includes juvenile salmon and related habitat within the Project footprint. The scope of the local and regional assessment areas for the Marine Resources Valued Component (VC) are laid out in the [Application Information Requirements](#), which were set to capture the furthest extent of anticipated effects. The EAO concludes that the Project would result in the following residual adverse effects on the Marine Resources VC:

- Change in water and sediment quality during all phases of the Project;
- Change in habitat during all phases of the Project;
- Change in behaviour caused by sensory disturbances; and
- Change in injury or mortality risk.



EAO identified the following proposed provincial conditions that would mitigate potential effects to juvenile salmon and salmon habitat:

- Certificate Condition 9 (Construction Environmental Management Plan) including a Marine Resource Monitoring and Management Plan that would include measures to protect marine mammals and fish and mitigate the underwater noise and to develop follow-up programs regarding the continuous monitoring of effluents discharge and marine intakes;
- Certificate Condition 20 (Transmission Line Development Report), which will require Ksi Lisims LNG to confirm the baseline conditions through pre-construction surveys and assessments that address sensitive wetlands and vegetation, aquatic and marine environments, and wildlife and wildlife habitat, and implementation of any additional mitigation measures and Ksi Lisims LNG's mitigation measures in Appendix A of the Revised Application; and
- Condition 22 (Marine Water Quality Baseline Reporting), which will require Ksi Lisims LNG to report the results of a marine water quality baseline monitoring program that characterizes pre-disturbance water quality conditions within the marine receiving environment.

The EAO identified the following federal Mitigation Measures and Follow-up Programs under the IAA that would mitigate potential effects to juvenile salmon and salmon habitat:

- Mitigation measures for freshwater fish that maintains fish habitat and minimizes harm to fish, including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish and that is consistent with the Fisheries Act;
- Management of underwater noise, including managing exclusion zones as appropriate, to mitigate injury, mortality and disturbance of marine fish and marine mammals in the construction and operations of the marine terminal; and
- Implement follow-up programs for effects to fish from changes to water quality, benthic invertebrate communities, and entrainment and impingement of fish from the marine water intakes.

Based on EAO's review of the Revised Application and the information provided by GLMO, there is no information to suggest that effects to juvenile salmon and salmon habitat in the Project area will result in effects to the Nass River fisheries at large, including in Upper Nass Watershed where Gitksan's laxyip in the Upper Nass watershed is located. In the absence of contrary information, the EAO finds no indication that there will be a subsequent impact on Gitksan's rights to fish in the Upper Nass. Both the federal and provincial conditions outlined above would mitigate anticipated impacts to juvenile salmon and salmon habitat and an adaptive management approach and monitoring will help ensure that any effects are being mitigated adequately.

#### **17.12.4.3. Climate Change**

The GLMO raised concerns regarding climate change as the impacts from climate change are being felt around the globe. The GLMO identified several areas of concern including project splitting and its consequences on climate impacts, deficient mitigation measures, jeopardizing climate targets, and lack of consideration for the global impact of climate change.

Section 25 of the B.C. *Environmental Assessment Act* (2018) states that every assessment must consider greenhouse gas emissions, including the potential effects on the Province of B.C. being able to meet its targets under the [Climate Change](#)

[Accountability Act](#). Ksi Lisims LNG must also provide a credible plan for Ksi Lisims LNG to achieve net-zero greenhouse gas emissions by 2030, as per the [Minister’s letter regarding GHG standards](#) and the introduction of the [Net-Zero New Industry Policy](#)

As required for designated projects under the IAA, the Proponents prepared their Revised Application to provide the information required by Environment and Climate Change Canada’s (ECCC) Strategic Assessment of Climate Change, including a credible net-zero emissions plan describing how Ksi Lisims LNG would achieve net-zero emissions by the year 2050. Two scenarios were considered by the Proponents when calculating GHG emissions for Ksi Lisims LNG:

- a Base Case for when the electricity from the transmission line is in use at the start of the Operations phase; and
- an Alternative Case for generating electricity from temporary natural gas-fired power barges (power barges) if the connection to the BC Hydro grid is not complete at the start of the Operations phase. The Alternative Case assessed GHG emissions for a period of up to five years, but the Proponents expect that connection would take place in 2032. Based on the EAO’s current understanding, this would mean that Ksi Lisims LNG would generate electricity through temporary power barges for approximately five years during the Operations phase, from 2028 to 2032.

The EAO has assessed the potential effects of Ksi Lisims LNG on greenhouse gas emissions in [Appendix 12](#). The EAO completed its assessment by considering both of the aforementioned scenarios. As greenhouse gas emissions are inherently cumulative, the EAO did not require the Revised Application for Ksi Lisims LNG to include a cumulative effects assessment for GHG emissions and the EAO did not conduct a cumulative effects assessment for the same reasons.

The EAO has proposed Certificate condition 12 (Greenhouse Gas Emissions and Net-Zero Plan) requiring the Proponents to implement, to the satisfaction of the EAO, the Greenhouse Gas Emissions and Net-Zero Plan. The EAO has also proposed Certificate Condition 19 (Project Electrification) requiring the Proponents to discontinue the use of power barges as a supplemental source of power for the Project once the Project is connected and commissioned to the BC Hydro grid and sufficient electrical capacity for Project Operations is available and supplied to the Project by BC Hydro.

In recognition that electrification of Ksi Lisims LNG will be a key aspect of the Proponents reaching a positive final investment decision on the Project, the requirements for the Proponents to adhere to the Net-Zero New Industry policy, the implementation of a net-zero plan, and the assumption that BC Hydro would be able to provide sufficient power to the Project, the EAO is satisfied that should the Base Case scenario be achieved, Ksi Lisims LNG would not have significant adverse effects on GHG emissions.

#### **17.12.4.4. Lack of Engagement with GLMO**

The GLMO stated that Gitxsan Nation is a key right holder, and it has not been engaged in the environmental assessment process. The GLMO’s concern is also around lack of consultation with Gitxsan people.

During the Early Engagement phase of the Ksi Lisims LNG Project EA, in 2021, the EAO reached out to those First Nations whose asserted territory overlapped with the assessment area of the Ksi Lisims LNG Project based on EAO’s understanding of the project and its effects. Since Gitxsan Nation’s Consultative Areas Database boundary does not overlap with any anticipated effects from the Ksi Lisims LNG Project, the EAO did not notify Gitxsan Nation regarding this project.

The EAO advertised the opportunity to comment on the EA for Ksi Lisims LNG during four public comment periods:

- on the Initial Project Description from August to September 2021;
- on the Process Order (including the Application Information Requirements and the Assessment Plan) from April to May 2023;

- on the Application from November to December 2023; and
- on the draft Referral Material (including the draft Assessment Report, provincial table conditions, project description, and federal conditions and project description) from November to December 2024.

The EAO also amended the [Process Order](#) for the Project, specifically Schedule B of the Assessment Plan, which sets out how First Nations will be engaged and consulted on the Project, to include the GLMO. As articulated in the amended Assessment Plan, the EAO committed to notifying the GLMO of key milestones including the Draft assessment report, conditions and certified project description during the Effects Assessment phase of the environmental assessment, Referral to Ministers for decision on an environmental assessment certificate under Section 29 of the Act; and the issuance of any legal orders issued under the Act in relation to Ksi Lisims LNG. As part of commitments in the amended Process Order, the EAO notified the GLMO of the acceptance of the Revised Application on September 3, 2024 and has notified, and will continue to notify the GLMO about the public comments periods required by Sections 27(2)(a) and 28(2)(b) of the Act.

#### 17.12.5. Conclusion

EAO considered the following factors in its consultation and engagement with GLMO, and in considering the concerns and comments brought forward:

- The scope of the assessment, assessment boundaries and Marine Resources VC which was scoped to capture the furthest extent of anticipated effects
- Distance from the project site to Gitksan fishing in the upper Nass River (approximately 130 km)
- Distance of project site from large spawning rivers like the Nass River
- Information, including technical memos, provided by GLMO during the EA
- Nature of anticipated impacts to juvenile salmon during construction of the project
- Lack of supporting information to demonstrate there could be an impact to GLMO's rights
- DFO authorizations required to construct the project
- Provincial and federal proposed conditions to mitigate anticipated impacts to juvenile salmon and habitat, which the proponent would be required to implement if the EAC is approved.

The EAO responded to concerns raised by GLMO and required the Proponents to respond to technical questions related to the project provided by GLMO. The EAO continued to engage with GLMO throughout the EA and amended the Process Order documents to capture the engagement and consultation activities.

## 18.0 APPENDIX 6 – VALUED COMPONENT ASSESSMENTS

### 18.1. Acoustic

#### 18.1.1. Summary

Acoustic has been identified as a Valued Component since the project is expected to contribute to an increase in noise during each phase of the Project. The term acoustic refers to the study of sound and in this context, noise is referring to “unwanted sound”. This assessment for acoustic draws information from the acoustic Valued Component and Marine Use Valued Component and has been incorporated into the assessment of the wildlife and wildlife habitat Valued Component ([chapter 18.7](#)), marine resources Valued Component ([chapter 18.9](#)), and human health Valued Component ([chapter 18.10](#)). The Proponents assessed the potential increase of noise levels causing sensory disturbance, annoyance, and sleep disturbance to people during all project phases. These changes are expected to be caused by site preparation and clearing, Construction of temporary and permanent infrastructure, natural gas pretreatment, liquefaction, storage, offloading of LNG and natural gas liquids projects and marine shipping.

The EAO received comments from participating Indigenous nations, members of the public, and technical advisors. Key concerns around the acoustic Valued Component includes:

- Potential effects of increased noise on First Nations’ ability to carry out their traditional activities within their territories and the effectiveness of mitigation measures to reduce added anthropogenic noises; and,
- Potential effects of noise on community health and well-being as a key concern, as this would cause potential annoyance and sleep disturbance for community members living close to the project site.

The Proponents responded to concerns raised by reviewers and applied changes in the Revised Application where applicable.

To address key concerns raised regarding noise, the EAO has proposed Certificate Condition 9 (Construction and Environmental Management Plan) requiring the Proponents to address noise management which also includes the Proponents’ proposed mitigation measures.

The EAO assessed the potential effects to acoustics given the Proponents’ assessment, proposed mitigation measures, proposed [Certificate conditions](#), and additional noise management plans requiring noise monitoring, that would be developed for Ksi Lisims LNG as part of permitting. Given these mitigation measures, the EAO found that there would not be a significant adverse effect to acoustic as a result of this project.

#### 18.1.2. Assessment Boundaries

The assessment for acoustics included the Project Footprint, the Project marine shipping routes and the transmission line, within the Transmission Line Assessment Area.

The spatial boundaries for the acoustics assessment included the following:

- Local Assessment Area: 1.5 km in all directions from the Project footprint and the Project marine shipping routes;
- Regional Assessment Area: 3 km in all directions from the Project site and the Project marine shipping routes.
- Open Water Assessment Area: 3 km in all directions from the marine shipping route between the 12 nautical miles (i.e., 22.2 km) limit of Canada’s territorial sea and the BCCPs boarding location at or near Triple Island Pilotage Station (Effects associated with marine shipping route were only considered for the Construction and Operation phases of the Project as the greatest amount of noise is expected during these phases); and

- Transmission Line Assessment Area: the area within which a portion of the transmission line between the Project and Nisga'a Lands (as defined under the Nisga'a Treaty) would be developed (Noise effects from the transmission line during the operation phase was expected to be negligible and therefore not further assessed).

Technical boundaries for assessing the acoustics Valued Component were defined by the noise sensitive receptors. Based on B.C. Energy Regulator (BCER) noise guideline<sup>14</sup>, noise sensitive receptor is defined as only the residential areas within 1.5 km from the project footprint. Health Canada noise guidance<sup>15</sup> description of common noise receptors include residential dwellings, other harvesting activities and workers' accommodation locations. The Proponents used BCER noise guideline, Health Canada guidance, regulatory requirements, and input from Indigenous nations to define noise sensitive receptors within the local, regional, and transmission line assessment areas.

The temporal boundaries of the Acoustic assessment include:

- Construction phase: approximately 3-4 years;
- Operations phase: minimum of 30 years; and
- Decommissioning phase: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this report.

### 18.1.3. Existing Conditions by the Proponents

The existing conditions for acoustics in the region were assessed in [section 07.03](#) of the Revised Application by the Proponents and are summarized here.

The Proponents assessed the potential noise effects following federal and provincial guidelines and the results from a sound level meter by characterizing the existing acoustic conditions for the she selected noise sensitive receptors based on previously monitored results, default values as presented in BCER noise guideline, or recommended values from Health Canada noise guidance. and noise modelling using a noise modelling software. The Proponents studied the existing acoustic conditions for all selected noise sensitive receptors based on previously monitored results, default values as presented in BCER noise guideline, or recommended values from Health Canada noise guidance.

The existing acoustic environment within the local and Regional Assessment Area is dominated primarily by nature sounds such as those from birds, wind-generated noise from vegetation, rain, and waves, along with marine vessel traffic. The existing acoustic environment of noise sensitive receptors (residential areas) of Gingolx, Prince Rupert, and Digby Island are characterized by variable sounds including nature sounds (e.g., wind, waves, wildlife) but also anthropogenic sounds (e.g., rail traffic, marine traffic, air traffic, vehicular traffic, and commercial activities).

For the local area around the Project footprint, the BCER allows proponents to assume that the average daytime and nighttime ambient sound levels for rural areas to be 45 A-weighted decibels (dBA) and 35 dBA, respectively, in the absence of project specific measured ambient sound levels.

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<sup>14</sup> For more information, please refer to BCER Noise guideline:

<https://www.bc-er.ca/files/operations-documentation/Oil-and-Gas-Operations-Manual/Supporting-Documents/BC-Noise-Control-Best-Practices-Guideline.pdf>

<sup>15</sup> For more information, please refer to Health Canada Noise Guidance:

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-noise.html>

The Proponents used the existing information from other LNG projects including the results from LNG Canada noise monitoring surveys on coastal receptors along the shipping route. Results of these surveys indicated that the day-night equivalent sound levels along the shipping route are 48.2 dBA and 50.5 dBA which are already higher than values recommended by BCER.

#### 18.1.4. Potential Project Effects by the Proponents

The Proponents considered A-weighted sound pressure levels (dBA), change in percent highly annoyed (%HA), and low frequency noise effects (dBC) as indicators of potential effects of the Project on noise.

The Proponents identified the following potential effects from Ksi Lisims LNG Project:

- Increased noise levels causing nuisance, annoyance, and sleep disturbance to people; and
- Displacement and sensory disturbance to wildlife which is addressed in the Wildlife and Wildlife Habitat Valued Component.

During the Construction phase, potential effects would result from operation of equipment and vehicles, installation of piles, and marine vessels (i.e., passenger vessels, barges, tugboats).

During the Construction phase, the following activities will have potential adverse effects on acoustic Valued Component:

- The construction of land and marine based infrastructure (includes transmission line within the Transmission Line Assessment Area);
- Project site preparation and clearing; and
- Marine and land transport of workforce and material.

During the Operation phase, increased noise levels would be caused by the following activities:

- Operation of the facility (e.g., FLNGs and power barge); and
- Marine vessels (i.e., LNG carriers, passenger vessels, barges, and tugboats)

During the Decommissioning phase, operations of equipment and vehicles would increase noise levels.

The Proponents did not identify any potential adverse effects of particular importance or concern that requires further detailed assessment. The Proponents' assessment showed that the highest predicted Project sound level at the residential noise sensitive receptors would meet the requirements set by the BCER noise guideline. The predicted changes to noise levels resulting from the Project's Construction would be below the limits set by Health Canada except in Pearse Island – Whiskey Bay which is a potential harvesting location. The predicted changes that would result from the Project's operation would be below the limits set by Health Canada except in Pearse Island-Whiskey Bay and at site boundaries. During the Operation phase no residential receptor would experience sleep disturbance based on Health Canada noise guidance recommendation, except for the workers residing in the permanent workers' accommodation.

#### 18.1.5. Proposed Mitigation Measures by the Proponents

- The Proponents included a list of all proposed mitigation measures for acoustics in [Table 7.3-10](#) of the Revised Application. In addition to following best practices in the industry and complying with related federal and provincial guidelines, regulations and standards, the Proponents identified the following relevant mitigation measure and are committed to their implementation through project design, procedures, and management plans, which include: During construction, schedule high disturbance construction activities (e.g., piling) outside of sleeping hours for day shift workers;

- Include noise ratings as part of the selection criteria for construction equipment and installation methods such as:
  - Use of vibratory-type pile driving or screw piling methods where impact piling is not required due to geophysical conditions; and
  - Additional measures to reduce noise effects will be considered during construction planning, subject to equipment availability, such as:
    - Selection of rubber-wheeled equipment over steel-tracked equipment;
    - Use of electrified (typically quieter) equipment over gas/diesel powered equipment; and
    - Use of broad-band backup alarms instead of the tonal-type backup alarms.
- Identify and implement noise rating targets for facility equipment during the design phase based on regulatory noise guidelines or guidance. Implement noise reduction (e.g., silencers, enclosures), as required to meet targets;
- Reduce Construction and Operation marine traffic to and from the site by:
  - Pre-scheduling recurring / daily marine traffic movements;
  - Scheduling personnel deployments to and from the site to use inbound and outbound trips on the same vessel; and
  - Pre-scheduling and marshalling materials shipments to reduce the number of partial loads.
- Permanent workers accommodation building walls and roof design will incorporate noise attenuation measures to maintain indoor sound levels at acceptable levels in accordance with Health Canada recommended sleep disturbance thresholds for continuous and maximum noise levels; and
- Blasting will meet the established thresholds for ground vibration and overpressure.

The Proponents expect a high likelihood of success associated with all the proposed mitigation measures in the Revised Application.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC's draft potential federal conditions. The Key Mitigation Measures related to Acoustic Valued Component are outlined in [Appendix 2](#).

#### 18.1.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the Acoustic Valued Component for Ksi Lisims LNG were identified." Some of the potential effects of the increased noise from the Project activities on Wildlife and Wildlife Habitat, Fish and Fish Habitat, and Marine Resources were raised, will be covered in their respective chapters.

##### 18.1.6.1. Impact of increased noise on First Nations' Traditional activities

Participating Indigenous nations including Kitselas First Nation and Gitxaala First Nation expressed concerns over the impact that the increased noise during different phases of the Project would have on First Nations' traditional activities in their territories and their sense of enjoyment. These reviewers also raised concerns regarding the change in quality of the soundscape. The reviewers identified increased traffic in the area, operation of equipment and installation of piles during Construction and Operation of the Project, and operation of marine vessels and LNG carriers as potential sources of increased noise levels.

Gitxaala Nation also raised concerns about the mitigation measures considered by the Proponents in section 4 of the Acoustic Technical Data Report and their effectiveness to mitigate or mask added anthropogenic noise to background levels.

The Proponents committed to work with participating Indigenous nations and Technical Advisors to discuss further monitoring programs and mitigation measures related to First Nations traditional activities in their territories.

In response to these concerns, the EAO has proposed the Certificate Condition 9 (Construction and Environmental Management Plan) requiring the Proponents to address noise management.

#### 18.1.6.2. Impact of increased noise on health and well-being

Participating Indigenous nations raised concerns that the increase in noise and vibration caused by the Project would have an impact on community members living in close proximity to the Project site. Health Canada had clarification questions regarding the methodologies used to assess existing conditions, lack of qualitative information around uncertainty in existing conditions, and Project-related effects such as sleep disturbance and annoyance.

In response to concerns regarding impacts to community health and well-being, the Proponents plan to schedule Construction activities predominantly during dayshifts and take into account noise ratings when selecting and designing facility equipment. The Proponents would consider noise attenuation measures when designing the permanent workers accommodation.

The EAO has proposed Condition 9 (Construction and Environmental Management Plan) requiring the Proponents to mitigate the effects from project-induced noise impacts on community health and well-being.

#### 18.1.7. The EAO's Characterization of Residual Effects

After considering the proposed mitigation measures and Certificate conditions proposed, the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on the acoustic Valued Component:

- Increase in noise levels from the construction of the transmission line and the marine terminal;
- Increase in noise levels from the operation of the Project and shipping activities;
- Increase in ground vibration from blasting

The EAO's characterization of the expected residual effects of the Project on Acoustic is summarized below, as well as the EAO's level of confidence in the effects determination (including their likelihood and significance).

Table 40: Summary of Residual Effects for Acoustic Valued Component

Residual Effect	Assessment Rating*	Significance and Rationale
<b>Increase in noise levels</b> <i>Due to activities related to the construction of the transmission line and the marine terminal</i>	Context (resilience): <b>Low</b> Magnitude: <b>Low</b> Extent: <b>Regional</b> Duration: <b>Short-term</b> Frequency: <b>Continuous</b> Reversibility: <b>Fully reversible</b> Affected Populations: <b>Disproportionate</b>	<b>Not significant</b> Existing conditions within the Local Assessment Area and Regional Assessment Area showed that existing noise levels perceived by sensitive receptors are typically below thresholds set by BCER and Health Canada. The workers are not expected to experience a change in noise levels as they were not present at these locations prior to the Project construction. Considering the existing conditions, and the sensitivity of First Nations and local communities to the increase in noise and the potential effects on traditional and cultural activities, the resilience of nearby communities to increased noise levels is rated as



Residual Effect	Assessment Rating*	Significance and Rationale
	Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b> Importance: <b>Moderate</b>	<p>low. The lowest baseline daytime sound level is 45 dBA and the predicted noise levels resulting from construction activities over daytime range from 7.2 dBA to 18.4 dBA which are negligible when compared with baseline sound levels. Ksi Lisims LNG's contribution to the acoustic environment would be below the regulatory guidelines and is expected to be low in magnitude. The increase in noise level is limited to the Construction phase and will cease to exist after the Construction is over, therefore the effect is considered short-term and fully reversible. Potential effects related to the construction of the marine terminal would be regional, while the potential effects related to construction of the transmission line would be local in extent. Since the project-related noise sources are generally constant, the effect was considered continuous. The likelihood of the predicted noise effects occurring is high. With proposed mitigations, the consequences of residual effects are considered moderate (low magnitude and regional extent). Nearby residents who are sensitive to noise, and members of First Nations who peacefully enjoy and use the land near Ksi Lisims LNG would be disproportionately affected by noise from the construction of the transmission line and the marine terminal. There is a low degree of uncertainty associated with the predictive noise modelling techniques used to quantify potential changes in noise levels at receptors within the assessment areas. Since the potential for noise disturbance due to construction activities were issues identified by First Nations, members of the public and technical advisors, the importance was considered moderate.</p>
<b>Increase in noise levels</b> <i>Due to activities related to the operation of the facility and marine shipping activities</i>	Context (resilience): <b>Low</b> Magnitude: <b>Low</b> Extent: <b>Regional</b> Duration: <b>Medium-term</b> Frequency: <b>Continuous</b> Reversibility: <b>Fully reversible</b> Affected Populations: <b>Disproportionate</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b> Importance: <b>Moderate</b>	<p><b>Not significant</b></p> <p>Existing conditions within the Local Assessment Area and Regional Assessment Area showed that existing noise levels perceived by sensitive receptors are typically below thresholds set by BCER and Health Canada. The workers are not expected to experience a change in noise levels as they were not present at these locations prior to the Project construction. Considering the existing conditions, and the sensitivity of First Nations and local communities to the increase in noise and the potential effects on traditional and cultural activities, the resilience of nearby communities to increased noise levels is rated as low. Predicted nighttime noise levels range from 0 dBA to 25.2 dBA and are considered negligible compared with the baseline nighttime sound level of 35 dBA. Ksi Lisims LNG's contribution to the acoustic environment would be below the regulatory guidelines and is expected to be low in magnitude. The increase in noise level is limited to the operation phase of the project which is a minimum of 30 years and will cease to exist once the operational life of Ksi Lisims LNG is over, therefore the effect is considered medium-term and fully reversible. Since the project-related noise sources are generally constant over the operation phase, the effect was considered continuous. The likelihood of the predicted noise effects occurring is high. Nearby residents who</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>are sensitive to noise, and members of First Nations who peacefully enjoy and use the land near Ksi Lisims LNG would be disproportionately affected by noise from the operation of the facility and marine shipping activities. The likelihood of the predicted noise effects occurring is high. With proposed mitigations, the consequences of residual effects are considered moderate (low magnitude and regional extent). There is a low degree of uncertainty associated with the predictive noise modelling techniques used to quantify potential changes in noise levels at sensitive receptors within the local and Regional Assessment Areas. Since the potential for noise disturbance due to operation activities were issues identified by First Nations, members of the public and technical advisors, the importance was considered moderate.</p>
<p><b>Increase in ground Vibration</b></p> <p><i>Due to activities during Construction which would include blasting and have the potential to generate noise and ground vibration</i></p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short-term</b></p> <p>Frequency: <b>Irregular</b></p> <p>Reversibility: <b>Fully Reversible</b></p> <p>Affected Populations: <b>Disproportionate</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Moderate</b></p>	<p><b>Not significant</b></p> <p>Considering the existing conditions, and the sensitivity of First Nations and local communities to the increase in noise and the potential effects on traditional and cultural activities, the resilience of nearby communities to increased vibration levels is rated as low (BCER and Health Canada do not have any thresholds for existing conditions as it pertains ground vibrations). Potential effects would be limited to the Local Assessment Area. Acoustic effects would not extend for more than 180 days. Once blasting-related noise and vibration sources cease to exist, the noise and vibration levels in the Local Assessment Area would return to levels similar to baseline conditions, therefore the effect is considered short-term and fully reversible. Blasting would occur irregularly and at sporadic intervals during Construction. Residents of nearby communities and members of First Nations who peacefully enjoy and use the land near Ksi Lisims LNG would be disproportionately affected. The likelihood of the predicted noise effects occurring is high. Environment Canada defines a threshold of 12.5 millimetre/second for ground vibration and an air overpressure threshold of 128 dB (linear); Health Canada recommends an air overpressure threshold of 125 Z-weighted (dBZ) for a single blast per day. With proposed mitigations to ensure blasting would meet thresholds for ground vibration and overpressure, and limiting blasts during daytime, the consequences of residual effects are considered low (low magnitude and local extent). There is a low degree of uncertainty associated with the predictive noise modelling techniques used to quantify potential changes in ground vibration at receptors within the assessment areas as a result of blasts. Since the potential for ground vibration due to construction activities were issues identified by First Nations, members of the public and technical advisors, the importance was considered moderate.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.1.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are twenty-five existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG, as described in [Table 7.3-17](#) of the Revised Application.

The Proponents further assessed the increased noise levels from project related activities during Construction and Operations phases as cumulative effect pathways. There are no cumulative effects from the past projects and physical activities as the noise effects cease after the activities are completed. Present and foreseeable future projects and physical activities within the local and Regional Assessment Areas that are likely to interact with noise from the project are limited to marine shipping route activities.

The Proponents concluded that the potential for cumulative effects from these projects and activities are considered negligible due to the remoteness of the site, planned mitigation measures and with limited influence from current or reasonably foreseeable future projects acoustic sources. The Proponents also concluded that the potential for cumulative effects related to increased noise levels along the marine shipping route is low as the predicted increase in noise levels is negligible even with conservative assumptions applied.

The EAO concluded that the potential for cumulative effects from these projects and activities are considered low due to the number and types of projects and activities and the remoteness of the Project site, as well as the mitigation measures proposed by the Proponents and the Certificate conditions proposed by the EAO.

The EAO concludes that not significant cumulative effects to the Acoustic Valued Component are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

### 18.1.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the Acoustic Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.2. Air Quality

### 18.2.1. Summary

Managing air quality is essential for the protection of human health, vegetation, soil, water quality and wildlife. Air quality was identified as a key concern and provides information for the assessment of other Valued Components including surface water, vegetation and wetlands, and human health.

The main air pollutants assessed as potential concerns by the Proponents were nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>2.5</sub>, PM<sub>10</sub>), carbon monoxide (CO), and ozone (O<sub>3</sub>) for developing baseline concentrations and predicting Ksi Lisims LNG's contribution to changes in air quality. The baseline conditions described by the Proponents in the Revised Application indicated that the existing conditions are considered pristine thus Ksi Lisims LNG will introduce a new air quality influence in the region. The most influential impact to air quality currently is the recreational or commercial marine traffic since there is limited industrial activity in the area. The Proponents based the air quality dispersion modelling during the Construction phase on data provided for the comparable LNG Canada Export Terminal Project.

The Proponents described mitigation measures that would reduce some of the potential effects to air quality, and the EAO assessed the potential effects to air quality from changes in the concentrations of NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO, and O<sub>3</sub>. The following key issues were identified by reviewers through the review of the air quality assessment which included uncertainty around baseline conditions and the appropriateness of using comparative analysis with LNG Canada Export Terminal Project's air quality dispersion modelling.

To address key issues related to air quality, the EAO has proposed the following Certificate condition:

- Condition 9 (Construction Environmental Management Plan - Air Quality Management): including, at a minimum, air quality management program that reduce emissions at the Ksi Lisims LNG project site during Construction. Additional mitigation measures have been suggested based on the potential uncertainty of the predicted changes to air quality and a reporting requirement.

Additionally, as identified in the [Joint Permitting/Regulatory Coordination Plan](#), a permit would be required from BCER under the Environmental Management Act to authorize discharge of air waste to the atmosphere through air waste discharge authorization. It will be expected that the air quality impacts from all air waste discharge sources applied for will be assessed by dispersion modelling. This authorization from the BCER would set conditions on air emissions sources, including fugitive dust, and require air quality monitoring. This authorization may also require a detailed Fugitive Dust Management Plan and a potential for other plans.

Considering the EAO's analysis and having regard to the proposed Certificate conditions (which would become legally binding if a Certificate is issued), the EAO is of the view that Ksi Lisims LNG would not have significant adverse effects on air quality.

The effects on air quality from Ksi Lisims LNG are expected to overlap cumulatively with reasonably foreseeable future projects and activities within the region as well as baseline conditions from human sources in the Local Assessment Area. The potential for cumulative effects from these projects and activities is considered moderate in consideration of extensive past, current, and planned activities in the region such as other marine shipping activities. However, the contribution of effects to air quality from Ksi Lisims LNG itself to cumulative effects in the region is considered not significant.

### 18.2.2. Assessment Boundaries

The spatial boundaries for the air quality assessment included:

- Local Assessment Area: 40 km by 40 km area centred on the Project site including the facility, during all phases;
- Regional Assessment Area: 40 km by 40 km area centred on the Project site including the facility, during all phases, and the Marine Shipping Local Assessment Area;
- Marine Shipping Local Assessment Area: encompassed by the operations phase of marine shipping emissions for 5 km on either side of the marine shipping route;
- Transmission Line Assessment Area: the broad area of the transmission line to be developed between the Ksi Lisims LNG project site and Nisga’a Lands (as defined under the Nisga’a Treaty); and
- Open Water Assessment Area: encompassed by a 12 nautical mile (nm) limit on Canada’s territorial sea and the BCCPs boarding location at or near the Triple Island Pilotage Station for the operation phase open water marine shipping route.

The temporal boundaries of the Air Quality Assessment include:

- Construction phase: approximately 3-4 years;
- Operations phase: a minimum of 30 years; and
- Decommissioning phase: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.2.3. Existing Conditions by the Proponents

The baseline air quality conditions in the region were assessed in section 7.2 of the Revised Application by the Proponents and are summarized here. The Proponents noted that a lack of existing emission sources for both the Facility, Marine Shipping Local Assessment Areas/Regional Assessment Areas, the open water Assessment Area, and Transmission Line Assessment Area, and the resulting quantification of baseline emissions would not be practical. Since no ambient monitoring stations are located within the Facility or Marine Shipping Local Assessment Areas/Regional Assessment Areas, and instead located near large industrial sources and near to where people live, the Proponents used air quality data from representative locations outside of the Facility and Marine Shipping Local Assessment Areas/Regional Assessment Areas to characterize existing air quality.

#### Facility Local Assessment Area and Regional Assessment Area

The existing air quality conditions in the Local Assessment Area and Regional Assessment Areas for the facility has limited industrial influences given the remote location of Ksi Lisims LNG. Similarly, emissions from sources associated with industrial activity on gravel roads and or wind erosion to naturally exposed materials are minimal.

Baseline concentrations for NO<sub>2</sub> and SO<sub>2</sub> were based off of historical data of passive monitoring air quality data for the LNG Canada Export Terminal Project, collected monthly over eight to 14 months in 2013 and 2014. PM<sub>2.5</sub>, PM<sub>10</sub>, CO and O<sub>3</sub> baseline concentrations were developed using ambient monitoring data from locations within Prince Rupert and Kitimat and chosen for their similarities in the Ksi Lisims LNG’s Local Assessment Area and Regional Assessment Area’s terrain and meteorology influences. Other monitoring data location included Smithers St. Joseph School and Kitimat Village based on their similarities to the Ksi Lisims LNG’s Local Assessment Area and Regional Assessment Areas residential emission sources.

Baseline concentrations were based on most recent and representative years of ambient air quality data in the ENV’s annual summaries of B.C. ambient air quality data. Given the existing pristine air quality in the Facility Local Assessment Area and Regional Assessment Area, the existing baseline concentrations are less than the B.C. Air Quality Objectives

(AQO) and United States National Ambient Air Quality Standards (NAAQS). The Revised Application included baseline concentrations of NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, CO and O<sub>3</sub> in section 7.2 – Table 7.2-7 and provided an explanation for why O<sub>3</sub>, hydrogen sulfide (H<sub>2</sub>S), total reduced sulphur (TRS) and volatile organic compounds (VOCs) are not considered in the baseline conditions and was therefore not carried through the assessment. Diesel particulate matter is assumed to be included in the baseline PM<sub>2.5</sub>, but due to the limited sources, polycyclic aromatic hydrocarbons are assumed to be negligible in the baseline concentrations and were not considered further the air quality assessment.

#### Marine Shipping Local Assessment Area and Regional Assessment Area

The existing air quality conditions for the Marine Shipping Local Assessment Area and Regional Assessment Areas has limited industrial influences given the remote location of Ksi Lisims LNG and similar to the existing conditions described for the Facility Local Assessment Area and Regional Assessment Area. Emissions from sources associated with industrial activity on gravel roads and or wind erosion to naturally exposed materials are minimal except in the portion of the Marine Shipping Local Assessment Area and Regional Assessment Area closest to Prince Rupert where commercial traffic and activity has the most influence on air quality. The commercial traffic in this portion of the Marine Shipping Local Assessment Area and Regional Assessment Area consists of marine, road and rail traffic, with small industrial facilities and domestic sources contributing to the existing air quality influences. Vessel movements in this portion of the Marine Shipping Local Assessment Area and Regional Assessment Area includes cruise ships and ferries that transit multiple times per week with aggregated daily number of large vessel movements of:

- 6.9 vessels/day intersecting or transit past the proposed marine shipping route; and
- 1.1 large vessels/day transit past the Triple Island Pilot Boarding Station.

The current vessels movements associated with both the Facility and Marine Shipping Local Assessment Area and Regional Assessment Area are estimated to be 5,020 vessels per year for both inbound and outbound traffic that pass the Triple Island Pilot Boarding Station. A smaller portion of marine traffic of an estimated 210 vessel movements operate within the Portland Inlet and Canal as both inbound and outbound trips. Vessel movements are estimated and were based on data and information of the existing conditions derived from existing data and field studies and was used to develop an emission inventory.

For the open water Assessment Area and Transmission Line Assessment Area, since their locations are both remote, their existing air quality conditions have limited influences but are expected to have some marine traffic and natural background sources contributing to air quality. Since there is a lack of data for large emission sources and of air quality influences for the Local Assessment Areas, Regional Assessment Areas, open water Assessment Area and Transmission Line Assessment Area, the Proponents indicated that quantification of baseline emissions was not practical for this Application. Instead, the Proponents used representative monitoring data to characterize existing air quality conditions.

#### 18.2.4. Potential Project Effects by the Proponents

The Proponents identified that Ksi Lisims LNG's activities would potentially affect air quality through the increase in concentrations of ambient air pollutants during all phases of the Project resulting from emissions sources like operating equipment, vehicles, generating emissions from the LNG facility, flaring activities, loading LNG carriers and marine vessel operation. Concerns related specifically to effects to human health are discussed in more detail in [chapter 18.10](#) (human health) of this Report. For facility operation, eight modelling scenarios were used to assess changes in air quality. These scenarios were based on project design options that have yet to be confirmed in the final design and included considerations for how the facility would be powered and worst-case scenarios for flaring events. The scenarios are as follows with more detail provided in the Revised Application:

- Project-alone case ('Base Case' - BC Hydro Option);

- Project-alone case ('Alternative Case' - On-site Power Generation);
- Revised Application case consisting of Project-alone case (BC Hydro Option) plus baseline;
- Revised Application case consisting of Project-alone case (On-site Power Generation) plus baseline;
- Worst case flaring events considers two worst-case flaring events;
- Cumulative case application case (BC Hydro Option) consisting of the Application Case (BC Hydro Option) plus Westcoast Connector Gas Transmission Project (K5 Nasoga Compressor Station); and
- Cumulative case application case (On-site Power Generation) consisting of the Application Case (On-site Power Generation) plus Westcoast Connector Gas Transmission Project (K5 Nasoga Compressor Station).

The effects of Ksi Lisims LNG on air quality were modelled using dispersion modelling to predict the change in the ground-level air pollution concentrations as a result of facility operations, including LNG carriers with associated marine components such as tugboats. The assessment used ENV's recommended CALPUFF modelling system for the Operations phase (including marine shipping) using the 1-hour time periods representing the worst-case emission scenario. This modelling was only completed where the Proponents identified interactions with potential adverse effects of particular importance or concern warranting further detailed assessment during the Operations phase (including marine shipping). Other interactions identified potential adverse effects during all Ksi Lisims LNG phases but were not analyzed using the dispersion modelling system except for emissions from LNG and natural gas liquids loading due to their proximity of the operation source and potential for cumulative adverse effects. Baseline values were added to the maximum model predicted values from Ksi Lisims LNG to present the total cumulative air contaminant concentrations compared to the current B.C. AQO.

For Decommissioning emissions, which were not calculated for the Revised Application assessment on air quality, the Revised Application assumes that Decommissioning will have the same residual effects as Construction but over a shorter time frame, estimated at one year.

#### 1.1.5 Proposed Mitigation Measures by Proponent

The Proponents have identified mitigations and enhancement measures based on provincial and federal regulations and policies on management practices and guidelines, and other relevant peer-reviewed literature. Mitigations were selected to address Project interactions that affect air quality during all Ksi Lisims LNG phases. The Proponents identified options to reduce emissions through project design incorporating 100 percent BC Hydro's electricity, which will result in reductions in GHGs and air pollutant emissions during the Operations phase. The Revised Application - [Table 7.2-12](#), provided a summary of the mitigation and enhancement measures to further avoid or reduce Project-related changes in air quality. A summary of the relevant proposed mitigation measures is provided below:

- Manage NOx emissions during Operations by selecting best technology for turbines - If natural gas turbines are required prior to connection to the BC Hydro grid, the turbines will be selected based on the manufacturer's ability to meet the emissions requirements of the national [Guideline for the Reduction of Nitrogen Oxide Emissions from Natural Gas-fuelled Stationary Combustion Turbine](#). The Proponents expect that there would be high likelihood of success associated with this mitigation measure with little uncertainty since there are already commercially available turbines that operate meeting the NOx guidelines.
- Manage NOx emissions during Operations by selecting best technology for heaters – For the heat medium heaters, the heaters will be selected based on the manufacturer's ability to meet the emissions requirements of the national Multi-Sector Air Pollutants Regulations. The Proponents expect that there would be high likelihood of success associated with this mitigation measure with little uncertainty since there are already commercially available heaters that operate meeting the NOx regulations.

- Develop and implement equipment and machinery maintenance and inspection manuals based on manufacturer recommendations. Emissions testing on power turbines, thermal oxidizer, and heaters to confirm emission levels will be carried out as prescribed in the Project's Waste Discharge Authorization under the provisions of the Environmental Management Act administered by the BCER;
- Re-liquefaction of boil-off gas from the LNG tanks and from LNG carriers during loading operations instead of venting or flaring. The Proponents expect that there would be high likelihood of success associated with this mitigation measure with little uncertainty since the Project is designed to limit venting and flaring; and
- Implement industry standard practices for Construction and Decommissioning including dust control, regular maintenance of machinery and equipment, monitor and limit idling of vehicles and machinery, and use of low sulphur fuel and low emission technology (such as Tier IV systems on equipment where it is available).

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC's draft potential federal conditions. The Key Mitigation Measures related to air quality Valued Component are outlined in [Appendix 2](#).

### 18.2.5. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the air quality Valued Component for Ksi Lisims LNG were identified.

#### 18.2.5.1. Reliability of Air Quality Baseline Data and Emission Sources

Health Canada, ENV and BCER were concerned that while baseline air quality information was gathered using comparable LNG Canada passive monitoring, air quality data from monitoring stations in Smithers (CO) and Kitimat, B.C. (PM<sub>2.5</sub>) may not be representative of the Nisga'a's community of Gingolx and the area. This led to some uncertainty in the accuracy of the air quality modelling and the approach of using measured baseline concentration. Health Canada suggested it is not clear how the Proponents' approach, which uses the same baseline concentrations for different exposure durations, such as 1-hour and annual concentrations, captures short-term variations in NO<sub>2</sub>, SO<sub>2</sub>, concentrations, which can be important when assessing short-term health risks. ENV suggested that two sets of results, one using the baseline as proposed and one using the model guidelines recommendations be updated in the air quality section and the supporting [Air Quality Technical Data Report](#) to allow the proponent to provide a range of possible conditions. This approach would be limited to CO and PM<sub>2.5</sub> as the baseline for NO<sub>2</sub>/SO<sub>2</sub> was agreed upon.

Health Canada recommended that the Proponents provide further details as to why baseline concentrations using passive sampling are considered conservative for Ksi Lisims LNG and how variations in baseline short-term concentrations are taken into account when using a single baseline concentration for both 1-hr and annual averaging times.

The Proponents clarified their approach to characterizing existing conditions at the Ksi Lisims LNG project site and that existing conditions are considered to be pristine, as there are few emission sources present in the Local Assessment Area and Regional Assessment Area. The LNG Canada passive monitoring locations are also considered representative of the Ksi Lisims LNG Local Assessment Area and Regional Assessment Area due to similarities in climate, meteorology, and emission source influence. As there are few existing emission sources and emissions are generally small and intermittent (i.e., marine vessels) within the Local Assessment Area/Regional Assessment Area, existing air quality is expected to be relatively uniform in concentration with limited variation in concentration (concentration distribution). Excluding unique events such as wildfires, existing conditions are not expected to be characterized by infrequent occurrences of higher concentrations typical of larger urban centers or areas with significant industrial emission sources. In remote locations,



such as the Ksi Lisims LNG project site, baseline concentrations can, therefore, be reasonably characterized using average passive measurements for both short-term (1-hour) and long-term (annual) baseline concentrations.

In response to ENV's concerns, the Proponents updated the baseline values for CO and PM<sub>2.5</sub> in both the air quality section and the [Air Quality Technical Data Report](#) in the Revised Application, including only the amended results. The Proponents noted that while the baseline and Project concentrations are expected to increase with the updates to the Revised Application, the values will remain below B.C. AQO and do not change the assessment conclusions considering the max 1-hour predicted increased concentrations of CO and PM<sub>2.5</sub> to 12 percent from eight percent of the B.C. AQO and 50 percent from 27 percent of the B.C. AQO, respectively. Similarly, the updated max annual average predicted concentrations for PM<sub>2.5</sub> increased from 13 percent to 49 percent and the max eight-hour average predicted concentrations of CO increased from 10 percent to 20 percent of the B.C. AQO.

In response to these concerns, the EAO proposed Certificate Condition 9 (Construction Environmental Management Plan) that would require the Proponents to implement an air quality management program for EAO approval prior to construction.

### 18.2.6. The EAO's Characterization of Residual Effects

After considering the proposed mitigation measures and conditions proposed, the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on the air quality Valued Component for the following reasons:

- Construction activities will increase all emissions including NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub> (including Diesel particulate matter), PM<sub>10</sub>, TRS, CO, VOCs and polycyclic aromatic hydrocarbons from equipment fuel combustion and fugitive dust and result in an adverse residual effect. This will continue for site preparation and offshore construction activities over the duration of the Construction phase, estimated for four years at 12 hours per day. Specifically, NO<sub>2</sub>, PM<sub>2.5</sub> (including Diesel particulate matter and fugitive dust) are predicted to be elevated with a potential to exceed B.C. AQO at the Ksi Lisims LNG project site during Construction.
- Operation phase activities are also predicted to increase all emissions including NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub> (including Diesel particulate matter), PM<sub>10</sub>, TRS, CO, VOCs and polycyclic aromatic hydrocarbons and result in an adverse residual effect but are predicted to be below the B.C. AQO except for NO<sub>2</sub> in some scenarios. Predicted exceedances with maximum 1-hour NO<sub>2</sub> in concentrations higher than the 2025 CAAQS are expected during operations in the following scenarios:
  - Project-alone case (BC Hydro Option) exceeds 2025 CAAQS 1-hour for NO<sub>2</sub> for 1.5 percent to 2.1 percent of the hours in a year;
  - Project-alone case (On-site Power Generation) exceeds 2025 CAAQS 1-hour for NO<sub>2</sub> for 1.5 percent to 2.1 percent of the hours in a year;
  - Application case consists of Project-alone case (BC Hydro) plus baseline exceeds 2025 CAAQS 1-hour for NO<sub>2</sub> for 1.9 percent to 2.6 percent of the hours in a year; and
  - Application case consists of Project-alone case (On-site Power Generation) plus baseline exceeds 2025 CAAQS 1-hour for NO<sub>2</sub> for 1.9 percent to 2.6 percent of the hours in a year.

The EAO's characterization of the expected residual effects of Ksi Lisims LNG on the air quality Valued Component is summarized below, as well as the EAO's level of confidence in the effects determination (including their likelihood and significance).

Table 41: Summary of Residual Effects for Air Quality Valued Component

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Increase of all air pollutants during construction and decommissioning of the Project.</b></p> <p>Nitrogen dioxide and particulate matter 2.5 concentrations are predicted to be elevated with a potential to increase above the B.C. AQO in areas of significant construction. Overall, the Project's nitrogen dioxide and particulate matter 2.5 concentrations are expected to be below B.C. ambient air quality objectives for all averaging periods.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local and Regional including the Transmission Line</b></p> <p>Duration: <b>Short-term</b></p> <p>Frequency: <b>Multiple irregular events</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionally distributed</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Low</b></p>	<p><b>Not significant</b></p> <p>The Application used a comparative analysis for air quality dispersion modelling that was completed for a comparable and similar project, the LNG Canada Project. Given the pristine existing conditions (baseline concentrations), construction activities are predicted to increase all air pollutants but are predicted to remain below air quality objectives or standards with the exception of NO<sub>2</sub> and PM<sub>2.5</sub> which predicted exceedances for the Project based on the comparative analysis using the CALPUFF dispersion modelling used for the LNG Canada Project. Magnitude is considered to be low as EAO agrees that the Ksi Lisims LNG will not be as large as the LNG Canada Project but have similar types of construction activities. The EAO agrees that the air quality assessment predictions for the LNG Canada Project likely overpredicts emissions concentrations due to conservative assumptions and thus Ksi Lisims LNG's emissions should be lower than the modelled emissions for LNG Canada Project. The extent is mostly local in the Local Assessment Area but extends to and along the shipping route of the Regional Assessment Area and the construction of the Transmission Line. Construction is expected to take an estimated four years and one year for Decommissioning. Construction and Decommissioning activities would involve multiple irregular events instead of a sustained and continuous singular activity or event. NO<sub>2</sub> and PM<sub>2.5</sub> predicted exceedances would be expected to return near their baseline concentrations once construction ceases. It's expected that that these effects would not be evenly distributed and not affect all populations equally in the airshed. The likelihood of effects would be low, and the consequences are minor (low magnitude with local to regional extent) for NO<sub>2</sub> and PM<sub>2.5</sub> which led to a low assessment of risk overall. There is a low level of uncertainty in the assessment based on the comparable size of Ksi Lisims LNG with LNG Canada Project. Air quality generally did not receive a high level of interest or concern and so its importance is low.</p>
<p><b>Increase of all air pollutants during operations including marine shipping of the Project.</b></p> <p>Nitrogen dioxide concentrations are predicted to be elevated with a potential to increase above the 2025 CAAQS due to the Project.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local and Regional including the shipping route</b></p> <p>Duration: <b>Medium-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionally distributed</b></p>	<p><b>Not significant</b></p> <p>The Application used a comparative analysis for air quality dispersion modelling that was completed for a comparable and similar project, the LNG Canada Project. Given the pristine existing conditions (baseline concentrations), operation activities are predicted to increase all air pollutants but are predicted to remain below air quality objectives or standards with the exception of nitrogen dioxide which predicted exceedances for the Project based on dispersion modelling from the Operations phase. Magnitude is considered to be medium as predicted concentrations for the operation of the facility and the operation shipping activities air pollutants are predicted to be below the B.C. AQO, except for NO<sub>2</sub> in some scenarios for 2025 CAAQS. As the project is expected to be electrified, the EAO agrees that a significant amount of air pollutants would decrease with the removal of on-site power generation for the operation of the facility. The extent is mostly local in the Local</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>Predicted concentrations of air pollutants are predicted to be elevated near the LNG carriers and tugboats along the shipping route and are expected to remain below B.C. ambient air quality objectives for all averaging periods.</p>	<p>Risk (likelihood and consequences): <b>Low</b>                      Uncertainty: <b>Low</b>                      Importance: <b>Low</b></p>	<p>Assessment Area but extends to and along the shipping route encompassed by the Regional Assessment Area and into the Open Water Assessment Area. Operations is expected to last 30 years with a medium-term duration. Operations including marine shipping activities would involve continuous and regular events instead of multiple irregular activities or events. NO<sub>2</sub> predicted exceedances would be expected to return near their baseline concentrations once operations cease. It's expected that that these effects would not be evenly distributed and not affect all populations equally in the airshed. The likelihood of effects would be low, and the consequences are moderate (medium magnitude with local, regional and shipping route extent) for NO<sub>2</sub> which led to a low assessment of risk overall. There is a low level of uncertainty in the assessment based on the operations modelling which assumed that operations equipment is operating at full/rated capacity, representative of a worst-case emissions scenario. Air quality generally did not receive a high level of interest or concern and so its importance is low.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.2.7. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. The Revised Application identified 13 existing and reasonably foreseeable projects and two activities that have the potential to act cumulatively with the Ksi Lisims LNG, as described in [Table 7.2-26](#) of the Revised Application.

Of these projects and activities, all 13 have marine shipping components that are likely to interact cumulatively with Ksi Lisims LNG during their operations. The Proponents indicated that only the marine shipping components are likely to interact, therefore construction and decommissioning of these projects are not considered to have an interaction with the Project.

The remaining project that is likely to interact cumulatively with Ksi Lisims LNG is the proposed Westcoast Gas Connector Transmission's K5 Nasoga compressor station. The compressor station will contribute air quality impacting emissions from natural gas combustion and is approximately 16 kilometres away from Ksi Lisims LNG. The interactions of the compressor station's operation and marine shipping activities of present and reasonably foreseeable projects are expected to be low with Ksi Lisims LNG Operations including its marine shipping activities.

The Proponents compared predicted concentrations of the cumulative residual effects cases including the BC Hydro Option (Base Case), On-site Power Generation (Alternative Case), and Operations Shipping which showed less than 1 percent change to maximum predicted concentrations, indicating limited interaction of emissions from Ksi Lisims LNG and the compressor station. The increase in predicted concentrations to NO<sub>2</sub>, SO<sub>2</sub>, CO and PM<sub>2.5</sub> are a measurable change from existing conditions, but within the regulatory criteria of the B.C. AQO for 1-hour maximum concentrations, maximum annual average concentrations, maximum 8-hour concentrations and 24-hour predicted concentration.

The potential for cumulative effects from these projects and activities is considered negligible to low (for the Ksi Lisims LNG's Operations and marine shipping, respectively) due to limited interactions of emissions from the Ksi Lisims LNG's marine shipping operations, the compressor station from Westcoast Gas Connector Transmission and the transitory nature of operations shipping activities.

The EAO concludes that not significant cumulative effects to air quality are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### 18.2.8. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the air quality Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction described in [Appendix 15](#).

## 18.3. Groundwater

### 18.3.1. Summary

A clean and abundant groundwater system supports ecosystems, including vegetation and wildlife habitat.

The Proponents assessed the potential effects to groundwater through a review of relevant literature, publicly available provincial data, reported use information, and site data for Ksi Lisims LNG. No field studies were conducted in support of the groundwater assessment by the Proponents. The Proponents engaged Nisga'a Nation regarding their knowledge of groundwater usage at Wil Milit and no ongoing use was identified. The potential effect to groundwater identified by the Proponents was a change in groundwater levels or surface water-groundwater recharge/discharge characteristics due to change in infiltration rates caused by Ksi Lisims LNG construction and operation of land-based facilities. Groundwater is not being considered as a water supply source for the Project.

There is no planned discharge of water to freshwater systems or freshwater effluent discharge as part of Ksi Lisims LNG. As a result, groundwater quality was scoped out of section 7.5 of the [Application Information Requirements](#). The only anticipated effect of Ksi Lisims LNG to groundwater quality is through unintended spills. Terrestrial marine spills are assessed in [Appendix 7](#) (malfunctions and accidents).

Key issues raised by reviewers related to concerns regarding the lack of available data within the assessment areas and the determination of the Proponents to rely on a desktop assessment without conducting any field studies. The BCER also identified that impacts to groundwater quality should be assessed as a sub-component of this Valued Component. They noted the potential hydraulic connection of groundwater with surface water and wetlands on the Ksi Lisims LNG site, as well as the potential for Ksi Lisims LNG to introduce chemical contaminants to groundwater. The Proponents responded that there is no land-based or freshwater effluent discharge planned as part of the Ksi Lisims LNG, and as a result the only potential effect on groundwater quality would be through unintended spills.

The EAO assessed the potential effects to groundwater, and specifically, changes to groundwater quantity. Effects will be mitigated by the proposed Certificate Condition 9 (Construction Environmental Management Plan) requiring the Proponents to develop and implement measures for water and stormwater management.

Given the assessment, mitigation measure, and proposed Certificate conditions, the EAO found that there would not be a significant adverse effect to groundwater. The effects on groundwater quantity from Ksi Lisims LNG are not expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the Regional Assessment Area. The potential for cumulative effects from these projects and activities was considered not significant in consideration of no other past, current, and planned activities. As a result, the contribution of effects on groundwater quantity from Ksi Lisims LNG itself to cumulative effects in the region is considered not significant.

### 18.3.2. Assessment Boundaries

The spatial boundaries for the groundwater assessment included a Local Assessment Area and Regional Assessment Area:

- Local Assessment Area included the footprint encompassing the Ksi Lisims LNG land-based and marine-based infrastructure components; the streams lakes, and ponds at least 100 metres (m) upstream from the Ksi Lisims LNG footprint; and the streams, lakes, and ponds between the Ksi Lisims LNG footprint and the high-tide mark at the ocean.
- Regional Assessment Area was a 1 km radius buffer from the Local Assessment Area or the high tide water mark, whichever is closer, around the Ksi Lisims LNG site.

The Open Water Assessment Area and Transmission Line Assessment Area were deemed not applicable for groundwater Valued Component.

The assessment areas for the potential effects to groundwater considered the geographic extent from infrastructure construction and potential surface water withdrawal over which Ksi Lisims LNG activities may affect groundwater quantity.

The temporal boundaries for Ksi Lisims LNG include:

- Construction (approximately 3-4 years);
- Operations (30 years); and,
- Decommissioning phases (approximately 12 months).

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.3.3. Existing Conditions by the Proponents

The baseline groundwater conditions in the Regional Assessment Area were assessed in [section 7.5](#) of the Revised Application by the Proponents and are summarized here. Data and information sources used to characterize existing conditions were gathered through a review of relevant literature, publicly available provincial data, reported use information and site data for Ksi Lisims LNG. However, there is limited hydrogeological data available for the Regional Assessment Area or Pearse Island and as a result, the hydraulic conductivity, aquifer (potential water storage), and groundwater elevations are inferred from the limited geological data and literature. No field studies were conducted in support of the groundwater assessment. Based on available information, groundwater in the Local Assessment Area and Regional Assessment Area have not been affected by anthropogenic activities. The hydrogeological characteristics of the surficial sediments and bedrock within the Regional Assessment Area suggest a limited potential for groundwater flow and storage. Further, groundwater is not being considered as a water source for Ksi Lisims LNG and there are no groundwater users in the assessment area.

### 18.3.4. Potential Project Effects by the Proponents

No groundwater modelling was conducted by the Proponents to inform the assessment of potential effects. Due to the lack of hydrogeological information available for the Regional Assessment Area and Pearse Island, the effects on groundwater were predicted qualitatively by the Proponents through use of scientific literature, professional judgement, and relevant project experience.

The Proponents identified the following potential effect:

- Change in local groundwater levels due to a decrease in groundwater recharge caused by site preparation and clearing and the construction of temporary and permanent land-based infrastructure.

Groundwater recharge is water added to the aquifer through the unsaturated zone after infiltration and percolation following any storm rainfall event.

The Proponents anticipated that after Decommissioning the recharge and associated evapotranspiration will return to pre-Construction values, assuming there has been no change in the presence/thickness of surficial sediments.

### 18.3.5. Proposed Mitigation Measures by the Proponents

The Proponents identified the following relevant mitigation measure related to groundwater:

- Develop and implement measures for water and stormwater management.

The Proponents anticipated that the implementation of the above mitigation measure would reduce stormwater runoff and therefore reduce the impact of groundwater quantity by limiting the change in groundwater recharge.

### 18.3.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of Groundwater Valued Component for Ksi Lisims LNG were identified.

#### 18.3.6.1. Insufficient Available Data and Lack of Field Studies

The BCER raised concerns regarding the lack of available data of the assessment areas. As no field studies were conducted in support of the groundwater assessment, a desktop assessment was undertaken by the Proponents using available data. The BCER identified that, as a result, the Proponents did not have sufficient information to discuss if and how groundwater is connected to surface waters and/or wetlands and any potential interaction of groundwater and surface water.

In response, the Proponents acknowledged that the groundwater assessment was completed through a desktop review and was qualitative. The Proponents stated that groundwater is not being considered as a water source for Ksi Lisims LNG and there are no groundwater users in the assessment area. As a result, the only potential indirect pathway for an effect is a change in local groundwater levels through a change in infiltration rate due to Project activities. Considering that there is no planned use of groundwater and limited direct pathways for impact, no additional field exploration or groundwater assessments were undertaken.

In consideration of these concerns, the EAO has determined that because groundwater is not being considered as a water source for Ksi Lisims LNG it has not been carried forward for assessment and the concern has been adequately addressed.

#### 18.3.6.2. Changes to Water Quality and Surface-Groundwater Interactions

The BCER raised concerns that given the uncertainty of the occurrence of groundwater and of the potential hydraulic connection of groundwater with surface water and wetlands on the Ksi Lisims LNG site, groundwater quality should be included as subcomponent of the groundwater Valued Component. Further, the BCER identified that groundwater quality should also be considered because of the potential for Ksi Lisims LNG to introduce chemical contaminants to groundwater.

The Proponents responded that there is no land-based or freshwater effluent discharge planned as part of the Ksi Lisims LNG. As a result, the only potential effect on groundwater quality would be through unintended spills, and impacts from terrestrial marine spills are assessed in [Appendix 7](#) (malfunctions and accidents). The Proponents further clarified that since the local assessment and Regional Assessment Areas occupy the lowest elevations on the north end of Pearse Island, groundwater discharge to surface water environments are expected within these areas. Additionally, since surficial and bedrock geology underlying the Local Assessment Area and Regional Assessment Area are generally expected to be low-permeability, the rate of groundwater discharge to the surface water environment is also expected to be low.

In response to these concerns, the EAO included the following condition in the proposed Certificate:

- Condition 9 (Construction Environmental Management Plan): Develop and implement measures for water and stormwater management, identified in the Application Appendix A. The Construction and Environmental Management Plan further requires the Proponents to address erosion and sediment control, and water quality management (both freshwater and marine).

As no groundwater extraction is planned, through the management of stormwater (e.g., runoff) the impact on ground water quantity will be reduced by limiting the change in groundwater recharge. As identified in [chapter 18.5](#) (marine resources) effluent, including stormwater would discharge to infiltration/detention ditches with multiple marine outfalls with no discharge to freshwater systems. The EAO is confident that applicable federal and provincial regulation and

guidelines to protect water quality (e.g., Fisheries Act, EMA, Waste Discharge Regulation) will address potential water quality and surface groundwater interactions and as a result the concern has been adequately addressed.

### 18.3.7. The EAO’s Characterization of Residual Effects

After considering the proposed mitigation measure and Certificate conditions proposed, the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on groundwater:

- Changes to groundwater quantity.

The EAO’s characterization of the expected residual effects of the Project on groundwater is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 42: Summary of Residual Effects for Groundwater

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Changes to groundwater quantity</b></p> <p>Changes in groundwater flow patterns and groundwater levels due to changes in ground surface material, permeability, or slope within the footprint where impervious surfaces remain, vegetation is removed will result in reduced evapotranspiration rates, increased runoff, and may result in decreased recharge rates.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Medium-term</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Frequency: <b>Continuous</b></p> <p>Affected Populations: <b>Not applicable</b></p> <p>Risk (Likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Moderate</b></p>	<p><b>Not Significant</b></p> <p>The adequate baseline condition of the groundwater quantity and the ability of it to recover led to this conclusion of high resilience. The magnitude for groundwater quantity effects is low from effects such as reduced evapotranspiration rates, increased runoff, and decreased recharge. Effects to groundwater quantity would be limited to areas of site clearing and paving, which is limited to the Local Assessment Area. Effects to groundwater quantity would occur during Construction and Operation, with recovery achieved during Decommissioning. Effects to groundwater quantity would be expected to be fully reversible into Reclamation. Groundwater is not considered as a source of water for the Project, nor is it currently being used as a source of water by any person, community or project so there are no affected sub-populations. The changes in the groundwater system would be expected to occur (medium likelihood/low likelihood), although the consequences would be minor (low magnitude and local extent). This led to a rating of low risk. Effects of site clearing, construction, and operation are well understood from qualitative analysis and the uncertainty in the assessment is low. Groundwater resources have been identified as important by two participating Indigenous nations.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.3.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are no existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with groundwater, and as a result, the potential for cumulative effects from these projects and activities is considered negligible for Ksi Lisims LNG. The EAO concludes that not significant cumulative effects to groundwater are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.



### 18.3.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on groundwater. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.4. Surface Water

### 18.4.1. Summary

Clean and abundant available surface water supports aquatic life and enables ecosystems and communities who depend on this resource. The surface water Valued Component was assessed from both a quality and quantity perspective. The Proponents assessed the potential effects to surface water quantity and quality that may result from Ksi Lisims LNG with expected interactions from site preparation and clearing work, construction, natural gas pre-treatment, liquefaction and storage, and temporary onsite power generation.

The Proponents identified potential effects to the surface water Valued Component as potential changes to both its chemical and physical composition and amounts of surface water flow. Ksi Lisims LNG project-related activities could include erosion and sedimentation, alterations to riparian areas via increased water temperatures in streams and wetlands, effects to waterbodies from air emissions including acidification and eutrophication, changes to the land cover and watershed and water withdrawals. The Proponents proposed mitigation measures that would reduce these potential effects to surface water.

Key issues raised by reviewers included potential effects to water quantity from Acid Rock Drainage (ARD) and Metal Leaching (ML) on surface water quality as ground clearing and disturbances can create a risk of metals leaching to the environment. Some reviewers also noted a concern with the limited amount of baseline data for water quality sampling and the limited scoping information regarding future surface water monitoring and sampling frequency. The Proponents indicated that additional baseline data collection is planned in advance of permitting in the future. Additional concerns included the level of detail in the surface water quality management plans, which made it challenging for reviewers to determine the plans' effectiveness. Similarly, concerns were expressed about the level of detail in mitigation measures, suggesting that more specific actionable criteria were needed for predictions on effectiveness. The Proponents indicated that further refinement of mitigation measures including timing, methods and monitoring will be completed during post-environmental assessment decision and pre-construction planning when details on construction planning are being refined.

The EAO proposed Certificate conditions to require erosion and sediment control measures, water quality management including acidification and eutrophication monitoring in aquatic and terrestrial environments, safe refueling practices and dust control measures as part of Condition 9 (Construction Environmental Management Plan). The Proponents also proposed a follow-up program that Ksi Lisims LNG would monitor aquatic effects through an aquatic effects monitoring. Additionally, as identified in the [Joint Permitting/Regulatory Coordination Plan](#), management plans would be required for Ksi Lisims LNG as part of permitting, including licences for surface water use and or withdrawal.

The EAO assessed the potential effects to surface water in consideration of the proposed mitigation measures, additional permits, and proposed Certificate conditions that would require Ksi Lisims LNG to implement mitigation measures for effects to surface water and found that there would not be a significant adverse effect to surface water.

### 18.4.2. Assessment Boundaries

The Ksi Lisims LNG project's footprint encompasses both temporary and permanent clearing areas or structures for both land based and marine based project related infrastructure and activities. The spatial boundaries for the surface water assessment included:

- Local Assessment Area: the District Lot boundaries 5431 and 7235 and encompasses the area within which Ksi Lisims LNG potential effects on surface water quality and quantity can be measured and would be of potential concern;

- Regional Assessment Area: the entirety of the watersheds on Pearse Island intersected by the Ksi Lisims LNG project site. This encompasses the potential interactions with other past, present, or future activities or projects that may affect surface water in the same watersheds that Ksi Lisims LNG specific interactions with surface water may occur;
- Surface Water Acidification and Eutrophication Study/Assessment Area (AESA): the 40 km by 40 km Air Quality Facility Local Assessment Area described in [section 7.02](#) of the Revised Application and [chapter 18.2](#) (air quality) of this Report used to assess specific effects resulting from air emissions; and
- Transmission Line Assessment Area: the broad area of the transmission line to be developed between the Ksi Lisims LNG project site and Nisga’a Lands (as defined under the Nisga’a Treaty).

The Revised Application did not include an Open Water Assessment Area as it was deemed not applicable for this Valued Component.

The temporal boundaries of the surface water Assessment include:

- Construction phase: approximately 3-4 years;
- Operations phase: a minimum of 30 years; and
- Decommissioning phase: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

#### 18.4.3. Existing Conditions by the Proponents

The existing surface water conditions within the assessment boundaries were assessed in [section 7.4.5](#) of the Revised Application by the Proponents and are summarized here. Data and information sources used to characterize existing conditions were gathered through a review of relevant literature, publicly available provincial data, reported use information and site data for Ksi Lisims LNG. For surface water quality, samples and measurements were collected during fish and fish habitat field surveys, hydrology surveys and acidification and eutrophication surveys and compared to B.C. Water Quality Guidelines for freshwater aquatic life (WQG-FAL). Measured water quality parameters for the existing conditions are described in detail in the Freshwater Fish and Fish Habitat Technical Data Report ([Appendix 7.08A](#)) and the Technical Data Report for surface water acidification and eutrophication ([Appendix 7.08B](#)).

[Table 7.4-8](#) of the Revised Application summarizes the measured and observed surface water quality parameters including temperature, pH, dissolved oxygen, conductivity, turbidity and clarity. The dissolved oxygen measurements were indicated as being above the B.C. WQG-FAL in larger mainstem streams; whereas wetlands, including beaver impoundments, had lower dissolved oxygen concentrations compared to flowing streams. For pH measurements, waterbodies and watercourses had higher pH levels compared to wetlands including beaver impoundments and streams. Multiple measurements were taken during different seasons where pH was found to be generally lower in the spring and higher in the summer and fall.

Surface water turbidity was measured as low in all streams and wetlands in the Local Assessment Area and water clarity was clear in most streams, while the clarity was brown/yellow or green/algae in most wetlands. Water conductivity was measured to be generally “low” (less than 40 microsiemens per centimetre) in most streams and in wetlands in the Local Assessment Area, indicating pristine or background conditions. Water temperatures were higher in wetlands and beaver impoundments than in streams in all seasons.

Water samples were collected from the lakes and streams within the Local Assessment Area for the AESA and analyzed for metals. Metal concentrations in the lakes and streams met the B.C. WQG-FAL, except for aluminum, cadmium, and iron.

Water samples from streams and lakes were tested for acid sensitivity and only one of the lakes sampled showed an acid sensitivity, and all lakes and streams had an oligotrophic baseline trophic status and interpreted as having low levels of nutrients and algae.

For surface water quantity, total annual runoff ranged from 2,400 – 2,700 millimetres, with much of the precipitation being captured as possible evapotranspiration and infiltration at Pearse Island. For the largest watercourse (WC-09), the observed average monthly flows range from 0.04 m<sup>3</sup>/s (July 2023) to 0.90 m<sup>3</sup>/s (May 2022). For the smallest watercourse (WC-02), the observed average monthly flows range from 0.00 m<sup>3</sup>/s (July 2023) to 0.25 m<sup>3</sup>/s (November 2022).

Limited surface water quality and quantity data and information were collected and analyzed for the Transmission Line Assessment Area resulting in limited characterization and hydrometric analysis for the streams and watercourses in the Transmission Line Assessment Area. Depending on the final transmission line route, the Proponents indicated that between 16 and 43 mapped watercourses would be crossed during construction and operation of the transmission line. Of these watercourses, four out of five watercourses have previously documented fish observations and recorded salmon spawning. Figure 18-1 below, provided in the Application, describes the existing hydrological environment.

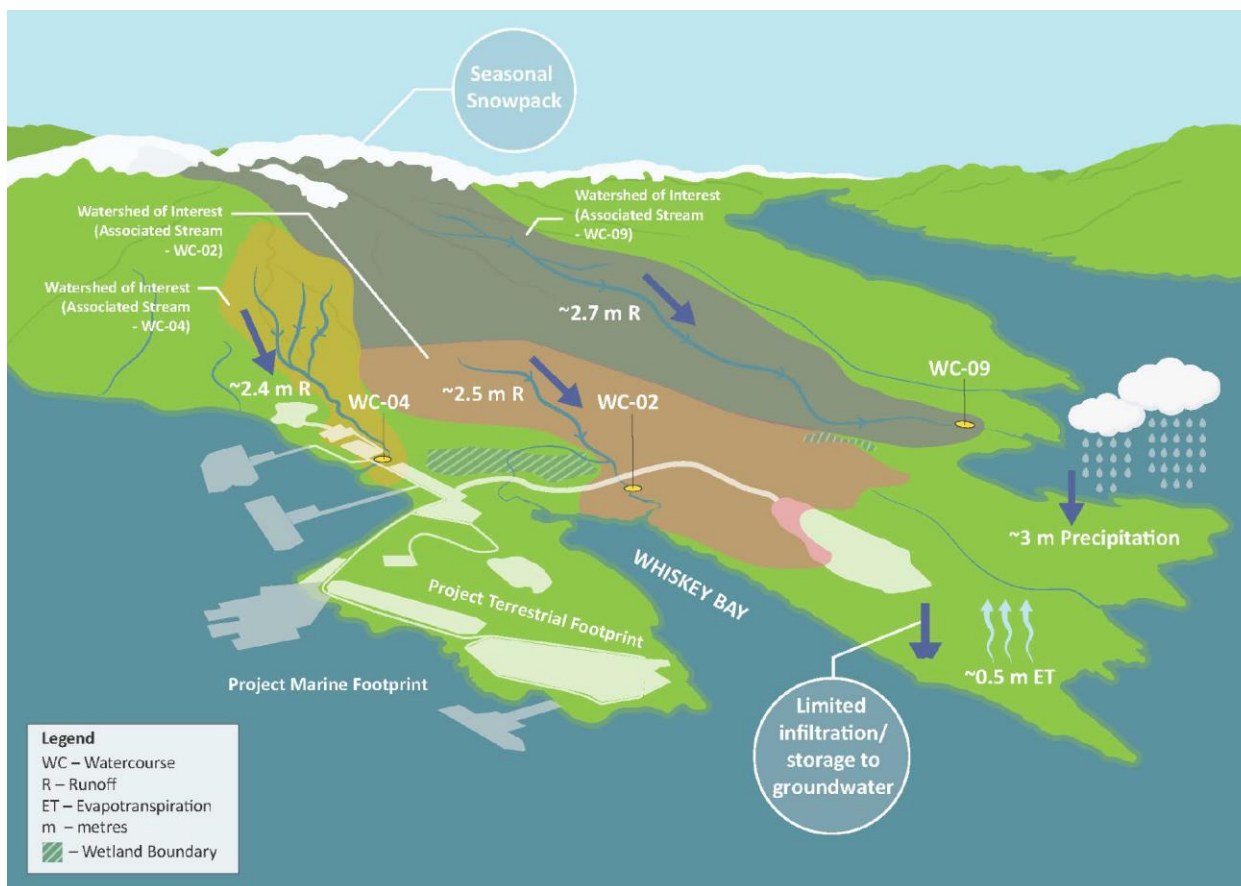


Figure 18-1: Conceptual model illustrating the hydrological environment describing the baseline conditions

#### 18.4.4. Potential Project Effects by the Proponents

The Proponents identified that Ksi Lisims LNG activities would affect surface water quality through the change in the chemical and physical composition of surface water and a change in surface water quantity through water diversion and

alteration of surface water drainage. The Proponents identified the following potential effect pathways associated with Construction and Operation of Ksi Lisims LNG:

- Increased erosion leading to sedimentation and loading in streams and wetlands;
- Alteration of riparian areas that can increase water temperature in streams and wetlands;
- Air emissions (i.e., nitrous oxide components [NO<sub>x</sub>] and sulphur oxide compounds [SO<sub>x</sub>]) can cause acidification in water bodies that share the same airshed with Ksi Lisims LNG if the deposition of sulphur and/or nitrogen exceeds the natural buffering capacity of the lakes;
- Air emissions can increase nitrogen deposition and nutrient availability in waterbodies within the airshed, potentially resulting in a change in trophic status; and
- Water quantity changes associated with water withdrawals, reductions in watershed areas and changes to land cover.

The Proponents anticipate that the potential Decommissioning effects are similar to Construction effects for the removal or repurposing of the constructed land-based infrastructure.

#### 18.4.5. Proposed Mitigation Measures by the Proponents

The Proponents have identified mitigation measures based on provincial and federal regulations and policies on management practices and guidelines, and other relevant peer-reviewed literature. Mitigations were selected to address project-related interactions that affect surface water during all Ksi Lisims LNG phases and would be used to avoid or reduce potential effects on surface water quality in the Local Assessment Area. Most of the surface water mitigation measures identified will be incorporated into the development of the Construction Environmental Management Plan. The Revised Application - [Table 7.4–17](#), provided a summary of the mitigation measures to avoid or reduce project-related changes in surface water. A summary of the relevant proposed mitigation measures is provided below:

- During all phases of the Project, develop and implement erosion prevention and sediment control measures, using industry standard management practices such as those laid out in the Professional Practise Guidelines Erosion and Sediment Control (CoAB et.al. 2024);
- Develop and implement a Trigger Action Response Plan for water and sediment control management to align with licensing requirements as stipulated;
- Develop and implement measures for water and stormwater management. Meeting the BC Water Quality Guidelines for Freshwater Aquatic Life or being within 20% of background conditions as a component of stormwater management protects surface water quality during construction activities;
- Implement dust control measures (e.g., application of water) during dry or dusty conditions – Dust control measures will reduce Ksi Lisims LNG related dust and debris from entering waterbodies in the Local Area Assessment;
- Planning and design will avoid or reduce impacts to identified watercourses, wetlands and riparian areas within the proposed terrestrial Ksi Lisims LNG footprint and reduce impacts from stormwater entering waterbodies;
- Complete a geotechnical assessment of the Project site and transmission line corridor, including geochemical characterization by a qualified professional of the potential for acid rock drainage/metal leaching (ARD/ML) during front end engineering design. Should the need for geochemical management to mitigate potential effects to water quality and aquatic resources be identified, mitigation will be developed prior to construction activities that may result in ARD/ML to the environment and will be implemented while those activities are occurring;

- Develop and implement equipment and machinery maintenance and inspection manuals based on manufacturer recommendations. Emissions testing on power turbines, thermal oxidizer, and heaters to confirm emissions levels will be carried out as prescribed in Ksi Lisims LNG’s Waste Discharge Authorization under the *Environmental Management Act* administered through BCER; and
- Establish designated equipment refueling areas and develop a spill response plan. Maintain a designated area for refueling in proximity to fuel storage equipped with spill response equipment to reduce the likelihood and spatial extent of potential fuel spills to the environment. Measures may include use of secondary containment, use of fuel nozzles with automatic shut-off and designated operators.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC’s draft potential federal conditions. The Key Mitigation Measures related to surface water Valued Component are outlined in [Appendix 2](#).

#### 18.4.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the surface water Valued Component for Ksi Lisims LNG were identified.

##### 18.4.6.1. Effects on Surface Water Flows and Baseline Data

ENV and ECCC indicated concerns with possible impacts of ARD/ML on surface water quality which had not been addressed in the Application. Since potential blasting is included as a specific construction related activity, this can expose metal-leaching rocks to the environment, resulting in heavy metals entering waterbodies. ENV indicated that ARD/ML was identified as an issue earlier in the environmental assessment and had yet to be addressed. The Proponents responded to ENV’s concerns explaining that initial geological analysis of the project site has a low potential for ARD/ML and as such the Proponents current approach to address ARD/ML is to manage the potential issue through the development of mitigation and management measures following the completion of geotechnical investigation and determination of potential ARD/ML issues. ENV suggests that the comment/concern remain open until an appropriate management plan addressing the concerns is available for review. Since a management plan is unlikely to be available before an environmental assessment certificate can be issued, more information may be required to address ARD/ML concerns.

Kitselas First Nation, Kitsumkalum First Nation and the Nisga’a Nation expressed concerns around impacts of water pollution affecting waters and fishing grounds related to surface water quality. Nisga’a Nation also identified concerns relating to quantity of potable water and access. ENV also had concerns with the limited amount of baseline data sampling and the limited scoping information regarding future surface water monitoring, specifically sampling frequency. The Proponents agreed and acknowledged that additional baseline data collection is planned in advance of, and to support project permitting, specifically the air emissions waste discharge authorization as air emissions have a direct pathway of effect on the surface water Valued Component. The Proponents indicated that additional baseline data collection is expected to occur one to two years in advance of project operation.

As the water withdrawal limits, discharge, and other water management infrastructure will be further discussed through permitting processes with ENV and the BCER, the EAO acknowledges that there maybe some overlapping information with EAO proposed conditions and management plans. The EAO required through Condition 9 (Construction Environmental Management Plan) that the plan include a water quality management and acidification and eutrophication monitoring in aquatic and terrestrial environments requirement.

#### 18.4.6.2. Surface Water Quality Mitigation Measures Effectiveness

ENV and ECCC had concerns relating to the level of detail with which the surface water effects were described in the Application, making it challenging to determine the surface water management plans effectiveness. Mitigation measures should be identified to reduce impacts of ARD/ML on the receiving environment should they be detected. The Proponents indicated that further refinement of mitigation measures details, including timing, methods and monitoring, will be completed during post-environmental assessment decision and pre-construction planning when details on construction planning are being refined.

ECCC had specific concerns about the level of detail in mitigation measures suggesting that more specific actionable criteria be included so that predictions on effectiveness can be better understood. ECCC noted that specific information that was required by the Application Information Requirements document for surface water follow-up monitoring was missing or lacking or relied on references to environmental management plans. The Proponents suggested that adding refinements and context in the Revised Application would address these comments and issues, specifically for mitigation measures, follow-up and monitoring for the surface water quality Valued Component.

#### 18.4.7. The EAO's Characterization of Residual Effects

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on the surface water Valued Component:

- Changes to surface water quality attributed to clearing, grading, construction activities; and
- Changes to surface water quantity attributed to land cover clearing for site preparation and project-related withdrawals occurring through all Ksi Lisims LNG phases.

The EAO's characterization of the expected residual effects of the Project on the surface water Valued Component is summarized below, as well as the EAO's level of confidence in the effects determination (including their likelihood and significance).

Table 43: Summary of Residual Effects for Surface Water

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Changes to surface water quantity</b></p> <p>This effect would include changes in surface water quantity, including from alteration to drainage pathways and drainage areas.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local Assessment Area and Transmission Line Assessment Area</b></p> <p>Duration: <b>Short-term to Medium-term</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Frequency: <b>Multiple irregular events to Continuous</b></p> <p>Affected Populations: <b>N/A</b></p> <p>Risk (Likelihood and consequences): <b>Low</b></p>	<p><b>Not significant</b></p> <p>The adequate existing condition of surface water quantity and the ability to respond and adapt led to this conclusion of high resilience. The magnitude of effects to surface water quantity is low since the predicted residual effects is within the variability of existing conditions and vary in reduction/increase of discharge to creeks with no new predicted critical load exceedances or change in trophic status. Effects to surface water quantity would be limited locally to smaller reaches of the watershed system on Pearse Island and the Transmission Line Assessment Area. Surface water quantity changes would occur mainly during Construction and Operations phases, but water withdrawals would be limited to the Construction phase. Effects to surface water quantity were expected to be reversible and will be restored as per the applicable agreements with the Nisga'a Nation and as prescribed in operating permit requirements. Disturbance of surface water flow from withdrawals and land use changes would occur over multiple regular events to continuous</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	Uncertainty: <b>Low</b> Importance: <b>Moderate</b>	throughout the Construction, Operations and Decommissioning. The changes in surface water systems have a high likelihood to occur, although the change is limited to the Local Assessment Area and Transmission Line Assessment Area in its extent. This in consideration with the low magnitude of the residual effect, the consequences would be minor; this led to a risk rating of low. Effects of surface water flow alterations due to facility construction and other activities and potential discharges to the environment are well understood and the uncertainty in the assessment is low. Nisga’a Nation identified the water sources in their traditional land use studies as moderately important in this region, in particular how water supports life in general.
<p><b>Changes to chemical and physical composition of surface water</b></p> <p>This effect would include changes in surface water quality due to changes resulting from construction and operations activities.</p>	Context (resilience): <b>Moderate</b> Magnitude: <b>Low</b> Extent: <b>Local Assessment Area and Transmission Line Assessment Area</b> Duration: <b>Short-term to Medium-term</b> Reversibility: <b>Reversible</b> Frequency: <b>Multiple irregular events to Continuous</b> Affected Populations: <b>N/A</b> Risk (Likelihood and consequences): <b>Low</b> Uncertainty: <b>Moderate</b> Importance: <b>Moderate</b>	<p><b>Not significant</b></p> <p>The adequate baseline condition of surface water quality and the ability to respond and adapt led to this conclusion of moderate resilience. The magnitude of effects to surface water quantity ranges is low since the residual effects vary relative to existing conditions and vary in reduction/increase of infrequent discharges to the watershed. Effects to surface water quality would be limited locally to smaller reaches of the watershed system on Pearse Island and the Transmission Line Assessment Area. Surface water quality changes would occur during Construction, Operations and Decommissioning phases. Effects to surface water quality were expected to be fully reversible and with requirements from agreements with Nisga’a Nation and prescribed in operating permit requirements, water quality will be restored as per the applicable agreements which supports the reversibility of adverse residual effects to water quality. Infrequent TSS releases would occur over multiple regular events to continuous throughout Construction, Operations and Decommissioning. The changes in surface water systems have a high likelihood to occur, although the relative amount is within the Local Assessment Area and Transmission Line Assessment Area in its extent with low magnitude and thus the consequence would be minor. This led to a risk rating of low. Effects of surface water composition alterations due to facility construction and other activities and potential discharges to the environment are well understood but since surface water quality baseline sampling was limited, the uncertainty in the assessment is considered moderate. With the collection and analysis of additional baseline data, uncertainty in the assessment could be considered low. Nisga’a Nation identified the water sources in their traditional land use studies as moderately important in this region, in particular how water supports life in general.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		



#### 18.4.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There is one existing and reasonably foreseeable project, the proposed Westcoast Gas Connector Transmission whose activities, which includes the K5 Nasoga compressor station, has the potential to act cumulatively with Ksi Lisims LNG.

The Westcoast Gas Connector Transmission's K5 Nasoga compressor station will contribute air quality impacting emissions through the combustion of natural gas resulting in nitrogen and sulphur deposition levels of up to 98 percent above the cumulative case baseline measurements for lakes and streams in the Local Assessment Area and AESA. This portion of the project's operation in combination with Ksi Lisims LNG's Construction and Operation phases represents a proportionally high contribution to the cumulative effects of the Westcoast Gas Connector Transmission project. The compressor station has the potential to impact the physical composition of surface water through pathways such as nitrogen and sulfur deposition (acidification) and eutrophication impacting the trophic status in the lakes and streams represented in the baseline measurements. These potential cumulative effects would be expected to be limited to the Local Assessment Area and AESA, be medium-term in duration, reversible, and continuous during Kis Lisims LNG Operations phase. There is no predicted change with respect to acidification or eutrophication in the lakes and streams that were sampled for the surface water Valued Component.

The EAO concludes that not significant cumulative effects to the surface water Valued Component are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### 18.4.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the surface water Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan)'s water quality management and acidification and eutrophication monitoring in aquatic and terrestrial environments and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.5. Marine Resources

### 18.5.1. Summary

Marine Fish are defined in *the Fisheries Act* as: (a) parts of fish, (b) shellfish, crustaceans, marine animals, and any parts of shellfish, crustaceans, or marine animals, and (c) the eggs, sperm, spawn, larvae, spat, and juvenile stages of fish, shellfish, crustaceans, and marine animals. In this chapter, marine resources considered are those that may occur along the northern coast of British Columbia (within the assessment boundaries). Marine resources have been identified as a Valued Components since Ksi Lisims LNG is expected to potentially affect marine resources through the following:

- Change in water and sediment quality;
- Change in habitat;
- Change in behaviour; and
- Change in injury or mortality risk.

This assessment for marine resources draws information from or informs Vegetation and Wetlands ([chapter 18.8](#)), Wildlife and Wildlife Habitat ([chapter 18.7](#)), Freshwater Fish and Fish Habitat ([chapter 18.6](#)), Marine Use ([chapter 18.9](#)), Human Health ([chapter 18.10](#)), Summary of Biophysical Factors that Support Ecosystem Functions ([Appendix 9](#)), and Accidents and Malfunctions ([Appendix 7](#)).

The EAO received comments from participating Indigenous nations, members of the public, and technical advisors. Key concerns around the marine resource Valued Components include:

- Impact of project-induced underwater noise on marine resources
- Impact of effluents on marine fish and mammals
- Marine species habitat alteration and disruption
- Increased risk of vessel strikes with marine mammals
- Risk of fish impingement and entrainment

The Proponents responded to concerns raised by reviewers and applied changes in the Revised Application where applicable.

The EAO assessed the potential effects to marine resources and proposed Certificate Condition 20 (Transmission Line Development Report) requiring the Proponents to conduct pre-construction surveys, within the final transmission line section between Ksi Lisims LNG and Nisga'a Lands (as defined under the Nisga'a Treaty), on sensitive marine fish and mammal habitat, and to develop Condition 9 (Construction Environmental Management Plan) including a Marine Resource Monitoring and Management Plan that would include measures to protect marine mammals and fish and mitigate the underwater noise and to develop follow-up programs regarding the continuous monitoring of effluents discharge and marine intakes.

Given the assessment, mitigation measures, and proposed conditions, the EAO found that there would not be significant adverse effects to marine resources. The effects on marine resources from Ksi Lisims LNG are expected to overlap

cumulatively with other past, present, and reasonably foreseeable future projects and activities within the Marine Shipping Regional Assessment Area, Marine Terminal Regional Assessment Area and Open Water Assessment Area. The potential for cumulative effects from these projects and activities and Ksi Lisims LNG itself on marine resources was considered not significant taking into account the extensive past, current, and planned activities such as pipeline projects (e.g., Prince Rupert Gas Transmission Project).

### 18.5.2. Assessment Boundaries

Due to the difference in potential effects to marine resources in different areas of the project, spatial boundaries of the assessment are as follows:

- • Project footprint: 13.3-hectare area where direct physical disturbance to marine habitat will occur. This is equivalent to the area occupied by the marine terminal and related infrastructure;
- Marine terminal area
  - Local Assessment Area: 500 metre buffer around marine-based components of the marine terminal;
  - Regional Assessment Area: 15-kilometre buffer around marine-based components of the marine terminal.
- Marine shipping area
  - Local Assessment Area: 2-kilometre corridor of marine waters centered on the marine shipping route between Wil Milit and the BC Coast Pilots boarding location at or near Triple Island Pilotage Station, the materials and supply shipping routes between Wil Milit and Prince Rupert/Port Edward, and between Wil Milit and Gingolx;
  - Regional Assessment Area: 30-kilometre corridor of marine waters centred around the marine shipping route between Wil Milit and the BC Coast Pilots boarding location at or near Triple Island Pilotage Station, the materials and supply shipping routes between Wil Milit and Prince Rupert/Port Edward, and between Wil Milit and Gingolx;
- Open Water Assessment Area: 40-kilometre corridor of marine waters centered on the open water marine shipping route between the 12 nautical mile (nm) limit of Canada’s territorial sea and the BC coast pilots boarding location at or near Triple Island Pilotage Station.
- Transmission Line Assessment Area: the area within which a portion of the transmission line between Ksi Lisims LNG and Nisga’a Lands (as defined under Nisga’a Treaty) will be developed.

The temporal boundaries include:

- Construction (approximately 3-4 years);
- Operations (30 years); and
- Decommissioning phases (approximately 12 months).

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (Project Description and Schedule) of this Report.

### 18.5.3. Existing Conditions by the Proponents

The existing conditions for marine resources were assessed in [Section 7.09](#) of the Revised Application by the Proponents and are summarised here.

The Proponents used the following sources<sup>16</sup> to gather information regarding the existing marine shipping Regional Assessment Area, Open Water Assessment Area, and Transmission Line Assessment Area conditions:

- Published literature;
- Previous environmental assessments that overlap spatially with Ksi Lisims LNG;
- Government reports;
- Indigenous Knowledge and First Nations’ studies and marine use plans;
- Total of eight project-specific field surveys and four data collection surveys in the Marine Terminal Local Assessment Area and Marine Shipping Regional Assessment Area; and,
- Two predictive modelling exercises including underwater noise modelling and sediment scour modelling.

In order to meet substitution requirements, the EAO has assessed the potential effects of Ksi Lisims LNG on marine species listed under the Species at Risk Act and/or the Committee on the status of endangered wildlife in Canada (COSEWIC) as required under the Impact Assessment Act. These species are listed in Table X below. For a complete list of species assessed please see the [marine resources technical data report](#) of the Revised Application.

Table 44: Marine Species listed under the Species at Risk Act and/or COSEWIC

Species Name	Species Group	Federal Species at Risk Status
Northern abalone ( <i>Haliotis kamtschatkana</i> )	Marine Invertebrate	Endangered
Green sturgeon ( <i>Acipenser medirostris</i> )	Marine Fish	Special Concern
Eulachon (Nass/Skeena population)	Marine Fish	Special Concern (COSEWIC)
Bocaccio ( <i>Sebastes paucispinis</i> )	Marine Fish	Endangered (COSEWIC)
Canary rockfish ( <i>Sebastes pinniger</i> )	Marine Fish	Threatened (COSEWIC)
Basking shark ( <i>Cetorhinus maximus</i> )	Marine Fish	Endangered
Tope shark ( <i>Galeorhinus galeus</i> )	Marine Fish	Special Concern
Bluntnose six gill shark ( <i>Hexanchus griseus</i> )	Marine Fish	Special Concern
Longspine thornyhead ( <i>Sebastolobus altivelis</i> )	Marine Fish	Special Concern
Rougheye rockfish -Type I & II ( <i>Sebastes sp. Type I &amp; II</i> )	Marine Fish	Special Concern
Yelloweye rockfish ( <i>Sebastes ruberrimus</i> )	Marine Fish	Special Concern

<sup>16</sup> For detailed information about the sources used to study the existing conditions please refer to [section 7.9.5](#) of the Revised Application.

Species Name	Species Group	Federal Species at Risk Status
Killer whale - northeast Pacific northern resident ( <i>Orcinus orca</i> )	Marine Mammals	Threatened
Killer whale - Bigg's or northeast Pacific transient ( <i>Orcinus orca</i> )	Marine Mammals	Threatened
Killer whale – northeast Pacific offshore ( <i>Orcinus orca</i> )	Marine Mammals	Threatened
Harbour porpoise ( <i>Phocoena phocoena</i> <i>Vomerine</i> )	Marine Mammals	Special Concern
Grey whale – pacific coast feeding group ( <i>Eschrichtius Robustus</i> )	Marine Mammals	Endangered (COSEWIC)
Grey whale – western pacific population ( <i>Eschrichtius Robustus</i> )	Marine Mammals	Endangered (COSEWIC)
Humpback whale – North Pacific ( <i>Megaptera novaeangliae</i> )	Marine Mammals	Special Concern
Fin whale – Pacific ( <i>Balaenoptera physalus</i> )	Marine Mammals	Threatened
Steller sea lion ( <i>Eumetopias Jubatus</i> )	Marine Mammals	Special Concern
Northern Fur Seal ( <i>Callorhinus Ursinus</i> )	Marine Mammals	Threatened (COSEWIC)
Sea Otter ( <i>Enhydra lutris</i> )	Marine Mammals	Special Concern (COSEWIC)
Humpback whale ( <i>Megaptera Novaeangliae</i> )	Marine Mammals	Special Concern
Blue whale ( <i>Balaenoptera Musculus</i> )Offshore and Pelagic Marine Mammals	Offshore and Pelagic Marine Mammals	Endangered
Sei whale ( <i>Balaenoptera Borealis</i> )	Offshore and Pelagic Marine Mammals	Endangered
North Pacific right whale ( <i>Eubalaena japonica</i> )	Offshore and Pelagic Marine Mammals	Endangered
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Sea Turtles	Endangered

### 18.5.3.1. Marine Terminal Regional Assessment Area

The marine terminal Regional Assessment Area includes Pearse Canal, Portland Canal, Observatory Inlet, Nass Bay, and Nasoga Gulf. These waters are heavily influenced by freshwater input from the nearby Nass River, which results in reduced salinity and high turbidity in and around the marine terminal Regional Assessment Area. The marine terminal Regional Assessment Area also overlaps with several DFO designated important areas for fish and invertebrates, including eulachon, pollock, and tanner crab. This Regional Assessment Area does not include any shellfish harvesting area used by Nisga'a Nation; however additional bivalve harvesting may occur within the marine terminal Regional Assessment Area. At the time of assessing the existing conditions, the marine terminal Regional Assessment Area around Gingolx were subject to a year-round sanitary closure affecting all shellfish species within a 670 m radius of the Gingolx wastewater outfall. Due

to a lack of large-scale industrial activity in the marine terminal Regional Assessment Area, the overall marine water and/or sediment contamination source concerns associated with anthropogenic activities are limited.

#### **18.5.3.2. Marine Shipping Regional Assessment Area**

The Marine Shipping Regional Assessment Area extends from Portland Inlet into Chatham sound and south through Prince Rupert Harbour to Porcher Island and west to the Triple Island Pilot station. This area is influenced by input from Nass and Skeena Rivers and includes several DFO designated important areas for marine fish, invertebrates, and marine mammals. The Marine Shipping Regional Assessment Area overlaps with six Ecologically and Biologically Significant Areas (EBSA) identified by DFO, including the Chatham Sound EBSA, which is designated for its physical characteristics, species assemblages, and use as fishing grounds for benthic invertebrate species. There are several marine parks and conservation areas overlapping with this area. The main source of anthropogenic activity in the area is associated with Port of Prince Rupert with high volumes of ship traffic. The additional sources of anthropogenic activity include existing shipping routes, a decommissioned pulp mill near Prince Rupert, and many small craft harbours spread throughout the Marine Shipping Regional Assessment Area.

#### **18.5.3.3. Marine Shipping Open Water Assessment Area**

The marine shipping Open Water Assessment Area extends from Triple Island Pilot station, through Hecate strait and Dixon Entrance, out to the westernmost edge of Canada's 12 nm territorial limit northwest of Haida Gwaii. This area is impacted by freshwater inputs from Nass and Skeena Rivers. It overlaps with many DFO designated important areas as well as designated critical habitat for northern resident killer whales (*Orcinus orca*). This area overlaps with six EBSAs (similar to EBSAs overlapping with the Marine Shipping Regional Assessment Area). Permanent shellfish closures due to sanitary concerns include most of the north coast of Haida Gwaii. The primary source of anthropogenic activities is associated with existing shipping routes and vessel traffic in the marine shipping Open Water Assessment Area.

#### **18.5.3.4. Marine Transmission Line Assessment Area**

The marine Transmission Line Assessment Area overlaps with the marine terminal Regional Assessment Area and includes portions of Nisga'a Category A Lands and the Nass Area but does not include Nisga'a Lands (as defined in the Nisga'a Treaty). Similar to the marine terminal Regional Assessment Area, the waters are influenced by freshwater input from the Nass River and overlap with three DFO designated important areas for marine fish and invertebrates, including eulachon, pollock, and tanner crab. Shellfish harvesting is prohibited in the marine waters within the Transmission Line Assessment Area due to year-round sanitary closures. The absence of large-scale industrial activity in the marine Transmission Line Assessment Area means that the overall sediment and water contamination concerns are limited.

Existing physical oceanography conditions are described in [Section 3.4.2](#) of the Revised Application.

#### **18.5.4. Potential Project Effects by the Proponents**

The Proponents identified the following potential effects to marine resources from Ksi Lisims LNG Project:

- Change in water and sediment quality due to extent, duration, or timing of in-water work or project-related effluent discharges;
  - Construction phase: increased exposure to total suspended solids (TSS), and exposure to historical and naturally occurring contaminants in seabed sediments may potentially affect fish, marine mammals, and marine organisms' health; and

- All Project phases: release of effluent from the desalination plant and wastewater treatment plant and ballast water from the floating LNG barges can adversely affect the health of marine organisms.
- Change in habitat (including marine plants under s.2 of IAA, such as brown algae and green algae);
  - All Project phases: potential for harmful alteration, disruption or destruction (HADD) of fish habitat temporarily or permanently.
- Behavioral change or habitat avoidance by fish, marine mammals, or sea turtles caused by sensory disturbances (underwater noise, artificial lighting, and electric and magnetic field interference);
  - Construction phase: underwater noise and changes to light associated with in-water construction activities have the potential to alter fish, marine mammals, and sea turtles behavior; and
  - All Project phases: project-related vessel movements and project infrastructure have the potential to cause behavioral changes in fish, marine mammals, and sea turtles.
- Risk of fish, marine mammals, or sea turtle injury or mortality due to magnitude, extent, duration, or timing of land-based and in-water work or Project-related vessel movements;
  - Construction phase: underwater noise associated with in-water construction activities has the potential to cause injury or mortality to marine fish and marine mammals;
  - Operation phase: seawater intake may cause injury or mortality through impingement or entrainment of fish; and
  - All project phases: vessel strikes from project-related vessel traffic have the potential to injure or kill marine mammals and sea turtles. Underwater noise has the potential to cause behavioral changes in fish, marine mammals, and sea turtles.

Construction of the transmission line which involves the installation of approximately 15 to 23 km of cable on the seabed will result in an increased risk of injury or mortality to marine organisms (primarily invertebrates through burial and crushing) and could have effects on water quality and habitat. The construction of the transmission line may also cause alteration or destruction of fish habitat. The operation of the transmission line may cause a change in habitat, and change in behaviour. During the Operation phase, the Proponents predicted that natural gas pre-treatment, liquefaction, and storage of LNG and natural gas liquids (NGL) products (condensates) at the floating LNG (FLNG) barges would have potential effects on fish habitat. Decommissioning activities would potentially cause change in water and sediment quality, change in habitat, change in behaviour and change in injury and mortality risk.

#### 18.5.5. Proposed Mitigation Measures by the Proponents

The Proponents identified the following relevant measures to mitigate the potential adverse effects of the Project on:

- Develop and implement spill prevention and response measures such as:
  - Appropriate spill containment and recovery equipment and materials available at the site;
  - Site orientation training will include spill response expectations including incident reporting for site personnel and contractors; and
  - Equip trucks and machinery with spill response kits.
- Following construction, revegetate disturbed riparian areas that do not contain Ksi Lisims LNG infrastructure;

- Planning and design will avoid or reduce impacts to identified environmentally sensitive marine and riparian areas within the proposed marine Ksi Lisims LNG footprint unless otherwise approved by the responsible regulator(s);
- Where possible, schedule high-risk Ksi Lisims LNG activities (i.e., in-water infilling) during the modified least risk window of August 1 - April 1;
- Offset harmful alterations, disruption and/or destruction of fish habitat through habitat creation, restoration, or enhancement measures, if required. The offset plan will be developed in collaboration with NLG and DFO. Consultation with other Indigenous nations on the offset plan is expected;
- Develop and implement a ramp-up procedure for impact pile driving to gradually and steadily increase underwater acoustic energy output;
- Implement sound attenuation (i.e., bubble curtain) prior to and during pile driving;
- Develop and implement underwater noise monitoring prior to construction for the protection of marine mammals and fish during in-water pile driving and blasting;
- Develop and implement a marine mammal detection and response procedure during all construction activities that pose a risk to marine mammals;
- Conduct marine fish salvage, as required, prior to specific activities with high potential for crushing and burial or during in-water work requiring isolation and dewatering;
- Prior to discharge of effluent, appropriate testing and treatment measures shall be implemented in accordance with water quality guidelines. Treatment and discharge constraints are dependent on the specific system of effluent and receiving environment;
- Ksi Lisims LNG will apply a non-biocidal coating to the underwater portions of the FLNG hull to prevent fouling;
- Develop and implement water quality monitoring during in-water construction activities including monitoring for total suspended solids and turbidity. Exceedances of water quality guidelines will be managed using an adaptive management approach, including but not limited to the use of stop-work;
- During all Ksi Lisims LNG phases, develop and implement erosion prevention and sediment control measures, using industry standard management practices such as those laid out in the College of Applied Biologists' [Professional Practice Guidelines - Erosion and Sediment Control](#);
- Design and implement Project lighting in accordance with the BCER's [Light Control Best Practices Guideline](#) and to limit environmental disturbance (e.g., directional or shielded lighting to direct light downward and inward);
- Establish designated equipment refueling areas and develop a spill response plan. Maintain a designated area for refueling in proximity to fuel storage equipped with spill response equipment to reduce the likelihood and spatial extent of potential fuel spills to the environment. Measures may include: use of secondary containment, use of fuel nozzles with automatic shut-off, designated operators, etc; and
- Develop and implement a no-fishing policy in streams or marine waters on/near Pearse Island by all Project personnel while on-shift.

To mitigate the effects of the transmission line on marine resources, the Proponents identified the following relevant mitigation measures:

- Develop and implement spill prevention and response measures during construction;



- Complete field surveys to better characterize fish habitat in intertidal and shallow subtidal zones that are potentially affected by the transmission line;
- Offset harmful alterations, disruption and/or destruction of fish habitat through habitat creation, restoration, or enhancement measures if required. The offset plan will be developed in collaboration with NLG and DFO. Consultation with other Indigenous nations on the offset plan is expected;
- Complete a marine survey to confirm the appropriateness of the selected route and to limit impacts to environmentally sensitive marine areas (e.g., sponge reefs, coral gardens);
- As part of Request for Review process, develop schedule for construction activities that consider windows of least risk;
- Conduct marine fish and invertebrate salvage, as required, prior to specific activities with high potential for crushing and burial or during in-water work requiring isolation and dewatering.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC's draft potential federal conditions. The Key Mitigation Measures related to the marine resources Valued Components are outlined in [Appendix 2](#).

### 18.5.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the marine resources Valued Component for Ksi Lisims LNG were identified.

#### 18.5.6.1. Impact of project-induced underwater noise on marine resources

Participating Indigenous nations including Gitxa'ana Nation, Gitga'at First Nation, Kitselas First Nation, Metlakatla First Nation, Lax Kw'alaams Band, Council of the Haida Nation and technical advisors including DFO and Environment and Climate Change Canada expressed concerns over the impact that underwater noise from the project could have on marine life. Underwater noise is primarily caused by construction activities such as pile driving, and the operation of heavy machinery. DFO also raised concerns about the effects of underwater noise as a result of marine shipping and operation of FLNGs during operation. Specific concerns were raised about the effect of underwater noise on marine mammals and fish species, including a variety of at risk species such as Northeast Pacific Transient, Northern Resident, and Offshore Killer Whale populations (each listed as threatened), Humpback whales (listed as Special Concern), Harbour porpoise (listed as Special Concern), Steller sea lion (listed as Special Concern), Pacific herring, eulachon (listed as Special Concern under COSEWIC), salmonids (e.g., Pacific salmon and steelhead), and Northern Fur Seal (listed as under consideration), all of which are sensitive to acoustic disturbances. Designated critical habitat for northern resident killer whale exists along the north end of Haida Gwaii and extends approximately 90 km east to west. The DFO important area also extends out to the northeast corner of Haida Gwaii. Western Dixon Entrance is also a designated critical habitat for northern resident killer whales and overlaps the Open Water Assessment Area in the coastal waters north of Haida Gwaii and the McIntyre Bay EBSA.

Underwater noise from Ksi Lisims LNG vessels and construction activities could disrupt communication and navigation behaviors of these species. Underwater noise levels are expected to exceed the 120 dB re 1  $\mu$ Pa threshold for marine mammal disturbance up to 5.5 km from non-impulsive pile installation activities during construction. During operation, additional 140 to 160 LNG carriers and 8 to 12 natural gas liquid (NGL) products carriers would complete transits with average speeds of 14 knots in the marine shipping Regional Assessment Area, and 16 knots in the marine shipping Open

Water Assessment Area annually. Operation of the FLNGs and berthing of marine vessels at the terminal are expected to produce underwater noise above the 120 dB re 1  $\mu$ Pa threshold for marine mammal disturbance up to 11.5 km from the marine terminal. There is a high likelihood that underwater noise levels from marine shipping activities during operation would exceed the 1  $\mu$ Pa threshold for marine mammals disturbance. The Proponents considered two different scenarios when modelling underwater noise levels from marine shipping activities. In one scenario the Proponents modelled the underwater noise at Dixon Entrance and considered the noise produced by a single LNG carrier and found that the R95 or the radius of exposure that includes 95% of all values above the behavioral disruption threshold is 20.8 km at 16 knots. In the second scenario, noise modelling was done at Portland Inlet and considered the noise produced by multiple LNG carriers and also an untethered escort tug as that is representative of anticipated shipping operations in Portland Inlet. The result of this modelling suggests that the R95 or the radius of exposure that includes 95% of all values above the behavioral disruption threshold is 28.2 km at 14 knots. The further distance of effect at lower speeds is mostly attributed to the presence of the tug.

Underwater noise levels in relation to impact pile driving are expected to exceed the 207 dB re 1  $\mu$ Pa threshold for fish injury and mortality within 32 m of the pile installation location. Sediment thickness varies between 0 to 20 m in the area and currently the information on the proportion of piles which would be located in areas where sediment thickness is greater than 7 m is not known. Given this large area of potential effects to fish injury and mortality, the Proponents adjusted the construction methods and remodelled potential underwater noise. A technical memorandum was developed and shared with the EAO and DFO. The revised results indicated that the area of potential impacts is reduced, and underwater noise levels would not exceed the threshold for fish injury and mortality beyond 10 m of the pile installation location in areas with sediment thickness of at least 7 m.

In response to concerns raised regarding underwater noise, the Proponents committed to implementing noise mitigation measures such as scheduling construction activities during less sensitive periods for marine life, using noise dampening technologies, and conducting regular acoustic monitoring to ensure noise levels remain within acceptable limits. In instances where sediment thickness is less than 7 m, and/or instances where bubble curtain is determined to be insufficient at reducing the underwater noise levels, the Proponents are committed to implement additional mitigation measures (e.g., installation of a pile cushion or second bubble curtain, adjustment to piling technique and technologies). The Proponents also proposed the use of noise barriers and "soft start" techniques to allow marine animals to vacate the area before full construction noise levels are reached. Furthermore, the Proponents agreed to have marine mammal observers present during construction activities to prevent disturbances.

The EAO has proposed a Certificate condition requiring the Proponents to mitigate the effects of underwater noise on marine mammals and marine fish as part of Condition 9 (Construction Environmental Management Plan). The EAO has also proposed a follow up program to IAAC to monitor effects from underwater noise on marine fish and marine mammals.

The EAO has also proposed a Key Mitigation Measure to IAAC to maintain peak underwater noise below 207 decibels within 10 metres of the pile while impact pile driving, using measures like bubble curtains and soft start procedures to allow marine mammals to vacate the construction area, and continuous sound monitoring and marine mammal observation during high-risk construction activities. The EAO also proposed a Key Mitigation Measure to IAAC that would require the Proponents to implement measures to mitigate adverse effects to marine fish and mammals caused by underwater noise during construction.

### 18.5.6.2. Impact of effluents on marine fish and mammals

Participating Indigenous nations including Gitga'at First Nation, Lax Kw'alaams Band, Metlakatla First Nation, Kitselas First Nation, and Gitxaala Nation and technical advisors including DFO and Environment and Climate Change Canada expressed concerns about the potential impact of effluents from the project on the existing habitat, fish and other marine life. Effluents, including brine from the desalination processes and potential chemical pollutants, could affect fish health, spawning, and overall population dynamics. Effluents can introduce harmful substances into the water, altering the water quality and negatively affecting the health of marine organisms. Species such as salmon, herring, and rockfish as well as species of concern like eulachon and sturgeon, were highlighted due to their ecological and economic importance. There were also concerns regarding the lack of baseline data for assessing the impact of effluents on fish and marine life, the adequacy of measures for protecting marine water quality, and the overall environmental impact of the project including cumulative effects.

The Proponent's effluent modelling results indicate that the maximum predicted concentration of salinity may be acutely toxic within 1 meter of the discharge location to sensitive aquatic organisms (i.e., mysid shrimp larvae). The Proponents committed to implementing advanced effluent treatment systems to minimize release of contaminants to the marine environment and regular monitoring of water quality and fish health. In recognition that acutely toxic effluent would not comply with the Fisheries Act, the Proponents also noted that the effluent model will continue to be refined as engineering designs are finalized and the results will be provided to support an application for a waste discharge authorization. Additionally, spawning grounds within the marine shipping Regional Assessment Area will be protected through designated no-discharge zones. The Proponents are also committed to conducting additional baseline studies to gather comprehensive data and implementing advanced modeling techniques to predict effluent dispersion to support the waste discharge authorization application.

At the time the Proponents apply for a waste discharge authorization, BC Energy Regulator would expect the Proponents to follow BC Ministry of Environment and Climate Change Strategy Technical Guidance 11 - Development and Use of Initial Dilution Zones in Effluent Discharge Authorizations when considering the use of an Initial Dilution Zone for the proposed effluent, including adherence to Section 2.0 (c) "Effluent discharge and water quality within the IDZ should not be acutely toxic to aquatic life".

In response to these concerns, the EAO has recommended follow up programs to IAAC for monitoring of the water quality, sediment quality, and effects to aquatic life.

### 18.5.6.3. Marine species habitat alteration and disruption

Concerns were raised by DFO, Gitxaala Nation, Lax Kw'alaams Band, Metlakatla First Nation, and Environment and Climate Change Canada about the disruption of habitats due to construction activities and lack of sufficient baseline information to characterize potential changes. Habitat disruption can occur from physical alterations to the environment, such as dredging, land reclamation, the installation of infrastructure and construction of the marine component of transmission line. These activities can negatively impact critical habitats for various species, including eelgrass beds, kelp forests, and intertidal zones, which are essential for the breeding and feeding of numerous marine organisms. Species at risk or endangered species affected include marine invertebrates, orcas (killer whales), humpback whales, sea lions, salmon, eulachon, and sturgeon. Designated critical habitat for northern resident killer whale exists along the north end of Haida Gwaii and extends approximately 90 km east to west. The DFO important area also extends out to the northeast corner of Haida Gwaii. Western Dixon Entrance is also a designated critical habitat for northern resident killer whales and overlaps

the Open Water assessment Area in the coastal waters north of Haida Gwaii and the McIntyre Bay EBSA. The marine shipping Regional Assessment Area and open water Assessment Area also overlap DFO important areas for coral, shrimp, and prawns, Dungeness crab, green sea urchin, and tanner crab.

DFO raised concerns about the appropriateness of Proponents' proposed least risk window of August 1 – April 1 for scheduling in-water works and expressed that the Proponents would need to identify the increased risks associated with working year-round.

The Proponents plan to implement habitat restoration projects, including a habitat offsetting plan to compensate for any habitat loss. Specific measures may include transplanting eelgrass beds, restoring damaged kelp forests, and creating artificial reefs to enhance habitat complexity. Additionally, the Proponents proposed conducting regular habitat monitoring and engaging with local First Nations to ensure the effectiveness of these measures.

In response to these concerns, the EAO proposed Certificate Condition 9 (Construction Environmental Management Plan), requiring the Proponents to develop a report to confirm baseline conditions and outline the results from pre-construction surveys.

The Proponents would also need to address the effects of the Project activities on alteration, disruption, or destruction of marine species habitat through a habitat offsetting plan to support the Fisheries Act Authorization requirements. The Proponents were asked by the DFO to update the proposed habitat offsetting plan to meet DFO's requirements.

#### **18.5.6.4. Increased risk of vessel strikes with marine mammals**

DFO, Gitxaala Nation, Gitga'at First Nation, Lax Kw'alaams Band, Metlakatla First Nation, Council of the Haida Nation, and Environment and Climate Change Canada, expressed concerns about the increased risk of vessel strikes on marine mammals due to increased vessel traffic associated with Ksi Lisims LNG. Marine mammals, such as orcas (killer whales), humpback whales, grey whales, fin whales, and sea lions are at risk of being struck by vessels, which can lead to injury or death. This risk is heightened in areas where these species are known to frequent and during periods of high vessel activity.

In response, the Proponents committed to support government-led initiatives to reduce risks from shipping, developing a terminal operations manual which would include speed profiles for project related vessels travelling along the marine shipping route, and complying with the recommended speed profiles for LNG carriers and NGL product vessels along the marine route which are informed by the Navigational Risk Assessment. The Proponents also proposed the use of marine mammal observers to detect and avoid effects on marine mammals during construction. The Proponents will engage with marine mammal experts and First Nation communities to ensure these measures are effective and culturally appropriate.

The EAO has recommended a Key Mitigation Measure to IAAC to have the operators of LNG carriers and NGL product vessels to navigate safely in the presence of marine mammals and minimize the risk of collision with marine mammals.

#### **18.5.6.5. Risk of Fish Impingement and Entrainment**

DFO and Gitga'at First Nation expressed concerns about the risk of fish impingement and entrainment during the operation of the seawater intakes. Fish entrainment can occur when fish and other small marine organisms are drawn into water intake structures, leading to injury or death and fish impingement occur when marine organisms are pinned against intake screens by the flow of water. This can negatively impact fish populations, particularly for species that are already at risk. DFO has also expressed concerns about the level of uncertainty around the magnitude and risk to fish

associated with impingement and entrainment and how the water intakes would be designed and the potential effects on impingement and entrainment of marine fish.

In response, the Proponents committed to implementing fish-friendly intake designs, such as fine mesh screens and low intake velocities, to minimize the risk of impingement and entrainment. The Proponents are also committed to further discussing the matter with DFO and First Nations to ensure the intake design is effective in reducing fish impingement and entrainment.

In response, the EAO has recommended a Key Mitigation Measure to IAAC to address the risk of impingement and entrainment of fish when designing, installing and operating water intake structures. Given the uncertainty associated with this effect, the EAO also recommends a follow-up program to verify the risk of entrainment and impingement of fish from operation of the water intakes.

### 18.5.7. The EAO’s Characterization of Residual Effects

After considering the proposed mitigation measures and conditions proposed, the information contained in [the Joint Permitting and Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on the marine resources Valued Component:

- Change in water and sediment quality during all phases of the Project;
- Change in habitat during all phases of the Project;
- Change in behaviour caused by sensory disturbances; and
- Change in injury or mortality risk

The EAO’s characterization of the expected residual effects of the Project on marine resources is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 45: Summary of Residual Effects for Marine Resources

Residual Effect	Assessment Rating*	Significance and Rationale
<i>Change in water and sediment quality</i> <i>Project-related activities (including waste management) during all phases have the potential to cause changes to water quality parameters including total suspended solids, salinity, nutrients, and other contaminants and effluent discharges have the potential to affect the marine environment and marine organisms’ health</i>	Context (resilience): <b>Low</b> Magnitude: <b>Medium</b> Extent: <b>Local</b> Duration: <b>Medium term</b> Frequency: <b>Continuous</b> Reversibility: <b>Fully reversible</b> Affected Populations: <b>Disproportionate to sub-populations near the Project</b> Risk (likelihood and consequences): <b>Moderate</b>	<b>Not significant</b> The marine terminal Local Assessment Area has not been subject to a human disturbance and can be characterized as remote. Port of Prince Rupert is a source of anthropogenic activity with a high ship traffic volume. As a result, the marine resources may be more sensitive to further changes in water and sediment quality. The change in water and sediment quality via effluent discharge and increased total suspended solids, would be contained within the marine terminal and Marine Shipping Local Assessment Area. This residual effect is expected to last from construction through Decommissioning phase of the project. Activities such as site preparation, construction of marine infrastructure, natural gas pre-treatment, liquefactions, storage and offloading of LNG and NGL products at the FLNG barges, dismantling removal of marine and land-based infrastructure would cause the change in water and sediment quality continuously. This residual effect

Residual Effect	Assessment Rating*	Significance and Rationale
	Uncertainty: <b>Moderate to High</b> Importance: <b>High</b>	<p>would cease after Decommissioning of the project and is fully reversible. It is anticipated that effects to water and sediment quality would disproportionately affect human populations who depend on marine resources, as a source of food, livelihood, and as part of their traditional activities.</p> <p>The likelihood of the predicted effect occurring is high. Through compliance with regulations and with proposed mitigation measures, the consequences of residual effects are considered minor or moderate (local extent and medium magnitude). There is a moderate to high degree of uncertainty associated with assessment methods used to characterize the effects. This is due to the results of the effluent dispersion modelling conducted by the Proponents showing that the potential exists for effluents to be acutely toxic to mysid shrimp larvae, that are 3 to 6 days post hatching at the point of discharge. This is in contravention with the <i>Fisheries Act Authorization</i> requirements. The EAO understands that the Proponents will continue to refine the model to support the requirements of a waste discharge authorization. As this issue is raised by First Nations, and technical advisors, the importance of this effect is considered high.</p>
<p><i>Change in Habitat</i>  <i>Project related activities during all phases of the Project have the potential to result in alteration, disruption, or destruction of fish habitat (including marine plants under section 2 of IAA, such as brown algae and green algae).</i></p>	Context (resilience): <b>Moderate</b> Magnitude: <b>Medium</b> Extent: <b>Local</b> Duration: <b>Medium term</b> Frequency: <b>Regular/Irregular</b> Reversibility: <b>Irreversible</b> Affected Populations: <b>Disproportionate to sub-populations near the Project</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Moderate</b> Importance: <b>High</b>	<p><b>Not Significant</b></p> <p>The marine terminal and marine shipping Local Assessment Area has not been subject to human disturbances and can be characterized as remote. Port of Prince Rupert is a source of anthropogenic activity in the area with a high ship traffic volume. As a result, the marine resources may be more sensitive to further changes in the marine environment. The project footprint is expected to affect approximately 93,372 m<sup>2</sup> of marine fish habitat. During the construction phase the marine riparian, intertidal and subtidal habitat will be directly altered or lost.. Within the Project footprint, approximately 872 m<sup>2</sup> of marine fish habitat will be lost as a result of pile installations. The location of infrastructure would be designed in a way to avoid or reduce impacts to sensitive habitats to the extent possible. Several in-water components have the potential to increase shading on approximately 39,445 m<sup>2</sup> of vegetated marine habitats. This effect is contained within the marine shipping and marine terminal Local Assessment Area except for the shipping wake produced through the operation phase, which would occur in the marine shipping and marine terminal Regional Assessment Area and Open Water Assessment Area. This residual effect is expected to last from construction through Decommissioning phase of the project. Residual effects are expected to happen regularly during operations and irregularly during Construction and Decommissioning. Project-related activities have the potential to permanently alter marine habitat. It is anticipated that change in habitat would disproportionately affect human populations who depend on marine resources, as a source of food, livelihood, and as part of their traditional activities.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>The likelihood of predicted effect occurring is high. With proposed mitigation measures (including a 47,441 m<sup>2</sup> of HADD which requires offsetting), the consequences of the residual effects are considered low (local extent and medium magnitude). There is a moderate degree of uncertainty associated with the predictive sediment scour and transport modelling and result of field-based studies used to assess this effect. Since change in habitat is an issue identified by the public, First Nations and technical advisors, the importance was considered high.</p>
<p><i>Change in behaviour caused by sensory disturbances</i></p> <p><i>Impulsive and non-impulsive project-related underwater noise and artificial light would affect marine organisms' behaviour</i></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Regional</b></p> <p>Duration: <b>Medium term (seasonal)</b></p> <p>Frequency: <b>Irregular/continuous</b></p> <p>Reversibility: <b>Fully Reversible</b></p> <p>Affected Populations: <b>Disproportionate to sub-populations near the Project</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not Significant</b></p> <p>Study of existing conditions and surveys conducted by the Proponents at approximately 2 km from the marine terminal and near the mouth of Portland Canal shows that the strongest contributions to the soundscape occurred at low frequencies (below 100 Hz) and were a combination of tidal-induced noise and marine vessel traffic. As the vessel detection was continuous throughout the monitoring periods, marine fish and mammals are more sensitive to anthropogenic noise in the area. Underwater noise and artificial light are expected to affect marine fish and mammals during all phases of the project at varying levels. The noise can be impulsive (mainly during construction and installation of piles) and continuous as a result of vessel traffic and operation of the facility and power barges. Project-related activities are also expected to modify the light levels and has the potential to cause change in the behaviour of marine mammals and fish. Underwater noise levels in relation to impact pile driving are expected to exceed the 207 dB re 1 µPa threshold for fish injury and mortality within 32 m of the pile installation location. The extent of this effect is extended to marine terminal and Marine Shipping Regional Assessment Areas and the Open Water Assessment Area. This residual effect is expected to last from construction through Decommissioning phase of the project. This residual effect would cease after Decommissioning of the project and is fully reversible. It is anticipated that change in behaviour due to sensory disturbances would disproportionately affect human populations who depend on marine resources, as a source of food, livelihood, and as part of their traditional activities.</p> <p>The likelihood of this effect is considered high, and consequences of this effect is medium (medium magnitude and regional extent). Effects of underwater noise on marine mammals and fish depends on various factors such as the context of exposure, type and frequency of sound, species and age class and is not a well-studied field and there is moderate uncertainty regarding the behavioral responses. This effect has been raised by First Nations, public and technical advisors and the importance is considered high.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p><i>Change in injury or mortality risk</i></p> <p><i>Project related- activities during all phases of the Project have the potential to change the injury or mortality risk through exposure to underwater noise, vessel strikes, crushing and burial, and impingement and entrainment.</i></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Medium term</b></p> <p>Frequency: <b>Irregular/Continuous</b></p> <p>Reversibility: <b>Fully Reversible</b></p> <p>Affected Populations: <b>Disproportionate to sub-populations near the Project</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not Significant</b></p> <p>Existence of a variety of human disturbances in the Marine Shipping Local Assessment Area and high traffic volume in the Open Water Assessment Area have resulted in a low to moderate resiliency. Potential mortality of marine organisms is expected during all project phases from burial or crushing of organisms during construction of the FLNG facility and seawater intake and outfall pipes. Marine mammals could also be injured or killed by vessel strikes. The effect from injury and mortality could result in a demonstratable change but would not be expected to alter the nature of the marine resources that could exceed resilience and adaptability limits of the natural environment. This effect is contained within the marine shipping and marine terminal local Assessment Area except for the increased risk of vessel strikes which extends to the Open Water Assessment Area during operation. This residual effect is expected to last from construction through Decommissioning phase of the project. While the mortality of individuals is by nature permanent and therefore irreversible, mortality risk is not expected to be at a rate that would potentially affect the populations health and therefore would be considered reversible when the cause of mortality ceases. It is anticipated that change in injury or mortality risk would disproportionately affect human populations who depend on marine resources, as a source of food, livelihood, and as part of their traditional activities.</p> <p>The likelihood of this effect is considered high, and consequences of this effect is medium (medium magnitude and local extent). The frequency of vessel strike risk will occur at sporadic intervals along the Marine Shipping Route based on the frequency of shipping. The frequency of effects due to underwater noise is irregular (shipping) and continuous (FLNG operation). The frequency of effects due to crushing and burial is considered irregular. The frequency of effects due to entrainment and impingement is expected to range from irregular (water intake operations as needed) to regular (scheduled water intakes). The frequency of effects due to artificial lighting is expected occur in regular events based on the need for lighting. Given that the effect would vary based on the species exposed to the effect and with the mitigation measures proposed by the Proponents, the uncertainty is considered moderate. As this effect is raised as a concern from First Nations and technical advisors, the importance is considered high.</p>
<p><i>Northern abalone – a species at risk as defined in subsection 2(1) of the Species at Risk Act</i></p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Regional</b></p> <p>Duration: <b>Medium term</b></p>	<p>Construction activities such as pile installation for the personnel dock, FLNG trestles and platforms, MOF, and mooring anchors have the potential to increase the risk of injury or mortality due to burial or crushing.</p>



Residual Effect	Assessment Rating*	Significance and Rationale
	Frequency: <b>Irregular</b> Reversibility: <b>Irreversible</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b>	
<i>Marine fish including green sturgeon, basking shark, tope shark, bluntnose six gill shark, longspine thornyhead, roughey rock fish (type I &amp; II), and yelloweye rockfish – Species at risk as defined in subsection 2(1) of the Species at Risk Act</i>	Context (resilience): <b>Moderate</b> Magnitude: <b>Medium</b> Extent: <b>Regional</b> Duration: <b>Medium term</b> Frequency: <b>Irregular</b> Reversibility: <b>Partially Reversible</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b>	Marine fish species that have a moderate sensitivity to underwater noise would be impacted by the underwater noise during construction. During the Operation phase, the risk of injury or mortality to marine fish would increase due to impingement and entrainment by project water intakes, the extent is however limited to the immediate vicinity of the seawater intakes and through the implementation of additional mitigation measures. The risk of impingement and entrainment also depends on species life stage, and the size of the intake screen compared to the size of the organism. Artificial lighting during Construction and Decommissioning is also expected to affect the marine fish on an individual level (predation-related mortality). Increased TSS would cause habitat alteration.
<i>Marine mammals including Killer whale (Northeast Pacific northern resident, northeast pacific transient, northeast pacific offshore) harbour porpoise, humpback whale, fin whale, steller sea lion, sea otter – Species at risk as defined in subsection 2(1) of the Species at Risk Act</i>	Context (resilience): <b>Low</b> Magnitude: <b>Medium</b> Extent: <b>Regional</b> Duration: <b>Medium term</b> Frequency: <b>Regular/Irregular</b> Reversibility: <b>Partially Reversible</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Moderate</b>	The residual effects identified for marine mammals would include primarily project induced noise during Construction, increased risk of vessel strikes, and change in habitat.
<i>Offshore and Pelagic marine mammals including blue whale, sei whale, north pacific right whale, – Species at risk as defined in subsection 2(1) of the Species at Risk Act</i>	Context (resilience): <b>Low</b> Magnitude: <b>Medium</b> Extent: <b>Regional</b> Duration: <b>Medium term</b> Frequency: <b>Regular/Irregular</b>	The residual effects identified for marine mammals would include primarily project induced noise during Construction, increased risk of vessel strikes, and change in habitat.

Residual Effect	Assessment Rating*	Significance and Rationale
	Reversibility: <b>Partially Reversible</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Moderate</b>	
<i>Leatherback Sea turtle - Species at risk as defined in subsection 2(1) of the Species at Risk Act</i>	Context (resilience): <b>Low</b> Magnitude: <b>Low</b> Extent: <b>Regional</b> Duration: <b>Medium term</b> Frequency: <b>Irregular</b> Reversibility: <b>Reversible</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Low</b>	The Project effects related to marine transportation activities in the marine shipping regional assessment area and open water assessment area. Low frequency noise produced by marine transport vessels can be detected by leather back sea turtles and may mask their auditory cues.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### 18.5.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are twenty-five existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with the Ksi Lisims LNG as described in [Table 7.9-44](#) of the Revised Application.

The following pathways for cumulative effects were assessed further for marine resources by the Proponents in [Section 7.9.12](#) of the Revised Application:

- Change in water and sediment quality;
- Change in habitat;
- Change in behaviour caused by sensory disturbance; and
- Change in injury or mortality risk.

#### 18.5.8.1. Change in water and sediment quality

Potential cumulative effects on water and sediment quality as a result of increased total suspended solids level over construction is expected to occur with two reasonably foreseeable future: Prince Rupert Gas Transmission Project (PRGT) and Westcoast Connector Gas Transmission Project (WCGT). Depending on the installation methods selected, there are varying degrees of sediment disturbance and subsequent effects on marine water quality. Marine construction of PRGT and WCGT are expected to increase total suspended solids in the marine environment and would lead to adverse changes

in water quality. Portions of the transmission line and the landfall site at the marine terminal may overlap with PRGT and WCGT pipeline routes.

A moderate risk of cumulative effects to marine fish and marine mammals listed under subsection 2(1) of the Species at Risk Act is expected as a result of marine Construction activities associated with PRGT and WCGT and increased levels TSS.

#### **18.5.8.2. Change in habitat**

The Proponents identify PRGT and WCGT as two reasonably foreseeable future projects that have the potential to permanently alter or destroy habitat within the Transmission Line Assessment Area and Marine Shipping Regional Assessment Area. These projects will likely require near shore burial and surface lay with anchors/armouring in the seabed in deeper waters.

Construction of Ksi Lisims LNG is expected to result in the permanent destruction of 32,229 m<sup>2</sup> of marine riparian vegetation, 15,086 m<sup>2</sup> of intertidal, and 6,166 m<sup>2</sup> of subtidal habitat due to the terrestrial Project footprint, pile installation, mooring anchors, and the infilling of the marine offloading facility. DFO determined that the project would result in HADD and must proceed with a Fisheries Act Authorization. PRGT and WCGT are also expected to be required to implement effective habitat offsetting or compensation programs for any residual effects to fish habitat. With the implementation of mitigation measures, conducting habitat offsetting and adhering to regulations would result in low risk of cumulative residual effects for change in habitat.

A low risk of cumulative effects to marine fish, marine mammals, marine invertebrates, and sea turtles listed under subsection 2(1) of the Species at Risk Act is expected due to the change in habitat.

#### **18.5.8.3. Change in behaviour caused by sensory disturbance**

Projects with potential cumulative effects on change in marine species' behaviour are present and reasonably foreseeable future marine infrastructure projects (Port of Prince Rupert (PRPA), PRGT and WCGT), as well as future and existing shipping activities in the Marine Shipping Regional Assessment Area and open water Assessment Area (PRPA, Stewart Bulk Terminals, Swamp Point – Sand and Gravel, Stewart World Port, LNG Canada, Cedar LNG, Skeena LNG, and Totem LNG). Marine construction of these project and activities will produce underwater noise and artificial lighting in marine terminal and Marine Shipping Regional Assessment Areas and Transmission Line Assessment Area) which may affect the behaviour of marine fish, marine mammals, and sea turtles. During the operations the increased vessel traffic will produce underwater noise and have the potential to affect the behaviour of marine species. The noise produced by existing and future vessel traffic along the Marine Shipping Regional Assessment Area and Open Water Assessment Area, including commercial, recreational, and Indigenous nation vessels may act cumulatively with noise from project related activities.

This spatial extent of behavioural effects may increase due to the cumulative effects of other marine construction projects (PRGT and WCGT) in the marine terminal Regional Assessment Area. Underwater noise from Project marine transport and shipping is likely to act cumulatively with existing and future projects during construction and operation. The cumulative increase in vessel traffic would increase the duration of ensonification in the Marine Shipping Regional Assessment Area and Open Water Assessment Area and would result in longer-term disturbance of marine mammals in high-traffic areas.

Residual cumulative effects on marine fish behaviour from existing and future projects during construction and operation are expected to include areas of potential fish avoidance or altered swimming behaviour within approximately 400 m of transiting vessels; however, these areas are not expected to overlap in extent except in high traffic areas.

The risk of cumulative effects on changes in behaviour is expected to be moderate for fish and sea turtles and high for marine mammals due to the exceedances of disturbance thresholds and presence of *Species at Risk Act* (SARA)-listed marine mammals. The implementation of mitigation measures by Ksi Lisims LNG and other projects will reduce the spatial extent and intensity of effects, some potential changes in the behaviour of marine species is expected in areas close to construction activities and transiting vessels.

A moderate risk of cumulative effects on the behaviour of marine mammals, marine fish and leatherback sea turtle listed in subsection 2(1) of the *Species at Risk Act* is expected as a result of construction and operation activities of Ksi Lisims LNG when considered cumulatively with past, present and foreseeable future projects.

#### **18.5.8.4. Change in Injury or mortality risk**

Injury or mortality of marine fish and invertebrates is expected to occur as a result of existing and reasonably foreseeable future projects due to crushing or burial during trenching, infilling and artificial lighting. The effects from these projects are expected to overlap spatially with Ksi Lisims LNG and would result in cumulative effects. Future marine infrastructures (PRPA, PRGT, WCGT) as well as existing shipping activities (PRPA, Stewart Bulk Terminals, Swamp Point – Sand and Gravel, Stewart World Port, LNG Canada, Cedar LNG, Skeena LNG, and Totem LNG) in the Marine Shipping Regional Assessment Area and Open Water Assessment Area. Existing and future vessel traffic along the Marine Shipping Regional Assessment Area and Open Water Assessment Area (commercial, recreational, and Indigenous nations vessels) will have the potential to act cumulatively with project related vessel traffic, which may increase the risk of injury or mortality of marine mammals and sea turtles due to vessel strikes.

Although mortality of individuals is expected, the effect is considered reversible as many of the affected species will be recolonized by adjacent communities immediately following the completion of construction activities. With the assumption that sensitive marine areas (e.g., sponge reefs, coral gardens) will be avoided, marine organisms that have the potential to be injured or killed by construction activities are not anticipated to be at-risk. DFO determined that the project would result in a harmful alteration, disruption or destruction (HADD) and offsetting or compensation measure would be implemented by the Proponents.

Given that future marine projects and activities will also be subject to mitigation measures similar to those applicable to the project to reduce the potential for injury or mortality to fish, invertebrates, marine mammals, and sea turtles, the risk of cumulative effects on injury or mortality risk is considered low for sea turtles and moderate for marine fish, marine invertebrates, and marine mammals.

A low risk for cumulative effects is expected for the leatherback sea turtle and a moderate risk is expected for marine fish, marine mammals and the northern abalone as defined under subsection 2(1) of the *Species at Risk Act* as a result of change in injury or mortality.

The Proponents concluded that there would be a low to moderate incremental increase in change in water and sediment quality, change in habitat, change in behavior caused by sensory disturbance, and change in injury or mortality risk when Ksi Lisims LNG is considered in context with other existing and reasonably foreseeable future projects, but that the long-term sustainability of marine species populations would not be affected.

The EAO concludes that not significant cumulative effects to marine resources Valued Component are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

### 18.5.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the Marine Resources Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 9 (Construction Environmental Management Plan) and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.6. Freshwater Fish and Fish Habitat

### 18.6.1. Summary

Freshwater fish and fish habitat were identified as a Valued Component for Ksi Lisims LNG because of its importance to Indigenous culture, ecological importance and to traditional and economic activities and values. Ecosystems that support freshwater fish and fish habitat are an indicator of long-term productive capacity for fish and other aquatic species. The Proponents' assessment considered traditional knowledge and use, emphasizing the importance of salmon fishing for First Nations.

Project activities, including site preparation, clearing and construction, natural gas pre-treatment and liquefaction, storage and offloading, and on-site power generation, may affect freshwater fish and fish habitat through changes in phytoplankton density in lakes, changes in fish habitat and changes in fish health, growth, survival, or reproduction. The reviewers raised concerns regarding the adequacy of fish habitat descriptions and the need for further field surveys, particularly concerning the transmission line's impact and related to the construction of watercourse crossings.

The Proponents proposed mitigation measures to minimize potential adverse effects, including erosion and sediment control measures, limiting water withdrawals and using clear span bridges or open bottom culverts for stream crossings. With the implementation of these mitigation measures, potential adverse residual effects to freshwater fish and fish habitat include:

- Changes in nitrogen and sulphur concentrations in area lakes and streams;
- Loss of approximately 1.09 hectares of riparian habitat in the Riparian Reserve Zone in the Local Assessment Area: approximately 0.42 hectares of riparian habitat in watercourses that do not have a Riparian Reserve Zone and 3.25 hectares of riparian habitat in the riparian management area;
- Change in stream flow in two watercourses, if freshwater withdrawals are required; and
- Potential for increased sedimentation in streams.

The Proponents' assessment concluded that the potential adverse residual effects to freshwater fish and fish habitat are low to moderate in magnitude and are reversible. Potential adverse residual cumulative effects are increased sulphur and nitrogen deposition in streams and lakes; the risk is considered low.

Given the assessment, the EAO concludes that there would not be a significant adverse effect to freshwater fish and fish habitat.

### 18.6.2. Assessment Boundaries

Ksi Lisims LNG footprint includes both permanent and temporary alterations to land and marine areas for infrastructure development and activities. The freshwater fish and fish habitat assessment boundaries are as follows:

- Local Assessment Area overlaps with District Lot boundaries 5431 and 7235, extending to the higher high water mean tide line. Where watercourses extend inland, the freshwater fish and fish habitat Local Assessment Area extends to the estuaries;
- Regional Assessment Area includes the entirety of all watersheds intersected by freshwater fish and fish habitat in the Local Assessment Area;
- Acidification and Eutrophication Study Area includes Ksi Lisims LNG's potential air emissions effects within a 40 km by 40 km zone; and

- Transmission Line Assessment Area focuses on marine and freshwater regions in the transmission line between Ksi Lisims LNG and Nisga’a Lands.

The temporal boundaries are:

- Construction (approximately 3-4 years);
- Operations (30 years); and,
- Decommissioning phase (approximately 12 months).

Ksi Lisims LNG components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.6.3. Existing Conditions by the Proponents

The existing freshwater fish and fish habitat conditions were assessed in [section 7.8](#) of the Proponents’ Revised Application and are summarized here. The existing conditions by the Proponents are as follows:

#### Fish Habitat

The Proponents’ studies showed in the Local Assessment Area, Regional Assessment Area, and Transmission Line Assessment Area, that freshwater fish and fish habitat are generally undisturbed, with limited human development except for some historical logging activities. The Acidification and Eutrophication Study Area is also in a generally undisturbed area with no major sources of emissions. The north end of Pearse Island faces low risk to salmon, while areas within the Acidification and Eutrophication Study Area and Transmission Line Assessment Area, including parts of the Ashington Range and Mylor Peninsula, are considered moderate risk due to forest disturbance, insect infestation, and land alteration. Chambers Creek watershed in the Transmission Line Assessment Area also faces moderate risk due to riparian disturbance. The Proponents identified eighteen streams in the Local Assessment Area, with varying levels of fish-bearing reaches and non-fish-bearing areas. These streams provide habitat for various fish species including coho and pink salmon, coastal cutthroat trout, and sculpin.

Streams within the Transmission Line Assessment Area are typically coastal, steep, and flow directly to the marine environment. Named watercourses in the Transmission Line Assessment Area include Chambers Creek, Flewin Creek, Welda Creek, Matheson Creek, and Ksgyukwsa’a, with several previously documented fish observations. The transmission line route options cross between 16 and 43 mapped watercourses, depending on the route. The Proponents anticipate that this number may change depending on where the transmission line is constructed within the Transmission Line Assessment Area.

#### Fish Presence

The Proponents identified ten fish species potentially in the Local Assessment, Regional Assessment, and Acidification and Eutrophication Study Areas, including cutthroat trout (*Oncorhynchus clarkii*), slimy sculpin (*Cottus cognatus*), coho salmon (*Oncorhynchus kisutch*), and chum salmon (*Oncorhynchus keta*), with none listed as species at risk. The Proponents reported that pink salmon (*Oncorhynchus gorbuscha*) have been observed spawning in Dogfish Creek, with distinct arrival and peak spawning times. The Proponents’ escapement studies in the coastal Nass area revealed declining trends in coho and chum salmon populations, attributed to various habitat pressures such as defoliation, land cover alteration, and linear development. Pressures affecting pink salmon include similar habitat disturbances as observed for other species, although they show a significant increase in odd years. No data was available for even-year pink salmon. Like other areas in the Nass region, the Proponents’ studies showed declining trends in coho, chum, and Chinook salmon populations.

The Revised Application indicated that the biological status of coho and chum salmon is rated as 'fair' and 'good' for pink salmon by the Pacific Salmon Foundation in the Local Assessment, Regional Assessment, and Acidification and Eutrophication Study Areas. Despite the primary pressures impacting salmon habitat in the Transmission Line Assessment Area, including defoliation, riparian disturbance, land cover alteration, and linear development, the Proponents noted the biological status of salmon populations is rated as 'good' or 'fair' by the Pacific Salmon Foundation.<sup>17</sup>

In the Transmission Line Assessment Area, the Proponents observed nine fish species in freshwater watercourses, including salmon species, trout, and sculpin; historic records indicate spawning activities for several salmon species. The Proponents reported on previously documented fish observations: Chambers Creek has historical records for spawning chinook (*Oncorhynchus tshawytscha*, coho, chum, and pink salmon). Flewin Creek and Welda Creek have historical records of spawning pink salmon, and Ksgyukwsa'a has historical records of spawning chum and pink salmon. No fish species documented in the updated Transmission Line Assessment Area are listed as species at risk or species of special concern<sup>18</sup> by the Species at Risk Act, the Environmental Protection and Management Regulation, Committee on the Status of Endangered Wildlife in Canada, or B.C. The Proponents identified no critical habitat for any freshwater fish species. The Proponents reported that North Coast chum, northern coho salmon, and Skeena and Nass Chinook are found in the updated Transmission Line Assessment Area and considered to be stocks of concern by DFO.

See [chapter 18.9](#) (Marine Use) for First Nation commercial and traditional salmon harvesting.

#### 18.6.4. Potential Project Effects by the Proponents

Ksi Lisims LNG activities that could affect freshwater fish and fish habitat include site preparation, construction, natural gas treatment, liquefaction, storage, offloading, and on-site power generation. Potential effects include changes in phytoplankton density in lakes and periphyton density in streams, alterations in fish habitat, and changes in fish health, growth, survival, or reproduction.

The Proponents' assessment of potential effects on freshwater fish and fish habitat identified pathways and indicators/measurable parameters to assess these effects. They used measurable parameters that were quantifiable where possible (e.g. area of instream or riparian habitat loss), but not all potential effects could be quantified (e.g. number of potential fish mortalities). Therefore, some effects were assessed qualitatively using an understanding of existing conditions, scientific literature, and professional judgment based on similar project experience. No tolerance thresholds for fish habitat were identified for potential adverse effects by First Nations or Technical Advisory Committee members.

The Revised Application indicated that during Construction, site preparation, clearing and the construction of temporary and permanent land-based infrastructure are anticipated to affect instream and riparian habitats and freshwater fish. No activities in the Construction and Decommissioning Phases are anticipated to lead to the eutrophication of area lakes and streams. However, during Operations, all other activities besides natural gas pre-treatment, liquefaction, storage and offloading of LNG and NGL products, and temporary on-site power generation do not create a pathway for potential eutrophication in area lakes and streams. Ksi Lisims LNG's effects on changes in fish health, growth, survival, or reproduction, are anticipated to occur in Operations due to natural gas pre-treatment, liquefaction, storage, and offloading of LNG and NGL products. Temporary on-site power generation is expected to emit emissions but is not likely to affect freshwater fish but not their habitat. Facility and infrastructure maintenance, which includes the transmission

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<sup>17</sup> Pacific Salmon Foundation. 2022. Pacific Salmon Explorer. Available at: <http://www.salmonexplorer.ca/>.

<sup>18</sup> Species listed as special concern are not afforded legal protection under the federal *Species at Risk Act*.



line within the Transmission Line Assessment Area, is anticipated to interact with other potential project pathways, which include fish habitat, and fish health, growth, survival, or reproduction.

Water discharges that occur as part of waste management will be to the marine environment; therefore, will not interact with freshwater fish or their habitats, see [chapter 18.5](#) (marine resources).

The Revised Application identified no freshwater fish species at risk or species of special concern, or any critical fish habitat designated for freshwater fish in the Local Assessment Area, Regional Assessment Area, Acidification and Eutrophication Study Area, or Transmission Line Assessment Area. Consequently, the Proponents did not evaluate Ksi Lisims LNG's potential to affect the accessibility or use of habitat for such species.

#### 18.6.5. Proposed Mitigation Measures by the Proponents

[Table 7.8–19](#) of the Revised Application provides a summary of mitigation measures for the assessment of freshwater fish and fish habitat. The Proponents selected mitigation measures based on provincial and federal regulations, best practices, and relevant literature, including guidelines for stream alterations in B.C., terms and conditions for water sustainability, and codes of practice from Fisheries and Oceans Canada.

The Proponents identified the following relevant mitigation measures to reduce potential effects on freshwater fish and fish habitat:

- Develop and implement equipment and machinery maintenance and inspection manuals based on manufacturers recommendations. Emissions testing on power turbines, thermal oxidizers, and heaters will be completed to confirm emission levels;
- During all phases of Ksi Lisims LNG, develop and implement erosion prevention and sediment control measures using industry standard management practices such as those laid out in the College of Applied Biologists' [Professional Practice Guidelines - Erosion and Sediment Control](#);
- Planning and design will avoid or reduce impacts to identified watercourses, wetlands and riparian areas within the terrestrial Project and transmission line footprints to the extent possible;
- Mark clearing boundaries prior to site preparation to keep clearing activities within the designated footprint;
- Develop and implement a Trigger Action Response Plan for water and sediment control management to align with licensing requirements as stipulated;
- Limit water withdrawals from fish-bearing streams such that the quantity of remaining flow does not impair fish migration, does not pose a stranding risk to fish eggs, or alter the quantity or quality of hydraulic habitat used by fish for spawning, rearing, or overwintering in accordance with the Proponents commitment to maintain within the Risk Management Level 1 of the Environmental Flow Needs Policy;
- Use clear span bridges or open-bottom arch culverts to cross streams with confirmed fish presence;
- Establish designated equipment refueling areas and develop a spill response plan. Maintain a designated area for refueling in proximity to fuel storage equipped with spill response equipment to reduce the likelihood and spatial extent of potential fuel spills to the environment. Measures may include use of secondary containment, use of fuel nozzles with automatic shut-off, designated operators, etc.;
- Instream works to be conducted in isolation of flowing water;
- Conduct fish salvage, as required, prior to specific activities with high potential for crushing and burial or during in-water work requiring isolation and dewatering;

- Water intakes used during construction to be screened in accordance with Fisheries and Oceans Canada [Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater](#) or the final code of practice, if available;
- Develop and implement a no-fishing policy in streams and marine waters on/near Pearse Island by all Ksi Lisims LNG personnel while on-shift;
- Develop and implement spill prevention and response measures;
- As part of Request for Review process with DFO, develop schedule for Construction activities that considers windows of least risk; and
- Use only clean equipment at the site. As determined by environmental or construction inspection personnel, any equipment arriving at the site in a dirty condition will be cleaned and re-inspected before use.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC's draft potential federal conditions. The Key Mitigation Measures related to freshwater fish and fish habitat are outlined in [Appendix 2](#) and include a follow-up program for effects to fish and fish habitat from changes to water quality during all phases of the Ksi Lisims LNG.

#### 18.6.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the freshwater fish and fish habitat Valued Component for Ksi Lisims LNG were identified.

##### 18.6.6.1. Fish Habitat in the Transmission Line Assessment Area

DFO and ECCC noted that the description of fish habitat within the Transmission Line Assessment Area was insufficient to meet the information requirements outlined in Section 6.6.3 of the [Application Information Requirements](#) which mandated a detailed depiction of baseline conditions and potential biophysical effects, including effects from the Construction, Operation and Decommissioning Phases of the transmission line. The Proponents' updated Transmission Line Assessment Area Supplemental Information assessed three transmission line options, identifying changes in fish habitat as a potential effect during transmission line construction, resulting in potential increases in watercourse sedimentation during construction and decommissioning and riparian clearing during construction and operation.

The Proponents responded that there may be increased sedimentation within the updated Transmission Line Assessment Area in the possible 16 to 43 mapped watercourse crossings of the route corridors during construction and decommissioning, which may impact fish habitat. The Proponents indicated that riparian clearing would be required in the route corridor at these watercourse crossings during construction and operation. In response to DFO comments, the Proponents also clarified that once project design has advanced the transmission line routing, field surveys will be conducted to collect data along the route. The Revised Application confirmed that watercourse crossings will be constructed above the ordinary high-water mark of watercourses.

The potential for a harmful alteration, disruption and destruction of fish habitat will be confirmed with DFO by the third party once the route is confirmed.

In response to these concerns, the EAO has proposed Certificate Condition 20 (Transmission Line Development Report) requiring the Proponents to develop a report to confirm baseline conditions and outline the results from pre-construction surveys for the final transmission line section between Ksi Lisims LNG and Nisga'a Lands (as defined under Nisga'a Treaty). The EAO also recommended a Key Mitigation Measure to IAAC to require the owner and operator of the transmission line

to mitigate adverse federal effects of its construction by conducting pre-construction surveys to assess fish habitat along the transmission line route.

### 18.6.6.2. Watercourse Crossings

DFO also raised concerns that Section 7.8.9.3.4 of the Proponents Revised Application should include a qualified environmental professional and recommended a reduced risk work window for the construction of watercourse crossings at several watercourses. They requested additional detail and rationale to demonstrate how fish species and life history informed the proposed reduced risk window and recommended that the Proponents choose a timing window that avoids restricting the movement of migrating salmon due to use of site isolation. DFO sought clarification that fording associated with watercourse crossings for vehicles would be completed during a reduced risk timing window. If this is not possible, the Proponents must describe the increased risks and propose associated avoidance or mitigation measures for freshwater fish and fish habitat. The Proponents clarified in the Revised Application that no instream works are anticipated at any of the fish-bearing watercourse crossings discussed in [Section 7.8.9.2.4.1](#), as clear span bridges and open bottom culverts will be constructed above the ordinary high-water mark of watercourses. The Proponents described the increased risks to freshwater fish and fish habitat and described primary mitigation measures and proposed additional measures to avoid or mitigate these risks if it is not possible to conduct fording within a reduced risk window, which include:

- Clear span bridges and open bottom culverts would be constructed above the ordinary high-water mark of watercourses;
- Equipment would be operated from land, except for fording, where one piece of equipment would cross the stream over and back if required to support construction;
- Though fording may occur outside of reduced risk timing windows, remaining mitigation measures in DFO's "[Code of Practice: Temporary fords](#)" would be implemented to reduce potential effects to fish mortality risk; and,
- Prior to fording, a stream walk will be conducted by a Qualified Professional to determine the location of any redds so that the ford crossing location will avoid the physical destruction of the redds and reduce the potential for downstream sedimentation.

In response to these concerns, the EAO recommended a Key Mitigation Measure to mitigate effects to freshwater fish and fish habitat by designing all crossings of fish-bearing watercourses in a manner that avoids harm to fish and fish habitat and in compliance with the Fisheries Act.

### 18.6.6.3. Aquatic effects monitoring

Metlakatla First Nation and Lax Kwalaams Band raised concerns regarding the methodology for invertebrate sampling, which they consider crucial for assessing the impacts of projects with footprints that overlap waterbodies. They requested that the Proponents describe plans for conducting benthic macroinvertebrate sampling in all affected waterbodies through the project phases. Metlakatla First Nation and Lax Kwalaams Band highlighted that while there may not be direct impacts on water quality, impermeable infrastructure like roads and paved areas could lead to sedimentation and changes in flow patterns. They cautioned against relying solely on chemical water sampling, which may overlook effects on streams and wetlands. The Proponents responded that water management and erosion and sediment control would mitigate potential sources of sediment, as well as changes to benthic macroinvertebrate communities due to changes in temperature, flow, and sedimentation. The Proponents committed to working with regulators and potentially affected First Nations to develop aquatic effects monitoring if determined to be required through the review process.

In response, the EAO has recommended a Key Mitigation Measure to the IAAC to address aquatic effects that include monitoring both turbidity and total suspended solids and comparing the monitoring results with the Canadian Council of

Ministers of the Environment’s *Canadian Water Quality Guidelines for the Protection of Aquatic Life* and B.C.’s *Water Quality Guidelines and Working Sediment Quality Guidelines*.

### 18.6.7. The EAO’s Characterization of Residual Effects

After considering the proposed mitigation measures and proposed conditions, the information contained in the Joint Permitting/Regulatory Coordination Plan, and the Regulatory Coordination Tracking Table, the EAO concludes that Ksi Lisims LNG would result in the following residual adverse effects on freshwater fish and fish habitat:

- Change in Phytoplankton Density;
- Change in Fish Habitat; and,
- Change in Fish Health, Growth, Survival, or Reproduction.

The EAO’s characterization of the expected residual effects of Ksi Lisims LNG on freshwater fish and fish habitat is summarized below, as well as the EAO’s level of confidence in the determination of the effects (including their likelihood and significance).

Table 46: Summary of Residual Effects on freshwater fish and fish habitat

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Change in Phytoplankton Density</b></p> <p><i>Potential changes to phytoplankton density caused by eutrophication of freshwater lakes and streams and sources of air-borne nutrients from the Project</i></p>	<p>Context: <b>Low</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local Assessment Area</b></p> <p>Duration: <b>Long term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>N/A</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Low</b></p>	<p><b>Not Significant</b></p> <p>Study of existing conditions show that the Acidification and Eutrophication Study Area is located in a generally undisturbed area with no major sources of emissions.</p> <p>Project-related nitrogen deposition is expected to result in a low magnitude effect on and low likelihood of potential change in phytoplankton density in lakes and periphyton density in streams within the Acidification and Eutrophication Study Area because the increase in total nitrogen concentrations in the lakes and streams are predicted to be too small to result in a change in trophic status. The consequences are considered minor, making the overall risk to phytoplankton densities due to air-borne deposition of nutrients from the Project low. The uncertainty related to this assessment is low because modelling was done using B.C. guidelines to predict effects. The effects of transmission line construction and related activities on fish and fish habitat are well understood and can be managed through the implementation of standard industry and project-specific mitigation measures. As part of the Construction Environmental Management Plan, the Proponents will be required to outline water quality management as well as acidification and eutrophication monitoring which would include the effects of air-borne emissions on the trophic state of lakes and streams.</p>
<p><b>Change in Fish Habitat</b></p> <p><i>Potential alteration or destruction of</i></p>	<p>Context: <b>Low</b></p> <p>Magnitude: <b>Low to medium (Construction and Operation) or low (Decommissioning)</b></p>	<p><b>Not significant</b></p> <p>Existing conditions within the Local Assessment Area showed that the freshwater fish and fish habitat are generally undisturbed, with limited human development except for some historical logging activities.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<i>fish habitat and riparian vegetation due to project activities including water withdrawal</i>	Extent: <b>Local Assessment Area</b> Duration: <b>Long term</b> Frequency: <b>Multiple irregular events</b> Reversibility: <b>Reversible</b> Affected Populations: <b>N/A</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Low</b> Importance: <b>Low</b>	<p>Clearing of riparian vegetation, construction of watercourse crossings, and water withdrawals are expected to result in low to medium magnitude residual effects to fish habitat in the Local Assessment Area and low magnitude residual effects in the Transmission Line Assessment Area and related to reductions in wetted area and depth at and downstream of the withdrawal locations. These potential residual effects have a high likelihood of occurrence but a minor consequence, resulting in low risks to fish habitat in the Local Assessment Area.</p> <p>Overall, with the implementation of mitigation measures, impacts to instream and riparian habitat are considered unlikely to cause harmful alteration, disruption or destruction of fish habitat. The Proponents developed a conceptual offsetting plan as a Fisheries Act authorization is required for Ksi Lisims LNG.</p>
<b>Change in Fish Health, Growth, Survival, or Reproduction</b>  <i>Potential effects of project activities on fish and parts of a fish and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish species</i>	Context: <b>Low</b> Magnitude: <b>Low</b> Extent: <b>Local Assessment Area</b> Duration: <b>Long-term</b> Frequency: <b>Continuous</b> Reversibility: <b>Reversible</b> Affected Populations: <b>N/A</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Low</b> Importance: <b>Low</b>	<p><b>Not significant</b></p> <p>Existing conditions within the Local Assessment Area showed that the freshwater fish and fish habitat are generally undisturbed, with limited human development except for some historical logging activities.</p> <p>Any water withdrawals from WC-02 or WC-04 will be restricted so that the percentage of cumulative flow withdrawn from the streams does not cause exceedance of the risk management framework of the <a href="#">Environmental Flow Needs Policy</a>, which includes three levels of risk (low, medium, and high). The EAO considers the magnitude of this residual effect to be low as changes in fish health, growth, survival, or reproduction, including changes in fish behavior, distribution, abundance, and migration patterns, are expected to be limited. The Proponents have committed to remain at the Risk Management Level 1 of the <i>Environmental Flow Needs Policy</i>.</p> <p>Most potential residual effects are expected to be short-term in duration and occur as multiple irregular events, particularly sediment releases to watercourses and subsequent increases in concentrations of total suspended solids. However, potential nitrogen and sulphur deposition due to air-borne emissions is expected to be long-term and continuous during Project Operations. The likelihood of a change in fish health, growth, survival or reproduction during Construction, Operations, and Decommissioning is predicted to be low with minor consequence, resulting in an overall low risk to the health, growth, survival, and reproduction of freshwater fish. The uncertainty related to this assessment is low. This is because, for most pathways of effects, the mitigation measures are widely used and known to be effective either because they are best management practices common to similar industrial projects, or because they are government-recommended guidelines that have been developed based on substantial academic research and in-field learning.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		Change in fish health due to changes in water quality due to spills is considered negligible after the implementation of mitigation measures. The Project is also expected to have a negligible effect on fish behaviour, distribution, abundance, migration patterns, or aquatic biodiversity. The potential risk of introduction of aquatic invasive species, including pathogens, is considered negligible after the implementation of mitigation measures. Cleaning equipment before use around watercourses is effective in removing invasive species.
* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a>		

### 18.6.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. The existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG are forestry activities (cumulative effects on changes in fish habitats), Prince Rupert Gas Transmission Project, and the Westcoast Connector Gas Transmission Project (cumulative effects on changes in phytoplankton density, fish habitat and fish health, growth, survival, or reproduction). Interactions between the residual effects of the Prince Rupert Gas Transmission Project are not expected with Ksi Lisims LNG.

#### 18.6.8.1. Change in Phytoplankton Density

The Proponents assessed the spatial and temporal overlap with potential acidifying and eutrophying emissions from the emissions from the Enbridge Nasoga Compressor Station (as part of the Westcoast Connector Gas Transmission Project) to identify cumulative effects on phytoplankton. The Proponents used three modelling scenarios to predict no change in trophic status for any lakes or streams, suggesting that they would remain oligotrophic for the cumulative scenarios. Consequently, the Proponents anticipate residual cumulative effects on changes in phytoplankton density; however residual cumulative effects are anticipated to be low in magnitude, confined to the assessment area, long-term, reversible, and continuous during project operation. The likelihood of such residual effects is considered low, as no changes in trophic status are predicted for any water bodies, and any consequences are minor, resulting in an overall low risk. Additionally, the uncertainty related to this assessment is deemed low since it was conducted using B.C. guidelines or predicting effects<sup>19</sup> (i.e., quantitative assessment), ensuring a quantitative assessment approach. The Proponents do not propose additional mitigation measures to address potential cumulative effects on phytoplankton densities.

#### 18.6.8.2. Change in Fish Habitat

Project construction and maintenance activities may lead to the alteration of up to 1.09 hectares of riparian habitat within the Riparian Reserve Zone of fish-bearing streams on Wil Milit. This constitutes a small portion of the riparian habitat in the project's area of assessment. Riparian clearing will also be necessary for the transmission line, which the Proponents indicate is similarly expected to represent a small fraction of riparian habitat in the Transmission Line Assessment Area.

The Proponents anticipated that the residual cumulative effects resulting from riparian vegetation clearing, in combination with residual effects from past, present, or future forestry activities in the Regional Assessment Area and

<sup>19</sup> Air Emissions Impact Assessment for Liquefied Natural Gas Export Terminal Facilities: Guidance for the Assessment of Acidification and Eutrophication of Aquatic Ecosystems. British Columbia Ministry of Environment (2015). Air Emissions Impact Assessment for Liquefied Natural Gas Export Terminal Facilities: Guidance for the Assessment of Acidification and Eutrophication of Aquatic Ecosystems.

Transmission Line Assessment Area, to be low in magnitude, with a moderate likelihood of occurrence and minor consequences. The Proponents stated that the cumulative risk to freshwater fish and their habitat is low, with any residual effects being long-term, reversible, and occurring during multiple irregular events. Overall, the Proponents considered the uncertainty related to this assessment to be low. Accordingly, the Proponents did not suggest additional mitigation measures to address potential cumulative effects on fish habitat. However, the Proponents have submitted a request to Fisheries and Oceans Canada for review, particularly for activities requiring riparian vegetation clearing and watercourse crossings. If required, the Proponents would develop a fish habitat offset plan including habitat creation, restoration or enhancement projects to mitigate any unavoidable Harmful Alteration, Disruption, or Destruction of fish habitat, including losses of riparian habitat.

### **18.6.8.3. Fish health, Growth, Survival, or Reproduction**

To evaluate the potential cumulative effects on fish health, growth, survival, or reproduction, the Proponents assessed the spatial and temporal overlap with potential acidifying and atrophying emissions from the Enbridge Nasoga Compressor Station, part of the Westcoast Connector Gas Transmission Project.

The Proponents' results from the acidification assessment indicated no predicted changes to the total number and location of Critical Load for Acidity when compared to the baseline case in the Acidification and Eutrophication Study Area. Residual cumulative effects on fish health, growth, survival, or reproduction due to potential acidifying effects are expected to be low in magnitude, as there are no predicted changes compared to the baseline case. Similarly, no changes in trophic status were predicted in any lakes or streams assessed for eutrophication. Therefore, potential effects on fish health, growth, survival, or reproduction due to eutrophication are also anticipated to be low in magnitude, reversible, limited to the Acidification and Eutrophication Study Area, long-term, and continuous during Operations. The likelihood of residual cumulative effects is low, and the overall risk level is considered low. The Proponents considered the uncertainty of this assessment as low, however they indicated that the Assessment may overestimate the cumulative effect on fish health, growth, survival, or reproduction in terms of acidification and underestimate it in terms of eutrophication.

There are no additional mitigation measures proposed by the Proponents to avoid or limit potential cumulative effects on any effect pathway. The Proponents have submitted a request for review to DFO for works requiring riparian vegetation clearing, water withdrawals, blasting, and construction of watercourse crossings to determine whether a Fisheries Act authorization is required for Ksi Lisims LNG. If required, the Proponents would prepare a fish habitat offset plan that would include habitat creation, restoration, or enhancement projects that would counterbalance any unavoidable Harmful Alteration, Disruption or Destruction of fish habitat (including riparian habitat losses).

The potential for cumulative effects from air emissions is considered negligible due to low risk and low consequence. With the implementation of mitigation and enhancement measures, some changes in the indicators, within the Local Assessment Area may be outside the range of natural variability and may exceed the federal and provincial management objectives; however, these changes are unlikely to affect the sustainability and productivity of fish populations. In response, the EAO has proposed Certificate Condition 9 (Construction Environmental Management Plan) in the, which requires the Proponents to identify any groundwater, surface water and/or freshwater fish and fish habitat monitoring requirements and verify the effectiveness of mitigation measures.

The EAO concludes that not significant cumulative effects on freshwater fish and fish habitat are expected as a result of the effects of Ksi Lisims LNG interacting with the effects of other past, present and reasonably foreseeable future projects and activities. The potential for cumulative effects on freshwater fish and fish habitat from these projects and activities is considered negligible due to proposed mitigation measures.

### 18.6.9. Conclusion

The EAO concludes that no significant cumulative effects to freshwater fish and fish habitat Valued Component are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities. The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the freshwater fish and fish habitat Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).



## 18.7. Wildlife and Wildlife Habitat

### 18.7.1. Summary

Wildlife and wildlife habitat is important to the function of natural ecosystems, maintains biodiversity, and supports human activities such as traditional hunting. All First Nations involved indicated the importance of a variety of wildlife species connected to their cultural practices including land stewardship, hunting, and trapping.

The Proponents assessed the potential effects to wildlife and wildlife habitat through Nisga’a Nation community surveys and focus group sessions, First Nation use studies completed by participating Indigenous nations to understand Indigenous knowledge and traditional land use, and wildlife field studies and wildlife habitat suitability models completed by qualified biologists. Potential effects to wildlife and wildlife habitat identified by the Proponents included direct and indirect habitat loss, changes to regular wildlife movement patterns and increased mortality risk.

The key issue raised by reviewers was the incomplete baseline data collection by the Proponents, specifically for northern goshawk, marbled murrelet, western screech owl, and general wildlife habitat features in the project area.

The EAO assessed the potential effects to wildlife and wildlife habitat and proposed Certificate conditions requiring the Proponents to complete western screech owl presence surveys prior to construction, recommended a Key Mitigation Measure to IAAC for managing effects to marbled murrelet, and avoid clearing and site preparation activities during sensitive wildlife periods. Note that for wildlife considered under federal jurisdiction, migratory birds<sup>20</sup> and wildlife species at risk<sup>21</sup> are included in this chapter, but fish and fish habitat and aquatic species are considered further in [chapter 18.6](#) (fish and fish habitat) and [chapter 18.5](#) (marine resources).

Given the assessment, mitigation measures, and proposed conditions, the EAO found that there would not be a significant adverse effect to wildlife and wildlife habitat. The effects on wildlife and wildlife habitat from Ksi Lisims LNG are expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the regional assessment area. The potential for cumulative effects from these projects and activities was considered not significant in consideration of extensive past, current, and planned activities such as forestry. The contribution of effects on wildlife and wildlife habitat from Ksi Lisims LNG itself to cumulative effects in the region is considered not significant.

### 18.7.2. Assessment Boundaries

The spatial boundaries for the wildlife and wildlife habitat assessment included the following Local Assessment Areas and Regional Assessment Areas:

- Terrestrial wildlife – the Local Assessment Area extended to 1 km on land from the Project footprint and the Regional Assessment Area included Pearse Island and a portion of the Highway 113/Nisga’a Highway road allowance;
- Marine Terminal (for marine birds) – the Local Assessment Area extended to 1 km and the Regional Assessment Area to 15 km in the water from the proposed marine Project footprint;

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<sup>20</sup> As defined in subparagraph (a)(iii) of the definition of adverse effects within federal jurisdiction in section 2 of the IAA.

<sup>21</sup> As required by [section 79 of the Species at Risk Act](#).

- Marine Shipping (for marine birds) – the Local Assessment Area extended to 2 km and the Regional Assessment Area to 30 km from the proposed marine shipping and supply routes;
- Transmission Line Assessment Area: included a large area between the Project site and Nisga’a Lands (as defined under the Nisga’a Treaty) within which a portion of a third-party transmission line would be developed; and
- Open Water Assessment Area (for marine birds): extended to 30 km centred on the shipping route.

The temporal boundaries for Ksi Lisims LNG include:

- Construction (approximately 3-4 years);
- Operations (30 years); and
- Decommissioning (approximately 12 months).

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (Project Description and Schedule) of this Report.

### 18.7.3. Existing Conditions by the Proponents

The existing conditions for wildlife and wildlife habitat in the region were assessed in the Proponents’ [Chapter 7.7.5](#) of the Revised Application and the [Wildlife and Wildlife Habitat Technical Data Report](#) provided and are summarized here.

In order to meet environmental assessment substitution requirements, the EAO has assessed the potential effects of Ksi Lisims LNG on wildlife species listed under the Species at Risk Act and/or the Committee on the status of endangered wildlife in Canada (COSEWIC) as required under the Impact Assessment Act. These species are listed in Table 53 below. For a complete list of species assessed please see [see Section 7.06 \(Wildlife and Wildlife Habitat Technical Data Report\)](#) of the Revised Application. While not all of these species were identified during field surveys, it is likely they are either present in the area already, or that parts of the project area represent appropriate ecosystems where these species could potentially occur.

Table 47: Wildlife Species listed under the Species at Risk Act and/or the COSEWIC

Species name	Species Group Assessed	Federal Species at Risk Status
Ancient murrelet ( <i>Synthliboramphus antiquus</i> )	Marine birds	Special Concern
Band-tailed pigeon ( <i>Patagioenas fasciata</i> )	Young forest birds	Special Concern
Barn swallow ( <i>Hirundo rustica</i> )	Wetland birds	Threatened
Black oystercatcher ( <i>Haematopus bachmani</i> )	Marine birds	Threatened
Black-footed albatross ( <i>Phoebastria nigripes</i> )	Marine birds	Special Concern
Black swift ( <i>Cypseloides niger</i> )	Marine birds	Endangered
Cassin’s auklet ( <i>Ptychoramphus aleuticus</i> )	Marine birds	Special Concern
Coastal-tailed frog ( <i>Ascaphus truei</i> )	Amphibians	Special Concern
Common nighthawk ( <i>Chordeiles minor</i> )	Wetland birds	Special Concern

Species name	Species Group Assessed	Federal Species at Risk Status
Great blue heron, <i>fannini</i> subspecies ( <i>Ardea herodias</i> )	Shorebirds	Special Concern
Grizzly bear ( <i>Ursus arctos horribilis</i> )	Large mammals	Special Concern
Haida ermine ( <i>Mustela haidarum</i> )	Small mammals/furbearers	Threatened
Hoary bat ( <i>Lasiurus cinereus</i> )	Bats	Endangered (COSEWIC)
Horned grebe ( <i>Podiceps auratus</i> )	Marine birds	Special Concern
Lesser yellowlegs ( <i>Tringa flavipes</i> )	Shorebirds	Threatened (COSEWIC)
Little brown myotis ( <i>Myotis lucifugus</i> )	Bats	Endangered
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	Marine birds	Threatened
Northern goshawk, <i>laingi</i> subspecies ( <i>Accipiter gentilis</i> )		Threatened
Northern myotis ( <i>Myotis septentrionalis</i> )	Bats	Endangered
Olive-sided flycatcher ( <i>Contopus cooperi</i> )	Old forest bird community and wetland bird community	Special Concern
Peregrine falcon, <i>pealei</i> subspecies ( <i>Falco peregrinus</i> )		Special Concern
Pink-footed shearwater ( <i>Ardenna creatopus</i> )	Marine birds	Endangered
Red knot, <i>roselaari</i> subspecies ( <i>Calidris canutus</i> )	Shorebirds	Threatened
Red-necked phalarope ( <i>Phalaropus lobatus</i> )	Shorebirds	Special Concern
Rusty blackbird ( <i>Euphagus carolinus</i> )		Special Concern
Short-eared owl ( <i>Asio flammeus</i> )	Wetland birds	Special Concern
Short-tailed albatross ( <i>Phoebastria albatrus</i> )	Marine birds	Threatened
Silver-haired bat ( <i>Lasionycteris noctivagans</i> )	Bats	Endangered (COSEWIC)
Western grebe ( <i>Aechmophorus occidentalis</i> )	Marine birds	Special Concern
Western screech-owl, <i>kennicottii</i> subspecies		Threatened
Western toad ( <i>Anaxyrus boreas</i> )	Amphibian	Special Concern
Wolverine, <i>luscus</i> subspecies ( <i>Gulo gulo</i> )	Small mammals/furbearers	Special Concern

The Proponents assessed effects to migratory birds<sup>22</sup> through the establishment of groups of species. Bird species may belong to more than one group and the groups represent a total of 167 species of migratory birds.<sup>23</sup> The groups included:

- Old forest bird community – representing 34 species of migratory birds;
- Young forest bird community - representing 35 species of migratory birds;
- Wetland bird community - representing 26 species of migratory birds;
- Shorebirds – representing 29 species of migratory birds; and

<sup>22</sup> As defined in subparagraph (a)(iii) of the definition of adverse effects within federal jurisdiction in section 2 of the IAA

<sup>23</sup> Listed in [Appendix B of the Proponent's Wildlife and Wildlife Habitat Technical Data Report](#)

- Marine birds – representing 69 species of migratory birds.

The Proponents' Project-specific studies related to wildlife and wildlife habitat were conducted through: Nisga'a Nation community surveys and focus group sessions; Indigenous use studies completed by participating Indigenous nations to understand Indigenous knowledge and traditional land use; and wildlife field studies completed by qualified biologists and overseen by Registered Professional Biologists. Wildlife field studies included surveys such as for breeding birds, northern goshawk, nocturnal raptors, marine bird vessels, shorebird and marine birds, and pond-dwelling amphibians. Studies included the use of remote cameras, bat acoustic recordings, habitat suitability assessments, and incidental observations.

The following summarizes the existing conditions described in the Revised Application and important to this assessment:

- There are 45 bird species of conservation concern that have been identified in the region, although only the ten following species of conservation concern were observed during project surveys: northern goshawk, western grebe, marbled murrelet, California gull (*Larus californicus*), surf scoter (*Melanitta perspicillata*), red-necked phalarope, long-tailed duck (*Clangula hyemalis*), common murre (*Uria aalge*), yellow-billed loon (*Gavia adamsii*), and great blue heron;
- A total of 42 bird species of Indigenous use and cultural value that are known or likely to occur in the Regional Assessment Area, Transmission Line Assessment Area, and Open Water Assessment Area; however only the following species were observed during project surveys: sooty grouse (*Dendragapus fuliginosus*), bald eagle (*Haliaeetus leucocephalus*), mallard (*Anas platyrhynchos*), American wigeon (*Mareca americana*), Canada goose (*Branta canadensis*), and surf scoter (*Melanitta perspicillata*);
- There are 52 terrestrial mammal species, including some federal species at risk and species of conservation concern (9 species), that are likely to occur in the region. The following species were observed in the terrestrial wildlife Regional Assessment Area and terrestrial portions of the Transmission Line Assessment Area: grizzly bear, Yuma myotis (*Myotis yumanensis*), little brown myotis, northern myotis, silver-haired bat, and hoary bat. These species were detected during project surveys, although there were no dens, mineral licks, hibernacula, maternity roosts, wallows, or significant wildlife trails identified during Project surveys or incidentally in the terrestrial wildlife Local Assessment Area;
- Thirteen terrestrial mammal species were identified as having First Nation cultural use and value, and the following were observed during project surveys: grizzly bear, Pacific marten (*Martes caurina*), wolverine, mountain goat (*Oreamnos americanus*), grey wolf (*Canis lupus*), black bear (*Ursus americanus*), mink (*Neovison vison*), red squirrel (*Tamiasciurus hudsonicus*), beaver (*Castor canadensis*), Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), North American river otter (*Lontra canadensis*), and moose (*Alces alces*); and
- A total of 6 amphibian and one reptile species known or likely to occur within the terrestrial wildlife Regional Assessment Area, including one federal species of special concern – western toad – that was observed during field surveys in the terrestrial Regional Assessment Area and the Transmission Line Assessment Area.

#### 18.7.4. Potential Project Effects by the Proponents

The Proponents considered potential changes in wildlife habitat, movement and mortality risk as the indicators of potential effects on the following species or species groups: grizzly bear, grey wolf, wolverine (luscus subspecies), Pacific marten (representing , moose, Sitka black-tailed deer, bats, western screech-owl (kennicottii subspecies), northern

goshawk (laingi subspecies), bald eagle, marbled murrelet, old forest bird community, young forest bird community, wetland bird community, shorebirds, marine birds, and western toad (representing amphibians). The Proponents also assessed effects to sooty grouse, dabbling ducks, diving ducks (including mergansers), Canada goose, and black bear as species specific to Nisga'a Nation interests.

Assessment techniques included developing wildlife habitat suitability models, field data collection, reviews of existing data, technical expert understanding of the species, and literature reviews.

The following potential effects to wildlife and wildlife habitat for terrestrial and marine birds, terrestrial mammals and amphibians were identified by the Proponents:

- Direct loss of wildlife habitat in the Project footprint due to clearing and infrastructure development during construction, including high magnitude effects on young forest bird community, Pacific marten, and moose (winter shelter habitat);
- Indirect loss of wildlife habitat due to increased noise, lighting, marine vessel movements and vibration for migratory and non-migratory birds, moose, pacific marten, grizzly bear, and western toad during construction and operations, extending into the wildlife Local Assessment Areas, which can reduce habitat effectiveness;
- Changes to regular wildlife movement patterns due to physical or perceived barriers; and
- Increased mortality risk to wildlife from the loss of active habitat features, accidental mortality and collisions with vehicles, attraction to the Project by lighting, and human-wildlife conflict.

The Proponents assessed that no changes to the sustainability of any wildlife populations in the region would be expected from these potential effects.

#### 18.7.5. Proposed Mitigation Measures by the Proponents

The Proponents included a list of all proposed mitigation measures for wildlife and wildlife habitat in [Table 7.7-27](#) Summary of Project Mitigation and Enhancement Measures for the Assessment of Wildlife and Wildlife Habitat of the Revised Application. The relevant mitigation measures for effects to wildlife and wildlife habitat included:

- Implement industry standard practices for construction including dust control, regular maintenance of machinery and equipment, monitor and limit idling of vehicles and machinery, and use of low sulphur fuel and low emission technology (such as Tier IV systems on equipment where it is available);
- Include noise ratings as part of the selection criteria for construction equipment and installation methods such as:
  - Use of vibratory-type pile driving or screw piling methods where impact piling is not required due to geophysical conditions;
  - Selection of rubber-wheeled equipment over steel-tracked equipment;
  - Use of electrified (typically quieter) equipment over gas/diesel powered equipment; and
  - Use of broad-band backup alarms instead of the tonal-type backup alarms.
- Reduce construction and operations marine traffic to and from the site by:
  - Pre-scheduling recurring / daily marine traffic movements;

- Scheduling personnel deployments to and from the site to use inbound and outbound trips on the same vessel; and
- Pre-scheduling and marshalling materials shipments to reduce the number of partial loads.
- Avoid disturbance related to site and transmission line preparation during the primary nesting period (i.e., April 11 to August 8):
  - Where disturbance must occur during the primary nesting period, a Qualified Professional will develop and implement beneficial management practices consistent with federal avoidance guidelines for migratory birds;
  - If a survey for nesting activity is needed, passive methods (e.g., point count or transect surveys) will be used for non-simple habitats, and nest surveys will be used for simple habitats (per federal avoidance guidelines); and
  - A setback will be placed around known or suspected active nests - the size of the setback will be determined by a Qualified Professional.
- Implement wildlife mitigation and management measures described in [Table 7.7-27](#) of the Revised Application. If required, additional measures will be developed and implemented. Nests of bird species listed in a table on Schedule 1 of the Migratory Birds Regulations 2022 are protected year-round from removal during the waiting period ascribed to that species. If such a nest is detected:
  - An ‘active period’ setback will be placed around the nest while it is active. The size of the setback will be determined through consultation with a Qualified Professional and in accordance with ECCC’s [Guidelines to Avoid Harm to Migratory Birds](#);
  - A smaller ‘inactive period’ setback will be placed around the nest while inactive to facilitate year-round protection. The size of the setback will be determined through consultation with a Qualified Professional; and
  - If removal of the nest is necessary, may be removed without a permit if all conditions of the Migratory Bird Regulation 5.2(c) are met, including providing written notice to the Minister of ECCC (via the Abandoned Nest Registry) as many months in advance as required for that species and providing the nest is not used for nesting by a migratory bird for that period. In certain limited situations a damage or danger permit may be available to allow removal of the nest following a permit application and approval.
- High-disturbance Ksi Lisims LNG activities will be avoided within 300 m of active bald eagle nests during the breeding period (February 5 – August 31). If high-disturbance activities within 300 m of an active bald eagle nest cannot be avoided, a Qualified Professional will be consulted to develop appropriate mitigation;
- Mitigation for amphibians will be implemented for construction works occurring in or within 30 m of wetlands during the amphibian breeding and dispersal period (approximately mid-April to late-September). A Qualified Professional will be consulted on the mitigation;
- Design and implement Project lighting in accordance with the BCER’s [Light Control Best Practices Guideline](#) to limit environmental disturbance (e.g., directional or shielded lighting to direct light downward and inward);
- Develop and implement speed limits for on-site roads;
- Develop and provide on-site Ksi Lisims personnel and contractors with wildlife awareness training;

- A pre-construction survey for wildlife habitat features (i.e., dens, mineral licks, bat roosts, raptor nests) will be completed by a Qualified Professional prior to the start of vegetation clearing, if those activities will occur during the active period for the habitat feature.
- Surveys for band-tailed pigeon mineral sites will be completed during the potential active period (i.e., during the breeding season and/or fall migration) prior to vegetation clearing;
- A pileated woodpecker nest cavity survey will be completed in the Ksi Lisims LNG footprint during the breeding period for pileated woodpecker prior to clearing;
- A follow-up program consisting of a low-level aerial survey will be completed prior to the start of Construction to verify if terrestrial (nesting) marbled murrelet habitat, based on the biophysical attributes described in the recovery strategy, is present in the area to be cleared by Ksi Lisims LNG. A Qualified Registered Professional Biologist will be consulted on undertaking the low-level aerial survey, interpreting the results, and developing applicable mitigation;
- Mark setbacks around identified active wildlife habitat features prior to site preparation activities. The size of any setback will be determined through consultation with a Qualified Professional;
- If previously unidentified wildlife habitat features (i.e., dens, nests, mineral licks) are identified during construction or operation, report to the designated environmental personnel;
- Fences will be installed around the terrestrial border of the Ksi Lisims LNG footprint to reduce the potential for human-wildlife interactions;
- Develop and implement waste management measures to manage waste including hazardous and construction waste, recyclables, and wildlife attractants;
- During all phases of Ksi Lisims LNG, develop and implement erosion prevention and sediment control measures, using industry standard management practices such as those laid out in the College of Applied Biologists' [\*Professional Practice Guidelines - Erosion and Sediment Control\*](#);
- Develop and implement measures for water and stormwater management;
- Planning and design will avoid or reduce impacts to identified watercourses, wetlands and riparian areas within the proposed terrestrial Project footprint to the extent possible;
- Mark clearing boundaries prior to site preparation to keep construction activities within the designated footprint;
- Develop and implement wetland compensation to address loss of wetland area and functions;
- Develop and implement wetland monitoring and management measures to address potential effects on wetlands located adjacent to the Ksi Lisims LNG footprint;
- Establish designated equipment refueling areas and develop a spill response plan. Maintain a designated area for refueling in proximity to fuel storage equipped with spill response equipment to reduce the likelihood and spatial extent of potential fuel spills to the environment. Measures may include use of secondary containment, use of fuel nozzles with automatic shut-off, designated operators, etc.;
- Develop and implement a ramp-up procedure for impact pile driving to gradually and steadily increase underwater acoustic energy output;
- Implement sound attenuation (i.e., bubble curtain) prior to and during pile driving;

- Develop and implement traffic safety measures for Project-related travel between Prince Rupert, Terrace and Gingolx;
- Construction and operations personnel traveling to and from the site during crew rotations will be required to travel in multi-passenger vehicles (e.g., vans or buses) to reduce the number of vehicles transiting Highway 113/ Nisga'a Highway; and
- Overhead transmission lines may be marked using line markers to reduce the risk of bird collisions with transmission lines in areas where a risk of collision is identified, and where it is feasible to do so.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC's draft potential federal conditions. The Key Mitigation Measures related to wildlife and wildlife habitat are outlined in [Appendix 2](#).

### 18.7.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the wildlife and wildlife habitat Valued Component for Ksi Lisims LNG were identified.

#### 18.7.6.1. Baseline Conditions

Kitsumkalum First Nation, Kitselas First Nation, Gitxaala Nation, Lax Kw'alaams Band, Metlakatla First Nation, and Environment and Climate Change Canada (ECCC) all raised concerns regarding the baseline data collection by the Proponents, specifically for northern goshawk (breeding and foraging habitat), marbled murrelet (terrestrial nesting and marine habitat), western screech owl (breeding, overwintering, and foraging habitat), and identification of general wildlife habitat features in the project area.

The Proponents indicated the breeding bird surveys conducted (by qualified professionals in one breeding season, generally using one survey per location) was adequate to identify the presence of different bird species, and that no additional surveys are needed to inform the environmental assessment. The Proponents indicated that additional wildlife habitat feature surveys, nest surveys, and amphibian surveys and salvage would occur prior to construction to identify any specific features or habitat that would be impacted by construction activities.

Lax Kw'alaams Band and Metlakatla First Nation requested standardized western screech owl surveys that follow BC RISC (Hausleitner 2006) standards (i.e. call-playback) to identify habitat for western screech owl.

ECCC requested that the Proponents develop a follow-up program following the methods described in ECCC's Guidance and Tools to Support the Identification of Potential Marbled Murrelet Suitable Nesting Habitat (Manning et al. 2018) to identify any suitable nesting habitat, inform additional and appropriate mitigation for marbled murrelet. ECCC also recommended that the Proponents clear and prepare the site outside of sensitive periods, such as bird nesting periods, to prevent mortality and disturbance.

In response to these concerns, the EAO included the following conditions in the proposed Certificate under Condition 9 (Construction Environmental Management Plan) or as recommended Key Mitigation Measures as described in [Appendix 2](#):

- Pre-construction surveys for wildlife habitat features (i.e., dens, mineral licks, bat roosts, raptor nests) must be completed by the Proponents prior to the start of vegetation clearing if those activities will occur during the active period for the habitat feature and mark buffers around any active habitat features identified;



- The Proponents must complete standardized western screech owl surveys that follow BC Resources Information Standards Committee (Hausleitner 2006) standards (i.e. call-playback) to identify habitat and any additional mitigation measures for western screech owl prior to construction;
- The Proponents shall conduct site-specific surveys to identify nesting critical habitat for marbled murrelet and inform development of appropriate mitigation;
- The Proponents must develop a follow-up program for migratory birds and their habitat;
- Ensure ground vibration associated with blasting does not exceed recommended guidelines;
- The Proponents must protect migratory birds and avoid injuring, killing or harassing migratory birds or destroying, taking or disturbing their eggs, or damaging, destroying, removing or disturbing their nests, while taking into account Environment and Climate Change Canada’s Guidelines to avoid harm to migratory birds;
- If the Proponents determine the presence, or likely presence of migratory birds nest(s) protected under the Migratory Birds Convention Act that may be adversely affected by any Project activity prior to initiating the activity the Proponent should identify a no-work retain a buffer around the nest; and
- The Proponents will construct a bridge to cross the creek between the FLNG cooling systems.

No additional key issues were raised regarding migratory birds or species at risk.

**18.7.7. The EAO’s Characterization of Residual Effects**

After considering the proposed mitigation measures and conditions proposed, the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on wildlife and wildlife habitat:

- Direct and indirect loss of wildlife habitat;
- Changes to wildlife movement patterns; and
- Increased mortality risk.

The EAO’s characterization of the expected residual effects of the Project on wildlife and wildlife habitat is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 48: Summary of Residual Effects for Wildlife and Wildlife Habitat

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Direct loss of wildlife habitat</b></p> <p>Due to loss, change, removal, or fragmentation of wildlife habitat primarily during vegetation clearing in construction.</p>	<p>Context (resilience): <b>Low to high</b></p> <p>Magnitude: <b>Low to high</b></p> <p>Extent: <b>Limited to Project Footprint and Open Water Assessment Area (Operations)</b></p> <p>Duration: <b>Long-term</b></p>	<p><b>Not Significant</b></p> <p>Although the magnitude of the direct loss of wildlife habitat is predicted to be high for some wildlife groups (young forest bird – including some migratory birds, Pacific marten, and moose for winter shelter habitat) due to a loss of effective habitat in the Local Assessment Area, the loss is expected to occur primarily during construction, be limited to the footprint area, and be partially reversible.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	<p>Frequency: <b>Continuous (construction) and multiple irregular events (other phases)</b></p> <p>Reversibility: <b>Partially reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low to moderate</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>High</b></p>	<p>It is anticipated that effects to wildlife would disproportionately affect the human populations who depend on wildlife (i.e., for traditional hunting and trapping purposes for example). The direct loss of wildlife habitat would be expected to occur (medium to high likelihood), although the amount would be limited to the Project footprint and thus the consequence would be minor for most wildlife (low magnitude and local extent). This led to a low risk rating for effects to most wildlife, or medium for those with higher magnitude of effects, and the sustainability of regional populations is not expected to be adversely affected.</p> <p>There is a low level of uncertainty in the wildlife assessment based on the data provided and the well-understood relationship of most wildlife species and disturbance.</p>
<p><b>Indirect loss of wildlife habitat</b></p> <p>Due to increased noise, lighting, marine vessel movements and vibration for migratory and non-migratory birds during Construction and Operations, extending into the wildlife Local Assessment Areas, which can reduce habitat effectiveness and cause displacement or sensory disturbance.</p>	<p>Context (resilience): <b>Low to high</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local Assessment Area</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Multiple irregular events (all phases) and continuous (Operations)</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>High</b></p>	<p><b>Not Significant</b></p> <p>The magnitude of indirect loss of wildlife habitat due to disturbance is considered medium and short to medium term in duration; effects would likely be higher in magnitude during construction but would extend throughout Operations (e.g., through increased access by hunters and trappers along the Transmission Line). Effects in this case would likely be reversible.</p> <p>It is anticipated that effects to wildlife would disproportionately affect the human populations who use wildlife. The indirect loss of wildlife habitat would be expected to occur (low to medium likelihood), although the amount would extend to the Local Assessment Area and thus the consequence would be minor for wildlife (medium magnitude and local extent). This led to a low risk rating for effects to wildlife, and the sustainability of regional populations is not expected to be adversely affected.</p> <p>There is a low level of uncertainty in the wildlife assessment based on the data provided and the well-understood relationship of most wildlife species and disturbance.</p>
<p><b>Changes to wildlife movement patterns</b></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low to medium</b></p>	<p><b>Not Significant</b></p> <p>The magnitude of effects to change in wildlife patterns is anticipated to be low to medium depending on the species</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>Due to physical or perceived barriers, wildlife movement may be affected by the development of Project infrastructure or Project activities.</p>	<p>Extent: <b>Within Local Assessment Area/Open Water Assessment Area</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous (Construction and Operations) and multiple irregular to continuous (Decommissioning)</b></p> <p>Reversibility: <b>Partially reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low to moderate</b></p> <p>Uncertainty: <b>Low to moderate</b></p> <p>Importance: <b>High</b></p>	<p>and would occur continuously throughout Construction and Operations but limited to the Local Assessment Area and Open Water Assessment Area (for marbled murrelet, shorebirds, and marine birds only).</p> <p>It is anticipated that effects to wildlife movement patterns would disproportionately affect the human populations who depend on wildlife. The change to wildlife movement patterns would be expected to occur (medium likelihood), although the amount would be limited to the Local Assessment Area or Open Water Assessment Area and thus the consequence would be minor to moderate for wildlife (low to medium magnitude and local extent). This led to a low-risk rating for effects to wildlife, and the sustainability of regional populations is not expected to be adversely affected.</p> <p>There is a low level of uncertainty in the wildlife assessment based on the data provided and the well-understood relationship of most wildlife species and disturbance.</p>
<p><b>Increased mortality risk</b></p> <p>From the loss of active habitat features, accidental mortality and collisions with vehicles, attraction to the Project by lighting, and human-wildlife conflict.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low to medium (migratory and non-migratory birds), no measurable change to moderate (terrestrial mammals), and low to moderate (amphibians)</b></p> <p>Extent: <b>Local Assessment Area and Open Water Assessment Area</b></p> <p>Duration: <b>Short to long-term</b></p> <p>Frequency: <b>Multiple irregular to continuous</b></p> <p>Reversibility: <b>Reversible to partially reversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low to moderate</b></p> <p>Uncertainty: <b>Low to moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not Significant</b></p> <p>Mortality risk is anticipated to be negligible to medium magnitude for wildlife, depending on the species, and would occur continuously throughout Construction and Operations but limited to the Local Assessment Area and Open Water Assessment Area (for marbled murrelet, shorebirds, and marine birds only).</p> <p>It is anticipated that effects to wildlife would disproportionately affect the human populations who use the wildlife more. Mortality risk is expected to increase (medium likelihood), although the amount would be limited to the local area and thus the consequence would be minor for wildlife (low magnitude and local extent). This led to a low risk rating for effects to wildlife, and the sustainability of regional populations is not expected to be adversely affected.</p> <p>There is a low level of uncertainty in the wildlife assessment based on the data provided and the well-understood relationship of most wildlife species and disturbance.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Migratory birds</b></p> <p>Migratory birds were assessed individually and in the following bird and bird communities: peregrine falcon, rusty blackbird, <i>laingi</i> subspecies; marbled murrelet; old forest bird community; young forest bird community; wetland bird community; shorebirds; and marine birds.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local Assessment Area and Open Water Assessment Area</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Once and continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Low</b></p>	<p>The residual effects identified for migratory birds would include primarily direct and indirect loss of migratory bird habitat, including marine habitat. The extent of effects are contained within the Local Assessment Area for most species but extends into the Open Water Assessment Area for marbled murrelet, shorebirds and marine birds.</p>
<p><b>Grizzly bear:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low to medium</b></p> <p>Extent: <b>Local Assessment Area</b></p> <p>Duration: <b>Long term</b></p> <p>Frequency: <b>Once and continuous</b></p> <p>Reversibility: <b>Partially reversible</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Low</b></p>	<p>The residual effects identified for grizzly bear would include primarily direct (during construction) and indirect loss of habitat (from disturbance during operations and increase in linear disturbance).</p>
<p><b>Small mammals/furbearers</b></p> <p><b>Wolverine (<i>Iuscus</i> subspecies):</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i></p> <p><b>Haida ermine:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local Assessment Area</b></p> <p>Duration: <b>Long term</b></p> <p>Frequency: <b>Once and continuous</b></p> <p>Reversibility: <b>Partially reversible - irreversible</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>High</b></p>	<p>The residual effects identified for small mammals/furbearers would include primarily direct (during construction) and indirect loss of habitat (from disturbance during operations and increase in linear disturbance).</p> <p>Uncertainty is high for small mammals/furbearers due to limited understanding of small mammals/furbearers use of coastal areas and uncertainty around mitigation effectiveness.</p>
<p><b>Amphibians</b></p> <p><b>Western toad:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i></p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local Assessment Area</b></p> <p>Duration: <b>Long term</b></p>	<p>The residual effects identified for amphibians would include primarily direct and indirect loss of breeding habitat. Mitigation measures listed to protect wetland habitat are important to mitigation effects to this species.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	Frequency: <b>Once and continuous</b> Reversibility: <b>Partially reversible</b> Risk (likelihood and consequences): <b>Low to moderate</b> Uncertainty: <b>Low to moderate</b>	
<b>Bats – little brown myotis and northern myotis:</b> these are species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i>	Context (resilience): <b>Low</b> Magnitude: <b>Low</b> Extent: <b>Local Assessment Area</b> Duration: <b>Short to medium term</b> Frequency: <b>Once and continuous</b> Reversibility: <b>Partially reversible to irreversible</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b>	The residual effects identified for bats would include primarily direct and indirect loss of bat roosting habitat. Mitigation measures listed to protect potential roosting and hibernacula habitat are important to mitigation effects to this species.
<b>Western screech-owl, <i>kennicottii</i> subspecies:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i>	Context (resilience): <b>Moderate</b> Magnitude: <b>Low</b> Extent: <b>Local Assessment Area</b> Duration: <b>Short to medium term</b> Frequency: <b>Once and continuous</b> Reversibility: <b>Reversible</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Low</b>	The residual effects identified for western screech-owl would include primarily direct and indirect loss of habitat. Mitigation measures listed to protect nests and prevent vehicle collisions are important to mitigation effects to this species.
<b>Northern goshawk, <i>laingi</i> subspecies:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i>	Context (resilience): <b>Moderate</b> Magnitude: <b>Low</b> Extent: <b>Local Assessment Area</b> Duration: <b>Short to medium term</b> Frequency: <b>Once and continuous</b> Reversibility: <b>Reversible</b> Risk (likelihood and consequences): <b>Moderate</b> Uncertainty: <b>Low</b>	The residual effects identified for northern goshawk would include primarily direct and indirect loss of habitat. Mitigation measures listed to protect bird nests, including setback distances, are important to mitigation effects to this species.

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Marbled murrelet:</b> species at risk as defined in subsection 2(1) of the <i>Species at Risk Act</i></p>	<p>Context (resilience): <b>Low to moderate</b>                      Magnitude: <b>Low to medium</b>                      Extent: <b>Local Assessment Area</b>                      Duration: <b>Short to medium term</b>                      Frequency: <b>Continuous</b>                      Reversibility: <b>Reversible</b>                      Risk (likelihood and consequences): <b>Moderate</b>                      Uncertainty: <b>Moderate</b></p>	<p>The residual effects identified for marbled murrelet would include primarily direct and indirect loss of habitat but may also include an increase in mortality risk. Mitigation measures listed to protect marine and shoreline nesting habitat are important to mitigation effects to this species.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.7.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are 24 existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG, as described in Table 7.7-29 of the Revised Application.

The following pathways for cumulative effects were assessed further for migratory and non-migratory birds, terrestrial wildlife, and amphibians by the Proponents in [Section 7.7.10](#) of the Revised Application:

- Change in wildlife habitat including direct habitat loss or alteration by vegetation clearing in addition to other clearing occurring from other projects;
- Indirect effects to wildlife habitat from sensory disturbance in addition to other projects;
- Indirect effects to marine and shorebirds from increased vessel traffic along the shipping route;
- Physical or sensory barriers that may be a barrier to wildlife movement; and
- Mortality risk from site preparation activities, human-wildlife conflict, and collisions with infrastructure, vehicles, or vessels in addition to other projects.

The Proponents concluded that there would be a negligible to low incremental increase in direct and indirect habitat loss or alteration, barriers to wildlife movement, and mortality risk when Ksi Lisims LNG is considered in context with other existing and reasonably-foreseeable projects, and that the long-term sustainability of regional wildlife populations would not be affected.

The EAO assessed that the potential for cumulative effects from these projects and activities is considered low due to the number and type of activities in the region such as shipping and forestry, as well as the overall mitigation measures proposed by the Proponents and the conditions proposed by the EAO.

The EAO concludes that not significant cumulative effects to wildlife and wildlife habitat are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

For migratory birds, there would be a negligible to low increase in direct and indirect habitat loss, barriers to movement, and mortality risk when considered cumulatively. The significance of cumulative effects on migratory birds is expected to be not significant.

For grizzly bear and wolverine, there would be a negligible to low increase in direct and indirect habitat loss, barriers to movement, and mortality risk when considered cumulatively. The significance of cumulative effects on grizzly bear and wolverine is expected to be not significant.

For western toad, there would be a negligible to low increase primarily in direct and indirect habitat loss when considered cumulatively. The significance of cumulative effects on western toad is expected to be not significant.

For little brown myotis, northern myotis, western screech-owl, northern goshawk, and marbled murrelet, there would be a negligible to low increase in direct and indirect habitat loss and mortality risk when considered cumulatively. The significance of cumulative effects on these species at risk is expected to be not significant.

#### 18.7.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on wildlife and wildlife habitat (including effects on wildlife species as defined in SARA and migratory birds). This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; the proposed conditions identified in the provincial Table of Conditions including additional pre-construction surveys under Condition 9 (Construction Environmental Management Plan), and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described further in [Appendix 15](#).

## 18.8. Vegetation and Wetlands

### 18.8.1. Summary

Vegetation and wetlands provide a variety of significant ecological functions, with wetlands also constituting habitat for both a large variety of plant species (including botanical and cultural forest product plant species of significance to local First Nations), as well as foraging, breeding and/or roosting habitat for a wide variety of birds, amphibians, and mammals (some of which are listed as special concern or endangered).

Potential effects to vegetation and wetlands identified by the Proponents include changes in abundance of plant species of interest, changes in abundance or quality of ecological communities of interest, and changes in wetlands.

Key issues raised by reviewers included:

- The incorporation of botanical and cultural forest products in restoration planning in First Nation territories;
- Concerns about a lack of comprehensive field surveys in the Transmission Line Assessment Area leading to a loss of rare or uncommon plants; and
- Insufficient baseline information and impact assessment for the Transmission Line Assessment Area as it pertains to vegetation and wetlands.

The EAO concluded that the Project would result in residual adverse effects on plant species of interest, ecological communities of interest and wetlands, including: direct losses, indirect effects like change in abundance and/or change in function, potential direct harm through the introduction of invasive species, changes in the abundance from tree clearing and construction of the transmission line, potential effects from increased concentrations of SO<sub>2</sub> and NO<sub>2</sub> (and acidification and eutrophication effects), and direct harm specifically to lichen in the regional assessment area due to acidification and eutrophication. To address these conclusions the EAO has proposed Certificate Condition 20 (Transmission Line Development Report) requiring the Proponents to develop a report to confirm baseline conditions and results from pre-construction surveys for the final transmission line right-of-way selected between Ksi Lisims LNG and Nisga'a Lands (as defined under the Nisga'a Treaty). The EAO has also proposed Condition 9 (Construction Environmental Management Plan) requiring the Proponents to include vegetation and wetland monitoring and management covering invasive plants, windthrow, edge effects and construction measures to reduce effects on vegetation and wetlands. The EAO is satisfied that these Certificate conditions will allow the predicted residual effects to be appropriately mitigated and managed and concludes that there will not be a significant adverse residual effect to vegetation and wetlands.

The effects on vegetation and wetlands from Ksi Lisims LNG are expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the regional assessment area. The potential for cumulative effects from these projects and activities was considered not significant and the contribution of effects on vegetation and wetlands from Ksi Lisims LNG itself to cumulative effects in the region is considered not significant.

### 18.8.2. Assessment Boundaries

The spatial boundaries used in the assessment of vegetation and wetlands included:

- The Local Assessment Area - defined by a 120 metre (m) buffer around the Site, including areas up to 2 m below the normal mean tide; encompasses the two district lots the Project is on, as well as the area where effects of the



Project may be expected, except for the effects of air emissions which have their own assessment area. See the [chapter 18.2](#) (air quality) for a more detailed analysis of air quality modeling results, mitigations, and project effects.

- The Regional Assessment Area - defined as a 1,000 m buffer around the Site, including areas up to 2 m below the normal mean tide. The Regional Assessment Area is the boundary within which cumulative effects on vegetation and wetlands are assessed, selected based on the extent to which residual Project effects are expected to act cumulatively with similar residual effects from other projects and activities, except for the effects of air emissions. The Regional Assessment Area is aligned with the Wildlife and Wildlife Habitat Local Assessment Area and encompasses approximately 600 hectares (ha). The Project footprint is at the downstream end of the drainage basin on the north end of Pearse Island; no effects from the Project on wetlands were anticipated by the Proponents to occur upstream of the Local Assessment Area or Regional Assessment Area.
- The Transmission Line Assessment Area - the area within which a portion of the transmission line will be developed, encompasses a broad area within which the route is anticipated to occur encompassing approximately 36,400 ha.
  - The Revised Transmission Line Assessment Area covers approximately 10,835 ha and consists of an approximately 500 m buffer on either side of the terrestrial portions of the three potential route options, and an approximately 1 kilometre buffer on either side of the marine portions of the route options as defined in the Updated Transmission Line Assessment Area Supplemental Information to support a better understanding of the potential effects of the transmission line.
- The acidification and eutrophication assessment area (AEAA) - the AEAA is based on the largest extent of the area predicted to receive cumulative sulphur and/or nitrogen deposition that exceeds the screening thresholds established by the B.C. ENV. The AEAA consists of a land area of 8,190 ha, approximately half of which (4,175 ha) is in the United States of America; field surveys, as well as soil and vegetation mapping, by the Proponents were limited to the Canadian portion of the AEAA.

The temporal boundaries include:

- Construction (approximately 3-4 years);
- Operations (30 years); and
- Decommissioning phases (approximately 12 months).

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (Project Description and Schedule) of this Report.

### 18.8.3. Existing Conditions by the Proponents

The existing conditions for vegetation and wetlands were assessed by the Proponents in [section 7.6.5](#) of the Revised Application and are summarized here.

The Project is in an area of wet rugged mountains capped with glaciers, small icefields, and exposed bedrock, the climate is extremely wet, and the vegetation is a mix of forest and bog. Freshwater wetlands (including bogs, swamps, and

shallow open water) cover 79.2 ha (28 percent) of the Local Assessment Area and 187.9 ha (31 percent) of the Regional Assessment Area. There are no existing projects or current forestry activities in the Local Assessment Area or Regional Assessment Area that were assessed as having an effect on vegetation or wetlands. The Local Assessment Area has experienced some minor human impact due to historical logging by Nisga’a Nation.

The plant species of interest and ecological communities found within the assessment boundaries, identified above in section 1.1.2, are summarized in the following sections.

### 18.8.3.1. Vegetation

#### Plant Species of Conservation Concern

One red-listed plant species, Arctic daisy (*Arctanthemum arcticum* ssp. *arcticum*) was identified at six locations in the Local Assessment Area during field surveys and Arctic daisy is also likely to occur in estuarine meadows within the AEAA. There are no known occurrences of red- or blue-listed plant or lichen species within the Revised Transmission Line Assessment Area outside of the Arctic daisy occurrence documented by Project surveys on Pearse Island. However, Arctic daisy is likely to occur in estuarine meadows on the Mylor Peninsula, based on the observation on Pearse Island and a B.C. Conservation Data Centre record of Arctic daisy located on the south shoreline of Nass Bay; and there is potential that pine mushroom could occur given the presence of host species such as pine and hemlock. In order to meet federal government environmental assessment substitution requirements, the EAO has assessed the potential effects of Ksi Lisims LNG on plant species listed under the Species at Risk Act and/or the Committee on the status of endangered wildlife in Canada (COSEWIC) as required under the Impact Assessment Act. These species are listed in Table X below. For a complete list of species assessed please see [Section 7.06](#) of the Revised Application.

Table 49: Federally at-Risk Plant Species

Species name	Species Group	Federal Species at Risk Status
Whitebark pine ( <i>Pinus albicaulis</i> )	Vascular Plant	Endangered
Rigid apple moss ( <i>Bartramia aprica</i> )	Bryophyte	Endangered
Roell's brotherella ( <i>Brotherella roellii</i> )	Bryophyte	Endangered
Dalton's moss ( <i>Daltonia splachnoides</i> )	Bryophyte	Endangered
Poor pocket moss ( <i>Fissidens pauperculus</i> )	Bryophyte	Endangered
Drooping-leaved beardmoss ( <i>Oxystegus recurvifolius</i> )	Bryophyte	Endangered
Acuteleaf small limestone moss ( <i>Seligeria acutifolia</i> )	Bryophyte	Endangered
Slender yoke-moss ( <i>Zygodon gracilis</i> )	Bryophyte	Endangered (COSEWIC)
Carey's small limestone moss ( <i>Seligeria careyana</i> )	Bryophyte	Endangered
Silky beach pea ( <i>Lathyrus littoralis</i> )	Vascular Plant	Threatened
Smoker's lung ( <i>Lobaria retigera</i> )	Lichen	Threatened
Cryptic paw ( <i>Nephroma occultum</i> )	Lichen	Special Concern
Oldgrowth specklebelly ( <i>Pseudocyphellaria rainierensis</i> )	Lichen	Special Concern

While these species were not identified during field surveys it is likely they are either present in the area already, or that parts of the project area represent appropriate ecosystems where these species could potentially occur.

### Botanical and Cultural Plant Species

Botanical and cultural forest product plant species most common in the Local Assessment Area include western redcedar, huckleberries, blueberries and yellow cedar which are characteristic species in ecological communities covering over half of the Local Assessment Area.

Six of the seven representative species identified by local First Nations (Lax Kw'alaams Band, Metlakatla First Nation, Kitsumkalum First Nation, and Kitselas First Nation; and Métis Nation B.C.) as botanical and cultural forest products were observed during field studies. Detailed descriptions of Indigenous nation use of botanical and cultural forest products and associated cultural values are described in section 11.0 to 19.0 of the Revised Application. Habitats with potential to support freshwater aquatic species occur in 14 percent of the Local Assessment Area. Labrador tea, green false hellebore, and devil's club occur in specific, less common ecological communities; three to five percent of the Local Assessment Area can support each of these species. Pine mushrooms were not observed during field studies and known pine mushroom harvesting areas do not coincide with Pearse Island. The Proponents used publicly available information and Indigenous use studies to identify culturally important plant species used by Lax Kw'alaams Band (Lax Kw'alaams), Metlakatla First Nation (Metlakatla), Kitsumkalum First Nation, and Kitselas First Nation; and identified those plant species of interest observed during field studies (See [section 7.6.5.2.2.2](#) of the Revised Application for more detailed information on cultural forest products and their assessment).

Based on the reconnaissance-level terrestrial ecosystem mapping, blue-listed ecological communities are present throughout the Revised Transmission Line Assessment Area; however, red-listed ecological communities occur primarily on the east side in a floodplain on the landmass connecting the Mylor Peninsula to the Coast Mountains.

### Invasive Plant Species

No noxious weeds or regionally categorized invasive plant species were observed during field studies or identified by spatial database within the Local Assessment Area, Regional Assessment Area, AEAA, or Transmission Line Assessment Area. The assessment areas are remote with little human presence and there are few pathways by which invasive plant species could have been introduced.

#### 18.8.3.2. Ecological Communities

Wetland types observed in the Local Assessment Area and Regional Assessment Area include:

- Freshwater shrubby and treed bogs and swamps, shallow open water;
- Estuarine meadows and marshes;
- Marine (i.e., intertidal) eelgrass beds; and
- Marine tidal shallow water wetlands.

Wetlands interpreted to be subject to the ‘no net loss of functions’ goal of the Environment and Climate Change Canada’s Federal Policy on Wetland Conservation by the Proponents include:<sup>24</sup> red- and blue-listed wetlands, eelgrass beds, estuarine wetlands, and coastal waters that are of continental significance to waterfowl. Wetlands that fall under these categories total 34 percent of the Local Assessment Area and 21 percent of the Regional Assessment Area. Estuarine wetlands occur along the shoreline of the Local Assessment Area and Regional Assessment Area and include three red-listed estuarine meadow and marsh communities, as well as eelgrass tidal flats.

### Ecological Communities of Conservation Concern

Ecological communities of conservation concern make up 17 percent of the Local Assessment Area and 14 percent of the Regional Assessment Area. Blue-listed ecological communities and red-listed ecological communities mapped cover 4 percent and <1 percent of the AEAA respectively. These communities are composed of Blue-listed upland forest, Blue-listed montane forest, Blue-listed wetland, Red-listed floodplain, and Red-listed wetlands.

In the Transmission Line Assessment Area, a total of 16 red- and blue-listed site units are mapped. There are four red-listed and eleven blue listed ecological communities mapped in the Transmission Line Assessment Area, and one sedge fen unit, which could include red-listed, blue-listed, and/or yellow-listed communities. Blue-listed communities are common at lower elevations of the Transmission Line Assessment Area, with red-listed communities most abundant on the east side of the Transmission Line Assessment Area in a large floodplain on the landmass connecting the Mylor Peninsula to the Coast Mountains (For more information on plants species and site dispersion in these communities see [section 7.6.5.2.3.1](#)).

### Animal Species supported by Wetland Ecological Communities

Wetlands in the Local Assessment Area and Regional Assessment Area support breeding, roosting, dispersal, and/or foraging habitat for migratory birds, amphibians and mammals including:

- Seven species that were documented in wetlands in the Local Assessment Area during field studies:

Table 50: Species Documented in Wetlands

Species name	Federal Species at Risk Status
Northern goshawk ( <i>laingi</i> subspecies)	Threatened
Marbled murrelet	Threatened
Great blue heron ( <i>fannini</i> subspecies)	Special Concern
Black swift	Endangered
Western toad	Special Concern
Little brown myotis	Endangered
Grizzly bear	Special Concern

<sup>24</sup> There is no formal definition of wetlands that are designated as ecologically or socioeconomically important to a region in the policy, so for the purposes of this assessment, the Proponents considered the following types of wetlands to be ecologically or socio-economically important to a region: provincially red- or blue-listed wetland communities, estuaries, regionally significant wetland areas according to the Pacific Birds Habitat Joint Venture and eelgrass communities.

- Three species with effective habitat modelled in the Local Assessment Area: western screech-owl (*kennicottii* subspecies), olive-sided flycatcher, and barn swallow; and
- Four species with ranges and wetland habitat types that overlap with the Local Assessment Area: lesser yellowlegs, band-tailed pigeon, peregrine falcon (*pealei* subspecies), and northern myotis.

See the [chapter 18.7](#) (wildlife and wildlife habitat) for a more detailed analysis of project effects on wildlife and wildlife habitat.

### 18.8.3.3. Acidification and Eutrophication

Current air quality in the AEAA has little influence from existing air emission sources, with there being no major emission source within the Local Assessment Area, Regional Assessment Area or Transmission Line Assessment Area. All existing condition values are below screening thresholds for deposition and critical levels for atmospheric concentrations. Additionally, soil critical load modelling identified no exceedance of acid deposition calculated critical loads in the base case (the Baseline Case of acid deposition rates, nitrogen deposition rates, and SO<sub>2</sub> and NO<sub>2</sub> atmospheric concentrations are provided in [section 7.6.5.2.4](#) of the Revised Application).

### 18.8.4. Potential Project Effects by the Proponents

Table 51 below summarizes potential effects and effects pathways identified by the Proponents, for a detailed breakdown of these anticipated effects see section 7.6.6 of the Revised Application.

Table 51: Potential Effects and Effect Pathways for Vegetation and Wetlands Identified by the Proponents' Revised Application

Project Phase	Potential Effects and Effect Pathways for Vegetation and Wetlands Identified by the Proponents' Revised Application
<b>Change in the Abundance of Plant Species of Interest</b>	
Construction	Vegetation clearing of the Project footprint can remove plant species. Site clearing activities disturb soils, which can favour invasive plants.
Operations	Indirect effects on plant species of interest can occur through changes in light, soil moisture, or hydrology. Facility and infrastructure maintenance will include brushing, tree removal, and herbicide application within the Project footprint which may affect plant species of interest by reducing the structural stages of vegetation adjacent to the Project.
All Phases	Vehicles or equipment could unintentionally introduce invasive plants (such as invasive cordgrass, creeping bentgrass and purple loosestrife) to the Site. Invasive plants can cause indirect effects to plant species of interest by out-competing and reducing habitat availability.
<b>Change in Abundance or Condition of Ecological Communities of Interest</b>	
Construction	Vegetation clearing of the Project footprint can remove ecological communities of interest. Indirect effects of construction clearing can result in changes to light or hydrology, which can affect the condition of ecological communities of interest.
<b>Change in Wetlands</b>	
Construction	Vegetation clearing of the Project footprint can remove wetlands and result in a change in wetland functions. Indirect effects (e.g., changes in light or hydrology) can affect wetlands and wetland functions adjacent to the footprint.

Project Phase	Potential Effects and Effect Pathways for Vegetation and Wetlands Identified by the Proponents' Revised Application
<b>Change in the Abundance of Plant Species of Interest, Abundance or Condition of Ecological Communities of Interest, and Wetlands</b>	
Operations	<p>Air emissions have the potential to affect vegetation and wetlands through:</p> <ul style="list-style-type: none"> <li>• Direct effects of increased air concentrations of SO<sub>2</sub> and NO<sub>2</sub>;</li> <li>• Direct and indirect effects of soil acidification through sulphate and acid deposition; and</li> <li>• Direct and indirect effects of soil eutrophication through nitrogen deposition.</li> </ul>

The Proponents have avoided potential direct effects to plant species of interest in Whiskey Bay by committing to keep Project infrastructure out of that area. The Proponents have selected refrigeration equipment that uses electrical power, planned to be supplied from the BC Hydro grid; this will reduce the air emissions that could affect plant species of interest during operation (once the temporary on-Site power generation is discontinued).

The key potential effects to plant species of conservation concern during operation identified by the Proponents are related to acidification and eutrophication due to Project air emissions. In the Application Case (On-Site Power Generation), 4.2 ha (less than one percent of the total AEAA) has predicted acid deposition exceeding the calculated critical loads and Arctic daisy, the only red-listed species identified in the Local Assessment Area, was not found within these areas of exceeded critical load and is therefore not expected to be affected by soil acidification.

#### 18.8.5. Proposed Mitigation Measures by the Proponents

Mitigation measures identified by the Proponents in their Revised Application were based on provincial, federal, and Nisga'a Nation regulations and policies, management practices and guidelines, and relevant peer-reviewed literature and utilized a hierarchy of avoid, minimize, restore on-Site, and offset. The Proponents detail further mitigation measures as they relate to plant species, ecological communities of interest and wetlands separately and across all Project phases in [Tables 7.6-14](#), [7.6-16](#) and [7.6-24](#) of the Revised Application.<sup>25</sup>

The relevant mitigation measures identified by the Proponents in their Revised Application was:

- Complete a pre-construction survey of environmentally sensitive features, specifically ecological communities of conservation concern and wetlands within the Ksi Lisims LNG footprint.
- Marking clearing boundaries prior to site preparation to keep clearing activities within the designated footprint;
- Implement industry standard management practices to reduce the introduction or spread of invasive plants and noxious weeds;
- Sediment and erosion control;

<sup>25</sup> Table 7.6-14 Mitigation Measures Proposed to Avoid or Reduce Change in Abundance Plant Species of Interest; Table 7.6-16 – Mitigation Measures Proposed to Avoid or Reduce Change in Abundance or Condition of Ecological Communities of Interest; and Table 7.6-24 – Mitigation Measures Proposed to Avoid or Reduce Change in Wetlands.

- Invasive plant control (the Construction Environmental Management Plan will describe the criteria and circumstances for applying adaptive management control methods, including chemical, biological, or mechanical, should invasive plants become a concern);
- Complete a windthrow risk assessment to identify high risk areas that may require windthrow management measures such as feathering or selective pruning along the forested edge of the Ksi Lisims LNG footprint;
- During all phases, develop and implement erosion prevention and sediment control measures, using industry standard management practices such as those laid out in the College of Applied Biologists [Professional Practice Guidelines - Erosion and Sediment Control](#);
- Develop and implement wetland compensation to address loss of wetland area and functions;
- Develop and implement wetland monitoring and management measures to manage and evaluate potential effects on wetlands located adjacent to the Ksi Lisims LNG footprint; and
- Incorporate botanical and cultural forest products into reclamation planning.

The Proponents' list of mitigation measures related specifically to ecological communities of interest also included completion of a windthrow risk assessment under the Construction Environmental Management Plan; and a pre-construction survey of environmentally sensitive features within the project footprint was identified as a mitigation measure in relation to both ecological communities and changes in wetlands.

The Proponents have also committed to developing a wetland monitoring and management plan, which will include mitigation measures to reduce potential edge effects on wetlands adjacent to the Project footprint; as well as a follow-up program for vegetation and wetlands resources to verify Project effects and assess the effectiveness of mitigation measures during construction, following adaptive management framework as necessary where mitigation measures are deemed ineffective. For a detailed breakdown of anticipated effects of the project by phase see [section 7.6.9](#) of the Revised Application.

In the Updated Transmission Line Assessment Area Supplemental Information the Proponents' included similar mitigation measures to those listed above for the transmission line's construction including: avoiding impacts, developing a wetland compensation plan, marking boundaries, sediment, erosion and invasive plants control and reclamation planning. The Proponents further included a measure requiring the completion of a pre-construction survey of environmentally sensitive features, including plant species of interest and wetlands within the transmission line footprint.

Revegetation of Project components will follow [Section 19\(1\)](#) of the Environmental Protection and Management Regulation of the *Energy Resource Activities Act* and mitigation measures will consider the natural succession and variability of the environment over time by not immediately reseeding or revegetating wetland communities within temporary workspaces, unless there are concerns about sediment or erosion. The Construction Environmental Management Plan will contain a section addressing erosion prevention and sediment control that will include measures for bank, wind, and water erosion. The revegetation will be considered successful if there is a diverse plant community that is self-sustaining and ecologically appropriate to the area. Active reclamation will use botanical and cultural forest product plant species, where feasible. Additionally, two overburden stockpiles within the Project footprint will be allowed to revegetate during operation, which will temporarily reduce the area of vegetation permanently lost. The Proponent will

monitor for revegetation and potential erosion issues as required and the overburden stockpiles will be used for restoration activities during Decommissioning.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC's draft potential federal conditions. The Key Mitigation Measures related to vegetation and wetlands are outlined in [Appendix 2](#).

#### 18.8.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the vegetation and wetlands Valued Component for Ksi Lisims LNG were identified.

##### 18.8.6.1. Restoration Planning in First Nation Territory

Lax Kw'alaams and Metlakatla raised concerns about restoration planning, particularly regarding the incorporation of botanical and cultural forest products in Lax Kw'alaams' and Metlakatla's territories; Lax Kw'alaams and Metlakatla both stated they have an interest in restoration activities that enhance cultural revitalization and must be involved in restoration planning and implementation. These comments were acknowledged, and the Proponents stated they will engage with Metlakatla and Lax Kw'alaams during the development of restoration plans for the Project. The EAO expects this to be adequately addressed through inclusion of this commitment to engagement in associated Management Plans.

##### 18.8.6.2. Changes in Vegetation Quality and Abundance

Lax Kw'alaams and Metlakatla indicated specific concerns regarding the timing of the vegetation survey, stating that as it was completed outside of the mushroom season, pine mushroom, if present, would likely be missed during the survey. This could lead to an underestimate of pine mushroom occurrences within the study area. Lax Kw'alaams and Metlakatla's concerns about the lack of comprehensive field surveys in the Transmission Line Assessment Area were not only regarding pine mushrooms, but also the possibility of a loss of rare or uncommon plants such as the red-listed arctic daisy and a general concern about the insufficient baseline information and impact assessment for the Transmission Line Assessment Area as it pertains to vegetation and wetlands and pursuant effects on harvesting botanical and cultural forest products.

The Proponents provided an assessment of potential transmission line-related effects on vegetation in the Updated Transmission Line Assessment Area Supplemental Information along with associated mitigation measures which include pre-construction surveys to support subsequent route planning and design, and specifically vegetation surveys of rare plants of conservation concern as well as cultural and traditional plants. The EAO considers these issues to have been adequately addressed provided the Proponents continue to work with First Nations to develop a shared understanding of how the transmission line may affect their interests.

Lax Kw'alaams, Metlakatla, Gitxaala Nation, Kitsumkalum First Nation and Nisga'a Nation all shared concerns around changes in their ability to harvest forest products and/or culturally appropriate foods, including specific concerns around mushroom picking and traditional medicine harvesting, as well as concerns that heavy equipment may impact natural areas and cause further changes to vegetation quality and abundance by introducing invasive species. Lax Kw'alaams and Metlakatla also expressed concerns regarding the contamination of vegetation, with Metlakatla stating that some members may avoid harvesting areas due to perceived or actual risks of contamination.



The Proponents assessed changes to the quality of plant species used by First Nations as negligible and therefore did not carry them through the assessment. However, the potential effects of soil acidification and eutrophication are carried forward and it is noted by the Proponents that Lax Kw'alaams and Metlakatla will have the opportunity to comment on the Construction Environmental Management Plan as it pertains to vegetation and wetlands prior to the start of construction. To ensure these issues are adequately addressed the EAO has proposed a Construction Environmental Management Plan which will require the Holder to describe vegetation and wetland monitoring and management plans, including spill protocols and management of hazardous materials, as well as proposed invasive plant controls. The EAO considers this to adequately address these concerns, in the understanding that the Proponents have committed to continuing engagement with Nations to explore recommended mitigations and enhancement measures to be incorporated into management plans as appropriate.

### **18.8.6.3. The Transmission Line Assessment Area**

Lax Kw'alaams and Metlakatla stated their position that the transmission line is an integral component of the overall project and thus, the Transmission Line Assessment Area requires a comprehensive assessment to understand the full extent of project impacts on Indigenous nations' rights and interests; further stating that additional hydrological, vegetation, and wetland monitoring studies are required.

In the Updated Transmission Line Assessment Area Supplemental Information the Proponents provided an assessment of the potential effects of the transmission line and committed to continue to work with First Nations to develop a shared understanding of how the transmission line may affect their interests but noted that agreements associated with future transmission line development will need to be developed with Nisga'a Nation, the owner of the transmission line.

Environment and Climate Change Canada (ECCC) also commented on the Proponents' assessment of the transmission line area stating that it did not provide them adequate information to understand the Project's impacts on wildlife and their habitat, including wetlands. ECCC further noted that the wetland assessment was unclear regarding the total impact (direct and indirect) that would be expected for both the facility footprint and the transmission line area for loss of wetland functions, recommending that the Wetland Compensation Plan be updated to include all wetlands, regardless of whether they are defined as significant by the Proponents. ECCC recommended the Proponents provide further information and more detailed mitigations in consideration of these comments.

The Proponents provided an assessment of potential transmission line-related effects on wildlife and their habitat, including wetlands, in the Updated Transmission Line Assessment Area Supplemental Information; this included several transmission line-specific mitigation measures including completing a pre-construction survey of environmentally sensitive features, as well as developing erosion prevention, sediment control measures and a wetland compensation plan to address loss of wetland area and function. In response to ECCC's comment on the Wetland Compensation Plan, the Proponents highlighted that they are working with the Nisga'a Nation on the development of wetland compensation, which will address loss of wetland area and function. The Nisga'a Nation and the Proponents are committed to further conversations with ECCC as they develop a compensation plan. The EAO has proposed Certificate Condition 20 (Transmission Line Development Report) related to the final transmission line section to confirm baseline conditions information required for future regulatory authorizations and mitigation planning. The report would include how the transmission line will be assessed for specific impacts, which pre-construction surveys will be required and an obligation that these materials are shared with consulted parties including agencies responsible for regulating the transmission line, prior to the commencement of the transmission line construction.

### 18.8.7. The EAO’s Characterization of Residual Effects

After considering the mitigation measures and conditions proposed by the Proponents, the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on vegetation and wetlands:

- Direct losses of plant species of interest, ecological communities of interest (including Old Forest) and wetlands due to site preparation and construction;
- Potential indirect effects to plant species of interest, ecological communities of interest and wetlands through changes in the environment as a result of clearing activities (and/or changes resulting from brushing, tree removal, and herbicide application during Operations) resulting in effects on species composition and a potential loss of biodiversity;
- A potential direct harm to plant species of interest, ecological communities of interest and wetlands through the introduction of invasive species on vehicles or equipment at all project Phases;
- A change in the abundance of plant species of interest, in the abundance or condition of ecological communities of interest and in wetlands from tree clearing and construction of the transmission line;
- A potential direct harm to plant species of interest, ecological communities of interest and wetlands through increased concentrations of SO<sub>2</sub> and NO<sub>2</sub> and associated acidification and eutrophication effects due to Project air emissions; and
- Direct harm to lichen in the Regional Assessment Area which is more vulnerable to acidification and eutrophication effects.

The EAO’s characterization of the expected residual effects of the Project on vegetation and wetlands is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 52: Summary of Residual Effects for vegetation and wetlands

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Direct loss of plant species of interest</b></p> <p>A direct loss of one location of red-listed Arctic daisy, and 0.7 to 34.6 ha of area supporting each of the botanical and cultural forest product plant species identified (excepting pine mushrooms).</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Limited to the Project Footprint</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>One-time</b></p> <p>Reversibility: <b>Partially reversible upon Decommissioning</b></p> <p>Affected Populations: <b>Disproportional to sub-</b></p>	<p><b>Not Significant</b></p> <p>Site preparation and construction will result in the direct loss of plant species of conservation concern, with the loss area ranging from 0.7 ha (3 percent) of area available in the Regional Assessment Area for devil’s club, to 34.6 ha (8 percent) for Labrador tea and western redcedar. Similarly, Project construction is assumed to result in the loss of one documented location of the Arctic daisy; however, there is some uncertainty regarding its location inside or outside the fence line and the Proponent has stated that it will be retained if reasonably possible. There is also a possibility that species listed as endangered, threatened, or special concern under SARA (<a href="#">see section 18.12.3.1</a> of this report) could be present in the area and were not observed during field studies and would thereby be lost during clearing.</p> <p>The clearing of these plant species will be a one-time occurrence, but the effects are long-term and only partially reversible with reclamation planning upon decommissioning; with any removed populations of arctic daisy being</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	<p><b>populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Low</b></p>	<p>irreversible and reclamation planning bearing the risk that planted stock will not survive. The low overall percentage of plant populations affected results in a low impact as the species that occur within the Project footprint will persist elsewhere within the Regional Assessment Area. Changes to local plant species will disproportionately affect those living and harvesting near the Project but due to the persistence of these plant species outside the Project Area the importance, risk and uncertainties are considered low to moderate.</p>
<p><b>Direct loss of ecological communities of interest (including Old Forest)</b></p> <p>A direct loss of 4.6 ha of blue-listed, 1.1 ha of red-listed ecological communities and 18.1 ha of old forest.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Limited</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>One-time</b></p> <p>Reversibility: <b>Partially reversible upon Decommissioning to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate</b></p>	<p><b>Not Significant</b></p> <p>Site preparation and clearing during construction will result in fragmented habitats, particularly between the Project boundary and the sea (See <a href="#">section 7.6.9.2.3</a> of the Revised Application for a full list of impacted ecological communities). Site preparation and clearing during the construction phase will result in the direct loss of 5.7 ha of five ecological communities of conservation concern which includes three red-listed (floodplain, estuarine meadow and estuarine marsh) and two blue listed (upland forest and swamp) ecological communities (See <a href="#">Table 7.6-19</a> of the Revised Application for more detail). Losses of individual ecological communities represent less than a 20 percent change in their area within the Local Assessment Area and less than a 15 percent change in their area within the Regional Assessment Area.</p> <p>While the percentage of communities lost is only partial and limited in scope and frequency due to the one-time nature of clearing, the long-term duration and only partial reversibility with reclamation upon Decommissioning create higher levels of uncertainty and a higher likelihood of adverse residual effects to the ecosystem including long-term changes to plant communities of interest (including old forest). Any residual effects from the loss of these ecological communities will disproportionately affect populations near the project site and are considered moderately uncertain and important and of medium risk as while the losses will be limited in extent, they will create fragmented habitats outside the area which may have unknown residual effects on the larger ecosystem.</p>
<p><b>Direct loss of wetlands</b></p> <p>A direct loss of 35.6 ha of wetlands.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>One-time</b></p> <p>Reversibility: <b>Partially reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-</b></p>	<p><b>Not Significant</b></p> <p>A total of 35.6 ha of wetlands of eight ecological communities will be cleared during construction, representing 14 percent of the wetlands in the Regional Assessment Area. Of this total 3.9 ha are blue-listed swamp, 0.9 ha are red-listed estuarine meadows which, along with 20.4 ha of tidal shallow water wetlands, results in a total of 25.2 ha of wetlands lost that are interpreted by the Proponents as ecologically or socio-economically important to the region.</p> <p>Individual wetland ecological communities will experience losses of less than 30 percent of their area within the Local Assessment Area and less than 20 percent of their area within the Regional Assessment Area, except for inundated tidal water wetlands which will lose up to 40 percent in the Local Assessment Area and up to 33 percent in the Regional Assessment Area, in addition two freshwater wetlands in the Project Footprint will be completely</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	<p><b>populations near project</b></p> <p>Risk (likelihood and consequences): <b>M</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate</b></p>	<p>lost. For more detailed information see <a href="#">section 7.6.9.3.3</a> of the Revised Application.</p> <p>While this effect is one-time and localized in extent, the moderate proportions of wetlands lost and total loss of two freshwater wetlands with the likely irreversible nature of those effects is considered more significant. Due to a higher chance of potential effects to hydrology causing changes in the surrounding area and ecosystems this effect is of medium/moderate context, magnitude, uncertainty, risk and importance as the hydrological effects may be adequately addressed by mitigation measures and follow up programs, but such effects cannot be accurately predicted before clearing begins. Any residual effects from this clearing will disproportionately affect populations near the project site.</p>
<p><b>Potential indirect effects to plant species of interest</b></p> <p>Edge effects are anticipated following Site clearing during construction which could result in species composition changing.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Limited</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous until Decommissioning</b></p> <p>Reversibility: <b>Partially reversible upon Decommissioning</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Low</b></p>	<p><b>Not Significant</b></p> <p>Edge effects will likely differ according to species' habitat requirements; shade intolerant species are likely to increase in abundance near edges, while species that tolerate or require shade are likely to decrease in abundance. These effects would also apply to plant species considered at-Risk federally under the <i>Species at Risk Act</i> or COSEWIC in the area.</p> <p>Edge effects are unlikely to drastically effect large populations of plant species as effects are limited to those plants growing directly adjacent to cleared areas. While this effect will be continuous for the operation of the project it will likely be fully reversible upon Decommissioning with appropriate reclamation planning though some species may not fully return. Any changes to these plant species will disproportionately affect populations near the project site but given the limited area affected those impacts are predicted to be low in magnitude and, risk and importance.</p>
<p><b>Potential indirect effects to ecological communities of interest (including Old Forest)</b></p> <p>Edge effects are anticipated following Site clearing during construction which could affect the dispersal, structure</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Limited</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous until Decommissioning</b></p>	<p><b>Not Significant</b></p> <p>Changes in hydrology could result in species composition changing to adjust to different conditions. Additional potential edge effects may occur from windthrow, which could result in a loss of individual or groups of trees along edges during a wind event. Construction of infrastructure could also indirectly affect ecological communities through sedimentation or changes in soil moisture in adjacent ecological communities.</p> <p>Facility and infrastructure maintenance during operation will include activities such as brushing, tree removal, and herbicide application within the Project footprint; this may affect ecological communities of interest by repeatedly reducing the structural stage of vegetation adjacent to the Project footprint.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>and/or functions of ecological communities.</p>	<p>Reversibility: <b>Partially reversible upon Decommissioning</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Low</b></p>	<p>Edge effects are limited to areas directly adjacent to cleared project works. While this effect will be continuous for the operation of the project it will be partially reversible upon Decommissioning with reclamation planning though some ecological communities may be fundamentally changed or lost due to edge effects during Operations. These changes will disproportionately affect populations near the project site but given the limited area affected those impacts are predicted to be low in magnitude, risk and importance; though there is a moderate uncertainty as interactions between ecological communities are complex and communities changed or lost due to edge effects may in turn effect communities farther from the cleared area.</p>
<p><b>Potential indirect effects to wetlands</b></p> <p>Edge effects are anticipated following Site clearing during construction which could affect the species composition, structure and/or functions of wetlands.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Partially reversible to Irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Moderate to High</b></p> <p>Uncertainty: <b>High</b></p> <p>Importance: <b>Moderate to high</b></p>	<p><b>Not Significant</b></p> <p>Vegetation clearing of the Project footprint has the potential to change the abundance of wetlands and change wetland functions, as well as causing indirect edge effects or changes in light. Site preparation adjacent to wetlands can also cause changes in hydrology, specifically decreased recharge rates and decreased groundwater infiltration, which could result in wetlands drying out downstream of Project infrastructure and/or species composition changing through time to adjust to new Site conditions. Estuarine meadows and marshes are likely to be susceptible to changes in hydrology. Changes in surface water quantity may also result in localized effects on drainage and soil moisture.</p> <p>Potential edge effects from changes in light will be greater for forested wetlands and could occur when Site clearing occurs during Construction until shade-intolerant species grow and re-establish conditions for shade-tolerant species. Changes in hydrology could result in Windthrow is a potential effect that could result in uprooted or broken trees in treed wetlands. Construction of temporary and permanent marine-based infrastructure may result in changes to estuarine and tidal water wetlands in the vicinity of the construction through sedimentation of adjacent wetland.</p> <p>During all phases, estuarine wetlands along the east side of Pearse Island could be indirectly affected by erosion from increased wave activity associated with an increase in vessels from marine transport of workforce, construction materials, marine shipping transportation, and transportation of decommissioned infrastructure.</p> <p>Decommissioning of land-based or marine-based infrastructure could re-disturb marine/estuarine wetlands adjacent to the footprint, cause sedimentation in marine environment wetlands. These events or outcomes may also change how wildlife use wetland habitats.</p> <p>Due to the complex nature of hydrological interactions and the sensitivity of wetlands ecosystems edge effects are predicted as higher in uncertainty as there are many potential effects and likely irreversible even upon Decommissioning with remediation planning as the effects to hydrology and</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		any erosion or sedimentation will have already occurred. These changes will disproportionately affect populations near the project site but due to the interconnected nature of wetland ecosystems could have a larger regional effect. For these reasons impacts are predicted to be medium to high in magnitude, risk and importance.
<p><b>Potential introduction of invasive plant species</b></p> <p>A potential direct harm to plant species of interest, ecological communities of interest and wetlands through the introduction of invasive species on vehicles or equipment at all project Phases.</p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Partially reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Moderate to High</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate</b></p>	<p><b>Not Significant</b></p> <p>There is potential that terrestrial or marine invasive plant species could be brought to the Site through transportation of construction equipment or other marine transportation and ground disturbance during site preparation could provide favourable conditions for invasive plant establishment. During construction and operation, marine shipping and transportation to the Site, as well as marine transportation of infrastructure during Decommissioning have potential to affect marine/estuarine wetlands through invasive plants spread through ballast water and equipment movement. Re-purposing of land-based or marine-based infrastructure could also introduce or spread invasive plants through ground disturbance. These events or outcomes may also change how wildlife use habitats in the Regional Assessment Area. Introduced invasive plant species have the potential to out-compete and replace native species in local ecological communities, including botanical and cultural plant species, as well as species considered at-Risk federally under the Species at Risk Act or COSEWIC in the area.</p> <p>While there will be industry standard invasive plant management throughout the project's lifetime, the uncertainty, risk and importance of the effects of invasive plants is considered medium/moderate due to the many opportunities through the project's lifecycle for introduction of invasive species and the isolated nature of the project site. Invasive plants, if introduced, would pose a considerable threat to the Region's ecosystems and would be partially reversible to irreversible due to the difficult nature of removing them from the isolated, heavily forested lands surrounding the project site. These effects would disproportionately affect populations near the project site but would also have a larger localized effect if invasive species spread.</p>
<p><b>Change in the abundance or condition of plant species of interest, ecological communities of interest and in wetlands</b></p> <p>From tree clearing and the construction of the transmission line and towers</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Limited</b></p> <p>Duration: <b>Long-term</b></p> <p>Frequency: <b>Continuous until Decommissioning</b></p> <p>Reversibility: <b>Partially reversible upon Decommissioning</b></p>	<p><b>Not Significant</b></p> <p>Botanical and cultural forest products would continue to be present underneath the transmission line (with the exception of trees, which would be removed for safe operation of the transmission line). Approximately 8.7 to 23.3 ha of ecosystems with potential to support blue-listed communities and approximately 0 to 9.6 ha of ecosystems with potential to support red-listed communities are present in the revised corridors in which tree clearing may occur; as well as approximately 12.6 to 31.6 ha of wetlands. There is also a possibility that species listed as endangered, threatened or special concern under SARA (<a href="#">see section 18.12.3.1</a> of this report) could be present in the area and were not observed during field studies and would thereby be lost during clearing for construction.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
	<p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate</b></p>	<p>Losses of plant species of interest, ecological communities of interest and wetlands will likely be only partial and limited in scope due to the one-time nature of clearing. However, the long-term duration and only partial reversibility upon Decommissioning create higher levels of uncertainty and a higher likelihood of adverse residual effects to the ecosystem. Any residual effects from clearing will disproportionately affect populations near the project site and are considered moderately uncertain and important and of medium risk as while the losses will be limited in extent, they will create fragmented habitats which may have unknown residual effects.</p>
<p><b>Soil acidification and eutrophication</b></p> <p>A potential direct harm to plant species of interest, ecological communities of interest and wetlands through acidification and eutrophication effects due to Project air emissions</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Regional</b></p> <p>Duration: <b>Medium-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Partially reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportional to sub-populations near project</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Low</b></p>	<p><b>Not Significant</b></p> <p>The soil acidification calculated critical load is exceeded in a total area of 4.2 ha, which is less than one percent of the total AEAA. The forested ecosystem eutrophication empirical critical load is exceeded in a total area of 17.4 ha, which is less than one percent of the total AEAA; as well as 2.9 ha of poor bog ecosystems, which are relatively sensitive to the effects of eutrophication. Soil acid deposition calculated critical loads are exceeded in a total of 2.1 ha of four ecological communities of conservation concern within the predicted areas of acid deposition exceedance in the Application Case. However, because acid deposition exceedances are only expected in a temporary period before connection to the BC Hydro grid and soil chemical changes may take decades or even centuries before critical thresholds are reached, it is unlikely this would occur within a few years of higher deposition associated with on-Site power generation. The effects of eutrophication are generally considered reversible, some effects may persist for years or decades.</p> <p>There a potential for a change in the abundance of botanical and cultural forest product indicator species from nitrogen deposition due to Project-related air emissions during Operations. Acidification can alter growth and productivity, decrease species diversity, and change community composition through interspecies competition in terrestrial and wetland ecosystems. These effects would also apply to plant species considered at-Risk federally under the Species at Risk Act or COSEWIC (see Table X) in the area.</p> <p>Due to the low magnitude of these predicted effects, the risk, uncertainty and importance is also deemed low. While any effects will disproportionately affect populations near the project site who harvest forest products, changes to the ecosystem are expected to be medium-term and thus soil levels are not expected to reach critical thresholds minimizing effects to the ecosystem. However, it is noted that these effects are regional, irreversible and continuous and may contribute to cumulative effects in the area.</p>
<p><b>Eutrophication effects to lichen</b></p> <p>Direct harm to lichen due to eutrophication effects in 330.9 ha</p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Medium to High</b></p>	<p><b>Not Significant</b></p> <p>Lichens are regarded as being especially sensitive to air emissions due to their lack of a protective cuticle layer. No lichen species of conservation concern were observed during field surveys within the Terminal Regional Assessment Area, identified from collections, or known from publicly available data</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>during operation after BC Hydro connection and 5,544.8 ha during temporary on-Site power generation.</p>	<p>Extent: <b>Regional</b>                      Duration: <b>Long-term</b>                      Frequency: <b>Continuous</b>                      Reversibility: <b>Partially reversible to irreversible</b>                      Affected Populations: <b>Disproportional to sub-populations near project</b>                      Risk (likelihood and consequences): <b>Moderate to High</b>                      Uncertainty: <b>High</b>                      Importance: <b>Moderate to high</b></p>	<p>sources. However, due to the remote location of the Project, the AEAA has not received extensive incidental search and there remains some uncertainty regarding the presence of undocumented occurrences of lichen species of conservation concern. Twelve lichen species of conservation concern (10 blue-listed and two red-listed, including three federally listed species at risk) have known ranges and habitat types that overlap with the vegetation and wetlands Regional Study Area. Different lichen functional groups serve important ecological roles: nitrogen-fixing, winter forage for ungulates and rodents, soil stabilizing, and as habitat and food for invertebrates and nesting materials for birds.</p> <p>In the Application Case (On-Site Power Generation), a temporary period prior to connection to the BC Hydro grid, a loss in the abundance and detrimental effects to the condition of lichens is predicted in 5,544.8 ha of area (68 percent of the total AEAA), including 2,823.4 ha in the USA. In the case where the project is connected to BC Hydro only 330.9 ha representing 4% of the total AEAA, are within the area of predicted nitrogen deposition rates exceeding the empirical critical load. While it is noted this later case is considered low risk there is a certainty that there will be a period of on-site power generation and some uncertainty around how long before connection to BC Hydro will be made.</p> <p>Lichen recovery, as noted in the Revised Application, can take decades and some species may never return. Further, ENV stated that the lichen community is insufficiently characterized to expect effects to be reversible; adding that Mitigation measures may be required at a later stage of the project in order to ensure the lichen community returns to baseline conditions. ENV will expect characterization of lichen communities in the study area to help predict impacts (and potential mitigation strategies) and a monitoring program to determine effects to lichen abundance and species richness (and/or other metrics) should the project proceed to the permitting stage. ENV has stated that they would like to be involved in the development of said baseline monitoring program.</p> <p>With the larger area of effect and the limited incidental search of the AEAA these impacts are regarded as medium/moderate to high in magnitude, risk, uncertainty and importance as there is a likelihood that effects to local lichen populations would be long-term, only partially reversible and cause large scale regional environmental effects due to the important role of lichen in local ecosystems. This effect would be disproportionately felt by populations near the project site who harvest forest products and would be continuous beyond Decommissioning.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.8.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are 24 existing and



reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG, as described in [Table 7.6-32](#) of the Revised Application. Various forestry activities and the Enbridge Nasoga Compressor Station have the potential to interact cumulatively with the Project to cause adverse residual effects on vegetation and wetlands.

The key Cumulative Case assessment results are summarized in [Table 7.6-33](#) of the Revised Application. The Proponents assessed residual cumulative effects on vegetation and wetlands as predicted to range from low to moderate based on an assessment of the residual effects of the Project plus past, current, and reasonably foreseeable projects and physical activities. The cumulative effects result primarily from direct loss of vegetation due to clearing/construction and acidification and eutrophication as a result of nitrogen deposition within the Regional Assessment Area and AEAA, which together are predicted to result in changes to the abundance of plant species of interest, including federal species at risk, changes in the abundance or condition of ecological communities of conservation concern, and changes to wetlands. Eutrophication effects to lichen during operation, particularly before the BC Hydro connection during temporary on-site power generation also have the potential for major, long lasting residual effects to ecological communities of interest and wetlands.

The EAO concludes that not significant cumulative effects to vegetations and wetlands are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### 18.8.9. Conclusion

The EAO is satisfied that Ksi Lisims would have not significant adverse residual or significant cumulative effects on the vegetation and wetlands Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.9. Marine Use

### 18.9.1. Summary

The marine waters of the region serve many purposes and represent important connections to First Nations and the surrounding communities. The Marine Use Valued Component was assessed to understand the connections that the local communities have to the marine environment, serving as a critical marine navigation route for First Nations that connect Stewart, Hyder, Kitsault, Gingolx, and the Nisga'a Villages to communities and surrounding ports. A safe and navigable marine environment supports traditional activities, aquatic life, ecosystems and communities who depend on access to marine resources. Kitselas First Nation, Kitsumkalum First Nation, Lax Kw'alaams Band, Gitga'at First Nation, Gitxaala Nation, Metlakatla First Nation, Haida Nation, and the Nisga'a Nation expressed concerns around impacts of increased marine traffic, access to the marine environment, transportation of waste, potential effects to fisheries of cultural, economic and traditional value, and impacts from increased marine shipping effects on First Nations' sense of place, sacred sites and continued access to travel routes.

These identified concerns related to other linked value components such as the Marine Resources Valued Components, Community Health and Wellness Valued Components, and the Human Health Valued Components in the Revised Application. The Proponents assessed the potential effects to marine use that may result from Ksi Lisims LNG through expected interactions with site preparation and clearing work, construction, natural gas pre-treatment, liquefaction and storage, and temporary onsite power generation.

The Revised Application identified potential effects to the Marine Use Valued Components as Ksi Lisims LNG is expected to contribute an additional 140 to 160 liquefied natural gas (LNG) carriers and 8 to 12 natural gas liquid (NGL) product carriers annually representing a 3-4 percent increase in the existing large commercial vessel traffic, navigating along the marine shipping route. Ksi Lisims LNG project-related activities have the potential to change the existing marine navigation, marine fisheries and other uses and cause changes in the aesthetic conditions.

The Proponents proposed mitigation measures that would reduce the potential effects to marine use that include installing Aids to Navigation within the marine project footprint and establishing a safety zone around the Project's marine components.

Key issues raised by reviewers and First Nations included effects on marine users, marine navigation and marine access, mitigation measures effectiveness and data reliability, cumulative effects, and First Nation impacts regarding access to traditional activities and potential to be alienated from the land.

The EAO proposed a Follow-up Program to address impacts relating to marine navigation, specifically vessel and shoreline disturbances. The EAO has proposed Certificate Conditions 13 (Marine Transportation and Communication Plan) which in addition to other requirements of the report, will establish a grievance process for First Nation marine users experiencing loss of marine access, fishing equipment, or other marine use effects. The EAO has also required noise monitoring and management as part of the construction environmental management plan. Additionally, as identified in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the Proponents will be required to receive certificates of compliance with Marine Transportation Security Regulations and Marine Facility Security Plan.

The EAO assessed the potential effects to marine use given the proposed mitigation measures, additional permits, and proposed Certificate conditions that would require Ksi Lisims LNG to implement mitigation measures for effects to marine

use and found that there would not be a significant adverse effect to marine use. The effects on marine use from Ksi Lisims LNG are expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the regional assessment area. The potential for cumulative effects from these projects and activities and Ksi Lisims LNG itself on marine use was considered not significant taking into account the extensive past, current, and planned activities such as pipeline projects.

### 18.9.2. Assessment Boundaries

Ksi Lisims LNG's footprint encompasses both terrestrial and marine areas where the project-related infrastructure and activities will be located. The spatial boundaries for the marine use assessment included:

- **Local Assessment Area:** Represented by the waters where Project related marine activities have the greatest potential to adversely affect navigation, fisheries, and other uses. The Local Assessment Area includes waters surrounding the marine terminal, waters in Portland Inlet, Main Passage, Chatham Sound, and waters extending 6 kilometres (km) on both sides of the marine shipping route between Ksi Lisims LNG and the pilot boarding location at or near Triple Island Pilotage Station, and the materials and supply vessel shipping routes between Ksi Lisims LNG and Prince Rupert and between Ksi Lisims LNG and Gingolx.
- **Regional Assessment Area:** Comprised of the Pacific Fisheries Management Areas (PFMAs) 3 (excluding 3-1, 3-6, 3-10, 3-14), 4 (excluding 4-3, 4-4, 4-15), and 104 (subarea 104-2 only). This broader area is expected to include the area within which residual Project effects are expected to act cumulatively with similar residual effects from other projects and activities on marine navigation and marine fisheries, as well as other marine uses.
- **Open Water Assessment Area:** Includes waters where Project marine activities have the greatest potential to adversely affect navigation, fisheries, and other uses. The Open Water Assessment Area includes waters extending 6 km on both sides of the marine shipping route between the 12 nautical mile (nm) limit of Canada's territorial sea and the B.C. Coast Pilots boarding location at or near Triple Island Pilotage Station. The Open Water Assessment Area also includes PFMA 101.
- **Transmission Line Assessment Area:** The area within which a portion of the transmission line between the Project and Nisga'a Lands (as defined under the Nisga'a Treaty) will be developed. The portion of the transmission line within the Transmission Line Assessment Area will tie into a transmission line that will be developed on Nisga'a Lands, connecting to the B.C. Hydro grid. The marine use Local Assessment Area encompasses the marine portion of the Transmission Line Assessment Area.

The temporal boundaries of the Marine Use Valued Components assessment include:

- Construction phase: approximately 3-4 years,
- Operations phase: minimum of 30 years, and
- Decommissioning phase: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (Project Description and Schedule) of this Report.

### 18.9.3. Existing Conditions by the Proponents

The baseline marine use conditions in the region were assessed in [section 7.11.5](#) of the Revised Application by the Proponents and are summarized here. Data and information sources used to characterize existing conditions were gathered through consultation with First Nations and stakeholders, primary research, and from publicly available information, including government reports and data, environmental assessments (EAs) for other projects in the region, primary literature, and online sources.

Where publicly available data was considered inadequate, primary research was conducted to collect information, including incidental observations, data from marine fishing, marine mammal data from remotely operated underwater vehicles and intertidal surveys including observations of marine vessel activity and fishing activity. A detailed record of these observations and surveys are available in the Revised Application's Appendix 7.09A – Marine Resources Technical Data Report. Additional primary research to characterize existing conditions, was collected through interviews with citizens of Nisga'a Nation, community members, and concerned stakeholders. Issues of importance to Indigenous groups were identified through consultation activities and through a review of Indigenous knowledge, First Nation's marine use and land use studies, and secondary data sources, where available. Further methods used to assess and characterize marine use existing conditions in the Revised Application included:

<ul style="list-style-type: none"> <li>Marine Vessel Traffic Data from multiple sources – used to quantify the number of vessel movements and identify the types of vessels transiting within the Regional Assessment Area.</li> </ul>
<ul style="list-style-type: none"> <li>Navigation Safety Assessment (NSA) – this includes data from multiple studies including, Marine Traffic, Marine Route, Casualty Data and Risk, Vessel Specifications, Terminal Plans and Cargo Transfer, Contingency Planning and Hazardous and Noxious Substances, Terminal Operations Manual. (Revised Application Appendix E – NSA)</li> </ul>
<ul style="list-style-type: none"> <li>Marine Fisheries Data from multiple sources – marine fisheries catch and effort data.</li> </ul>
<ul style="list-style-type: none"> <li>Marine-based Tourism and Recreation Data – mix of online, publicly accessible databases, stakeholder and First Nations input and other publicly available reports from relevant EAs.</li> </ul>
<ul style="list-style-type: none"> <li>Aesthetic Conditions – derived from B.C.'s Ministry of Water, Lands and Resource Stewardships' Visual Landscape Inventory, Geographic Information Systems software, and Google Earth Pro and First Nations input and other publicly available reports from relevant EAs.</li> </ul>

The Revised Application assessed and characterized marine use existing conditions through several categories throughout the Project footprint, local Assessment Area, regional Assessment Area, open water Assessment Area and transmission line Assessment Area, which are summarized below.

#### 18.9.3.1. Navigable Channels

The marine shipping route from Triple Island Pilotage Station to Ksi Lisims LNG is approximately 110 km long with the narrowest section of the marine shipping route being approximately 2,800 metres (m). All channels along the route

exceed the TERMPOL guidelines<sup>26</sup> for one-way vessel operations, which require the channel width to be a minimum of at least four times the design vessel's breath. The marine conditions in the north coast's coastal storms generate strong winds, which create large waves in the inlets and fjords. To assist in navigation safety and planning, there are 11 tide stations located within the Local Assessment Area and 55 anchorages and anchorage areas located in the Regional Assessment Area and Open Water Assessment Area but these are not appropriate for LNG carriers or other commercial vessels. The tides near Gingolx are mixed semi-diurnal, with a mean tidal range of between 3.7-7.2 m. Aids to Navigation (GPS, Lights, Buoys and Fog Signals assisting in marine navigation) are located in the Local Assessment Area in the Portland Canal, on Dundas Island and surrounding Prince Rupert.

### 18.9.3.2. Marine Authorities, Infrastructure and Vessels

The federal government has authority related to fisheries, navigation, federal lands, and international relations, including responsibilities related to the management of boundary waters shared with the United States. Federal agencies include Transport Canada (TC), Fisheries and Oceans Canada (DFO), and the Canadian Coast Guard (CCG), and their science partners at Environment and Climate Change Canada (ECCC), which jointly maintain the marine safety system. The Pacific Pilotage Authority and the B.C. Coast Pilots administer marine pilotage services in the waters of western Canada and the Navigation Protection Program, under TC, is responsible for administering and enforcing the Canadian Navigable Waters Act. Multiple other agencies operate in the marine environment including Western Marine Response Corporation, Transportation Safety Board of Canada, Prince Rupert Port Authority and including the CCG Auxiliary members of the Nisga'a Nation and the Nisga'a Lisims Government Enforcement Department. The CCG operates and manages multiple navigational safety information systems and vessel traffic services through their Marine Communications and Traffic Services.

The existing marine infrastructure within the Local Assessment Area and Regional Assessment Area is primarily comprised of ports (e.g., the Port of Prince Rupert), small craft harbours, marinas and moorage facilities, and aerodromes and seaplane bases. The Port of Prince Rupert is one of the busiest ports in Canada. The port handles a wide array of cargoes including containers, coal, grain, propane, wood pellets, logs, specialty cargo, project cargo and manages ferry traffic. There are three core fishing harbours located in the Regional Assessment Area, each with their own harbour authority including the Port Edward Harbour Authority, Stewart Harbour Authority, and Dodge Cove Harbour Authority. There are several marina and moorage facilities located within the Regional Assessment Area located in Gingolx and Cow Bay. There are three aerodromes and three seaplane bases located within the Regional Assessment Area with the CCG being based in Prince Rupert.

The marine waters of the region serve as marine navigation routes for First Nations, commercial, industrial, and recreational users connecting Stewart, Kitsault, Gingolx, and Laxgalts'ap to communities and ports. Most commercial and industrial vessels going past Ksi Lisims LNG are destined for port facilities in Stewart. The principal location of marine vessel traffic crossing the Project's marine shipping route is at or near the Triple Island Pilotage Station. Chatham Sound was also identified as a focal point of potential interaction or intersection with Project-related vessels and marine shipping-related activity with tugs, fishing, sailing, and pleasure craft moving north-south through Chatham Sound and moving to and from Prince Rupert in the east, towards Dundas Island. The Proponents indicated that the findings of the

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<sup>26</sup> Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) is replaced by an enhanced navigational safety assessment (NSA) proposed to modernize the review process and reduce the number of duplicative marine reviews. The NSA replaces the TERMPOL but TERMPOL guidelines are referenced throughout the Revised Application and this report since they are applicable to the NSA.

NSA found no discernable seasonal patterns among tugs, barges, and large vessel types, such as cargo ships and tanker vessels but did observe seasonality of large passenger/vehicle vessels. Large vessel movements along or intersecting the Project's marine shipping route were found to be infrequent with large vessels transiting along or intersecting the Project's marine shipping route, being primarily comprised of cargo vessels and tugs, travelling past the Project site, to and from Stewart. The NSA found that Brown Passage was the busiest section for these vessels and averaged approximately 21 vessels per week. Cruise ships and ferries operate in the Regional Assessment Area, mostly travelling to Prince Rupert through the Inside Passage, north south and through Chatham Sound and Triple Island Pilotage Station. There are approximately 7,120 vessels of these types moving through the Regional Assessment Area each year.

Other marine vessels that frequently operate in the Regional Assessment Area include tugs and barges, support marine-based forestry operations, raw materials and finished goods supporting the local economy. Roughly 8,770 tugs and barge movements occur through the Regional Assessment Area per year. Deep sea bulk carriers and cargo ships support the marine commercial transportation sector and estimate over five years, 1,432 piloted vessel movements involving bulk carriers or cargo ships occurred within the Regional Assessment Area. Small vessel traffic within the Local Assessment Area and Regional Assessment Area is primarily made up of commercial fishing vessels, water taxis, and recreational vessels. The NSA findings found that sailing, pleasure craft, and fishing activity increases significantly throughout the summer months and that sailing, and pleasure craft activity is absent during the winter months. Commercial fishing vessels, recreational vessels, military and government vessel movements within the Regional Assessment Area are approximately 9,951; 6,325; 2,089; per year, respectively.

### **18.9.3.3. Protected Areas, Fisheries and Harvesting**

Seven of the 158 conservancies in B.C. (Crown lands set aside for the protection and maintenance of their biological diversity and natural environments) are within the Regional Assessment Area, but no marine protected areas reside within the Local Assessment Area, Regional Assessment Area or Open Water Assessment Area. The marine environment has an active recreational and commercial fishing/harvesting sector. First Nation, commercial, and recreational fisheries are important to the B.C. economy and to its residents, First Nations and the northwest coast region which is widely known for its abundant marine resources. Aboriginal rights to harvest fish, shellfish, and aquatic plants are recognized and affirmed in accordance with section 35(1) of the Constitution Act, 1982. First Nations' fisheries have both cultural and economic importance as they enhance community food security and support cultural practices and social structures.

Regional freshwater river systems that connect to the marine ecosystem, such as the Nass River, are rich with spawning grounds. Within the Nass Area, harvesting by Nisga'a citizens occurs through Nisga'a commercial fisheries for salmon and Nisga'a domestic fisheries. The NLG and the federal government co-manage the Nass salmon fishery to preserve the resource, provide for Nisga'a citizens, and support a modern, sustainable fishery. Commercial fishing in the Portland Inlet and at the mouth of the Nass River is primarily focused on salmon with the Nisga'a commercial salmon fleet typically fishing in the area and around Trefusis Point. Nisga'a Nation reports harvesting chinook salmon, sockeye salmon, chum salmon, pike, and steelhead at varying times throughout the year in the Nass area including the Nass River, coastal streams in Portland Inlet, Portland Canal, and Observatory Inlet.

Nisga'a Nation stated that there are no notable quantities of freshwater fish species to be harvested from northern Pearse Island, which falls in the Regional Assessment Area. Kitselas First Nation highlights the importance of salmon and trout fishing but notes that many traditional harvesting areas are no longer accessible due to harvesting new technologies, government legislation, industrial and urban developments, participation in the industrial and wage

economies, settlement and resource harvesting by outsiders, and a shifting and diminished resource base. Metlakatla First Nation emphasizes the significance of salmon fishing for income, food security, and cultural traditions, and expressed concerns over declining salmon stocks since the 1970s and the impact of past fisheries management favouring large commercial industries. Gitga'at First Nation acknowledges changes in traditional harvesting areas due to resource abundance, accessibility, and government regulations, stressing the need for careful management to preserve their fishing traditions and livelihoods.

The Regional Assessment Area lies within DFO's PFMA 3 (Portland Inlet), 4 (Chatham Sound and Porcher Island), and 104 (the open water between Rose Point and Chatham Sound), which encompasses the marine shipping route (See figure [7.11-18](#) from Revised Application). Four broad categories of commercial fisheries occur in the Local Assessment Area and Regional Assessment Area, for which a range of techniques, gear types, and vessels are used. These fishery sectors include salmon, groundfish, small pelagic fish, and invertebrates.

Recreational fishing is enjoyed by local and non-local residents as it provides sustenance for personal use and continues to be important to the B.C. economy. DFO is responsible for regulating sport fishing in tidal waters and regulates the sector under the Fisheries Act. The most important recreational fishing species in B.C. are Pacific salmon and halibut although groundfish and shellfish are also harvested. Generally, there has been a decline in recreational fishing, a trend seen in resident anglers but not for non-resident anglers. Several recreational fisheries occur throughout the Regional Assessment Area, including salmon, groundfish, shrimp, prawn, and crab.

As for aquaculture operations, there are five licensed shellfish aquaculture facilities and one licensed shellfish hatchery that are situated in PFMA 4. DFO is responsible for regulating, monitoring, and licensing finfish and shellfish aquaculture operations in B.C. There are currently no finfish aquaculture operations located in the Local Assessment Area or Regional Assessment Area and no aquaculture facilities located in the Nass Area.

#### **18.9.3.4. Marine-based Tourism and Recreation**

Marine-based tourism is a major economic driver within the north and central coast as many tourists are attracted by sport fishing and many tourists visit sport fishing lodges. It was estimated that 60 sport fishing lodges operate along the north and central coast and employ close to 1,000 individuals. Marine-based tourism and non-commercial recreational users use the Portland Canal, Pearse Canal, and Portland Inlet area, primarily in the summer season. Marine recreation and tourism activities are supported by infrastructure such as anchorages, public and private marinas and moorage facilities, and service facilities. There are coastal camping locations and recreational boating destinations within the Regional Assessment Area, which are located on the southwestern end of Wales Island. Marine users typically travel through the Regional Assessment Area to reach other coastal campsites and recreational boating destinations. There is one scuba diving location located within the Regional Assessment Area, near the Triple Island Pilotage Station, and two SCUBA dive locations located in the Open Water Assessment Area. Recreational tourism-based fisheries, including lodges are located in the Open Water Assessment Area that is accessed by both pleasure crafts and fishing boats.

#### **18.9.3.5. Aesthetic Conditions**

The existing aesthetic conditions are described in the following three main categories: visual quality, acoustics, and ambient light. Visual quality is described as the potential for a landscape to produce varying degrees of satisfaction among viewers. The most sensitive landscapes in B.C. are usually steep, forested slopes, exposed to many views, while the least sensitive landscapes are typically low in relief, more remote, and with few viewers or viewing opportunities. The Proponents characterized existing conditions for visual quality using B.C.'s Ministry of Water, Lands and Resource

Stewardships' Visual Landscape Inventory (VLI) which identifies the most visible and sensitive landscapes within the province. Visual Sensitivity Units are used to rate sensitive landscapes according to their sensitivity to human-made changes. The Project's marine shipping route and materials and supply shipping route ranges between moderate to high sensitivity. Visual Quality Objectives are used to indicate the degree of human-caused alteration expected. The Visual Sensitivity Unit for the Ksi Lisims LNG on Pearse Island is moderate, and the Visual Quality Objectives is listed as modification as indicated from the observation of forestry activities on the island.

The Revised Application has characterized the viewpoints along the marine shipping route and materials and supply shipping route. These viewpoints were characterized using descriptions such as foreground, midground, or background based on their distance from the marine shipping route and materials and supply shipping route. Most of the viewpoints were described as "Tourism/Recreation and Traditional use area". Fewer descriptions described the viewpoints "Conservancies", "Indigenous nation community" or "Residential areas".

Ambient lighting and acoustics were the other components of aesthetic conditions. The existing conditions are described as intrinsically dark at night due to the remoteness of the area, ranging from natural to rural. This included the community of Gingolx given its small, rural character, based on classifications from the International Commission on Illumination guidelines for light trespass and glare. Where residential communities or industrial activities are present ambient light levels are assumed to range from rural to urban. Currently, there is no light being emitted from industrial, commercial, or residential developments at or near the Site. As such, ambient light levels at the Site can be categorized as natural, but some light is visible due to passing vessels.

As for acoustics, the marine shipping route and materials and supply shipping route is along non-populated areas, is dominated by natural sounds, of winds and waves with passing vessels. In areas where residential communities or industrial activities are present the acoustic environment may include some anthropogenic sounds such as marine traffic, air traffic, vehicular traffic, and industrial activities. A detailed acoustics assessment is described in [section 7.3](#) of the Revised Application and discusses acoustic sounds measurement level impacts for all noise sensitive residential receptors.

#### 18.9.4. Potential Project Effects by the Proponents

The Proponents identified that Ksi Lisims LNG's activities would affect marine use through interactions that include:

- Construction of temporary and permanent marine-based infrastructure (includes transmission line within the Transmission Line Assessment Area);
- Marine transport of workforce and construction materials to the Site;
- Waste management;
- Natural gas pre-treatment, liquefaction, storage and offloading of LNG carrier and NGL product carrier(condensate) at the FLNG barges (includes storage of NGLs);
- LNG carrier and NGL product carrier loading;
- Marine shipping and transportation (include tugboat) to Site;
- Facility and infrastructure maintenance (includes transmission line within Transmission Line Assessment Area);



- Decommissioning of marine-based infrastructure (includes transmission line within the Transmission Line Assessment Area); and
- Marine transport of decommissioned infrastructure.

The Proponents identified that the potential Project residual effects included changes to marine navigation, changes to marine fisheries and other uses and changes in aesthetic conditions during all phases of the Project.

#### 18.9.5. Proposed Mitigation Measures by the Proponents

The Proponents have identified mitigations measures based on provincial and federal regulations and policies on management practices and guidelines, and other relevant peer-reviewed literature. Mitigations were selected to address Project interactions that affect marine navigation, avoid or reduce effects to marine fisheries and other uses, and avoid or reduce effects to aesthetic conditions during all Ksi Lisims LNG project phases. The Revised Application - [Table 7.11-19](#), [Table 7.11-21 and Table 7.11-22](#), provided a summary of the mitigation measures to avoid or reduce Project-related changes to the Marine Use Valued Components. A summary of the relevant proposed mitigation measures is provided below:

- In consultation with CCG, identify and install appropriate Aids to Navigation within the marine Project footprint - The installation of appropriate Aids to Navigation will promote safe marine navigation and will be installed in coordination with the applicable regulatory bodies such as the CCG;
- Establish an operational buffer zone around the Project marine infrastructure - An operational buffer zone will be established through signage or a safety vessel monitoring the area and will be used to inform the public of the dangers or hazards of the area;
- Develop a Terminal Operations Manual and include information specific to the Project's marine operations and relevant risk mitigation measures – The Terminal Operations Manual will include information specific to the Project's marine operations and risk mitigation measures. The Terminal Operations Manual will also include speed profiles for Ksi Lisims LNG related vessels travelling along the marine shipping (transit) route and materials and supply shipping route; and
- Design and implement Project lighting in accordance with the BCER's Light Control Best Practices Guideline (B.C. OGC 2021b) and to limit environmental disturbance (e.g., directional or shielded lighting to direct light downward and inward) - The use of task-orientated lighting and hooded lamps limits the area and intensity of illumination surrounding near-water structures. Reduced light intensity and duration is expected to reduce changes in aesthetic conditions associated with artificial light.

The mitigation measures associated specifically with the Transmission Line are:

- Identify and install appropriate Aids to Navigation in consultation with Canadian Coast Guard;
- Establish methods for regular communication of construction activities with marine users - Communication of transmission line-related activities with marine users will provide an understanding of timing of activities that may affect them; and

- Planning and design will avoid or reduce impacts to identified watercourses, wetlands, and riparian areas within the proposed transmission line development area to the extent possible - Reduction in riparian clearing provides better visual quality to marine users. Examples of measures that will be implemented include: locate temporary workspaces outside of the riparian buffer (approximately 10 m from top of bank) unless otherwise approved by environmental personnel.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC's draft potential federal conditions. The Key Mitigation Measures related to marine use Valued Component are outlined in [Appendix 2](#).

#### 18.9.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the marine use Valued Component for Ksi Lisims LNG were identified.

##### 18.9.6.1. Effects on marine users, marine navigation and marine access

Gitga'at First Nation raised concerns regarding environmental dispossession, feeling that their Nation could be discouraged from accessing the lands including spiritual sites within their territories. This sense of environmental dispossession affects the Nations' ability to self-determination and could be a pathway to negative health outcomes. The Proponents acknowledged that limiting access may pose negative physical and mental health outcomes for Indigenous people. A detailed assessment of community health and wellness is described in [chapter 18.11](#) of this Report as well as [Appendix 5](#) (Detailed First Nations Assessments) which discuss Nation-specific assessments of effects to the interest identified by each community. The Proponents agreed to incorporate this information into the Marine Use Valued Component in the Revised Application and included specific language regarding negative health outcomes associated with environmental dispossession.

In addition, multiple First Nations raised concerns about the shipping route identified by the Proponents. As part of the Navigational Safety Assessment, the Proponents were required to complete a marine route analysis. Further information on the route identified is provided in the Navigational Safety Assessment. Shipping concerns are further discussed in [Appendix 7](#) (Malfunctions and Accidents) of this report. Gitga'at First Nation also identified a lack of details in describing the characteristics of the viewpoints for assessing aesthetic conditions. Gitga'at First Nation and the Proponents reached a joint understanding that the issue requires additional discussions before it can be considered resolved. Gitga'at First Nation and the Proponents agreed to continue discussions regarding this issue, continuing to work together to endeavour to reach an agreement.

The EAO has proposed Certificate Condition 13 (Marine Transportation and Communication Plan), which in addition to other requirements of the report, will establish a grievance process for First Nation's marine users experiencing loss of marine access, fishing equipment or other marine use effects. The condition would also define and require regular communication of Project activities that may affect marine use with marine users, including commercial, recreational and First Nation's fisheries. In addition, the EAO is recommending a Key Mitigation Measure to IAAC which would require the Proponents to develop a Marine Transportation Communications Plan. The Marine Transportation Communications Plan would require the Proponents to communicate regularly with marine users, including Indigenous marine users, about:

- Vessel traffic schedules;

- Operational safety zones and navigation aids;
- Collisions prevention measures; and
- Emergency response procedures.

Further, the EAO is recommending a Key Mitigation Measure to IAAC which would require the Proponents to participate in any regional initiatives related to marine shipping and current use of waters and resources for traditional purposes, if invited by a relevant federal authority.

#### **18.9.6.2. Mitigation measures effectiveness and data reliability**

Gitga'at First Nation, Haida Nation, and Lax Kw'alaams Band raised concerns regarding the lack of details regarding mitigations, specifically Aids to Navigation, which also related to perceived navigation safety, and seeking to be engaged to identify what Aids to Navigation are needed and at what locations. Metlakatla First Nation and Lax Kw'alaams Band reiterate that follow up is required to monitor and adaptively mitigate any potential changes in marine navigation, fishing activities, underwater noise, invasive species, marine harvesting success and wake effects. Adequate follow up programs are required to ensure accurate and ongoing data collection, verify effects assessment predictions, evaluate the efficacy of mitigation measures, adaptively respond to unforeseen effects, and contribute to ongoing regional monitoring efforts. Gitga'at First Nation has suggested that specific mitigation measures be implemented that address the perceived navigation safety and conflict with other marine users that may impact Indigenous peoples use of the marine environment. The Proponents explained that they will work with the CCG following the completion of the navigational risk assessment led by B.C. Coast Pilots/Pacific Pilotage Authority to identify where Aids to Navigation are needed. The Proponents further refinement of mitigation measures to detail, for example, timing, methods and monitoring, where needed, will be completed during post-EA decision and pre-construction planning when details on construction planning are being refined.

TC and Haida Nation communicated multiple concerns, specifically relating to how the NSA process would inform the Project's actual marine shipping route and procedures for LNG carriers, concerns with how data has been extrapolated for non-AIS vessels and associated limitations from the NSA from which a significant amount of this data was derived from. Haida Nation explained that potential gaps and lack of information on the movements of non-AIS vessels due to risks or safety have the potential to change vessel traffic use of small vessels resulting from Ksi Lisims LNG and should be addressed. The Proponents applied changes in the Revised Application that clarified details relating to small vessel surveys and observational data as well as factors considered in the selection of the Site. TC comments outlined the requirements for future authorization, information and data expectations which the Proponents will be required to provide to support subsequent authorizations, should the project receive approval. TC considered the provided data in their analysis within the Application but commented that the information provided for the Revised Application may not be sufficient to meet the data needs of the future authorizations.

#### **18.9.6.3. Concerns around cumulative effects**

The cumulative effects from Project related marine traffic increases were also identified as a concern by Gitga'at First Nation, Metlakatla First Nation, Lax Kw'alaams Band, and Gitxaala Nation, who did not agree with the Proponent's cumulative effects characterization and thought that risk should have a higher rating than what was identified in the Application. Gitga'at First Nation and Gitxaala Nation also noted that the NSA had shortcomings, indicating that mitigation measures and required avoidance strategies to resolve project-related effects are unacceptable. Gitga'at First Nation

suggested that additional international requirements and guidelines be applied to the Ksi Lisims LNG. The Proponents responded, explaining that the Application does not incorporate international requirements and guidelines directly as the Project is regulated under a B.C. and federal regime. The EAO provided a response and concluding that Ksi Lisims LNG will be required to comply with all applicable requirements established by the federal government and the International Maritime Organization, which is a specialized agency of the United Nations responsible for regulating shipping. The Application Information Requirements, which was established in consultation with the Technical Advisory Committee, did not identify the international standards noted in the comment. However, the International Maritime Organization does identify some additional international standards that apply to the project in the Marine Resources Valued Components, including the International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004); and the International Convention for the Prevention of Pollution from Ships.

#### **18.9.6.4. First Nation Marine Harvesting Impacts**

Gitga'at First Nation raised many concerns related to project-specific impacts to its Nation, highlighting multiple impacts identified in the Marine Use Valued Components that could directly affect the Nation. Gitga'at First Nation has proposed the development of mitigation measures that address the identified impacts. The Proponents agreed that further refinement of mitigation measures to detail, for example, identification of measures for particular sub-populations, timing, methods and monitoring, where needed, will be completed during post-EA decision and pre-construction planning when details on construction planning are being refined.

Lax Kw'alaams Band and Metlakatla First Nation relayed concerns regarding project-related effects to shoreline harvesting in their territories. They commented that the harvesting of shellfish and seaweed in the intertidal zone is a highly important component of Indigenous fisheries and that the project has the potential to impact shoreline harvesting as a result of alienation of harvesting sites due to the construction of marine infrastructure and safety zone, as well as vessel wake dislodging marine vegetation and threatening the safety of shoreline harvesters. They have concerns that the project's potential effects on shoreline harvesting are insufficiently assessed in the Application. These comments and concerns are discussed in [Appendix 5](#) (Detailed First Nation Assessments).

Similar to Gitga'at First Nation concerns of environmental dispossession, Lax Kw'alaams Band expressed concerns relate to potential alienation of the harvesting sites due to construction of marine infrastructure and safety zone, as well as vessel wake threatening the safety of shoreline harvesters. Lax Kw'alaams Band and Gitxaala Nation also indicated that proposed mitigation measures for effects from marine shipping specifically impacting fishing are limited and insufficient to mitigate the effects of marine shipping and transportation. The Proponents indicated that vessel routing has been carefully considered to maximize operational and safety considerations. Further refinement of mitigation measure details will be completed during post-EA decision and pre-construction planning when details on construction and operational planning are being refined.

Acoustics is a component of aesthetic conditions. Since Ksi Lisims LNG's location and shipping/materials supply route is described as transiting along non-populated areas that are dominated by the natural sounds of wind and waves with passing vessels, the acoustic landscape would change with an increase in vessel activity and perceived by marine users. To address construction related noise levels in the marine environment, the EAO has proposed a noise management plan as part of the Construction Environmental Management Plan that will require construction noise monitoring and reporting. The EAO has also proposed Condition 11 (Community Feedback Process) requiring the proponent to implement and

describe how the Holders will engage, notify and communicate project-related information with marine users and property owners.

**18.9.7. The EAO’s Characterization of Residual Effects**

After considering the proposed mitigation measures and conditions, and the information contained in the Joint Permitting/Regulatory Coordination Plan and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on marine use:

- Changes to marine navigation attributed to an increase in the number of vessels in the Local Assessment Area and Open Water Assessment Area during all phases for Ksi Lisims LNG;
- Changes to marine fisheries and other marine uses attributed to navigating vessels in the Local Assessment Area and Open Water Assessment Area by adding up to 140 to 160 LNG carriers and 8-12NGL product carrier movements per year and changes in vessel traffic and the types of vessels transiting along the shipping route; and
- Changes to the aesthetic conditions affect visual quality, the acoustic environment, noise emissions and ambient lighting experienced by other marine users.

The EAO’s characterization of the expected residual effects of the Project on marine use is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 53: Summary of Residual Effects for Marine use

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Changes to marine navigation</b></p> <p>This effect would include changes in marine use as there is a potential for the Project to interfere with vessel navigation in navigable waters.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local and open Water Assessment Area</b></p> <p>Duration: <b>Short-term to Medium-term</b></p> <p>Reversibility: <b>Fully reversible</b></p> <p>Frequency: <b>Multiple irregular and regular events to continuous</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (Likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>The marine environment around the Project site is relatively undeveloped, lacking industrial activity in this remote location. The Project is expected to introduce changes to marine navigation in the marine environment and Portland Canal during all phases of the Project. The existing conditions of the marine environment, and the ability for it to recover from an increase in marine activity and traffic, led to the conclusion of high resilience. Specifically, adverse interactions between the Project and marine navigation can be avoided or mitigated through existing regulations and mitigation measures. Residual effects of marine shipping and marine transportation are expected but will be low in magnitude as the change will be measurable but is not expected to alter the existing marine use and navigation levels. The residual effects are expected to be limited in their extent to Local Assessment Area and Open Water Assessment Area and have a duration lasting through all project phases, up to its operations period of 30 years, and be reversible upon Decommissioning. The residual effects are expected to be continuous and occur in both multiple irregular and regular intervals. It is anticipated that changes to marine navigation would disproportionately affect human populations who use the marine environment as a source of their livelihood and as part of their traditional activities. Through compliance with regulations and with proposed mitigation measures, the consequences of the residual effects are considered minor (local extent</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		and low magnitude) and the likelihood that the residual effect will occur is medium. There is a moderate uncertainty associated with the pathway to effect on marine use. Potential for uncertainty is associated with data and/or modelling. The effectiveness of mitigation is expected to be moderate. Marine use was identified as having a high importance to participating Indigenous nations.
<p><b>Changes to marine fisheries and other marine uses</b></p> <p>This effect would include changes in marine use as a result of an increase in vessel traffic and type of traffic transiting along the shipping route.</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low to Medium</b></p> <p>Extent: <b>Local and Open Water Assessment Area</b></p> <p>Duration: <b>Short-term to Long-term</b></p> <p>Reversibility: <b>Fully reversible</b></p> <p>Frequency: <b>Multiple regular events</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (Likelihood and consequences): <b>Low to Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>The marine environment around the Project site is relatively undeveloped, lacking industrial activity in this remote location. The Project is expected to introduce changes to marine traffic from the introduction of multiple large vessels and marine infrastructure to the marine environment and Portland Canal during all phases of the Project. The existing conditions of the marine environment and the ability for it to recover from an increase in marine vessel activity, the construction of new marine infrastructure and increase in marine shipping and transportation led to this conclusion of high resilience as adverse interactions between the Project and marine navigation can largely be avoided or mitigated through existing regulations and mitigation measures. Residual effects of marine infrastructure on marine fisheries and other marine uses are expected with a potential for temporary displacement events but will be low to medium in magnitude as the change will be measurable but is not expected to alter the current marine use levels and will affect a small area of the existing marine fisheries and other use areas. The residual effects are expected to be limited in their extent to Local Assessment Area and Open Water Assessment Area and have a duration lasting through all project phases, potentially beyond its Operations period of 30 years, and be reversible upon Decommissioning. The residual effects are expected to occur in multiple regular intervals. It is anticipated that changes to marine fisheries and other marine uses would disproportionately affect human populations who use the marine environment as a source of their livelihood and as part of their traditional activities. Through compliance with regulations and with proposed mitigation measures, the consequences of the residual effects are considered minor (local extent and low to medium magnitude) and the likelihood that the residual effect will occur is medium. There is a moderate uncertainty associated with the pathway to effect on marine use. Potential for uncertainty is associated with data and/or modelling. The effectiveness of mitigation is expected to be moderate to low. Marine use was identified as having a high importance to participating First Nations.</p>
<p><b>Changes in aesthetic conditions</b></p> <p>This effect would include changes to visual quality,</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local and Open Water Assessment Area</b></p>	<p><b>Not significant</b></p> <p>The marine environment around the Project site is relatively undeveloped, lacking industrial activity in this remote location. The Project is expected to introduce changes to aesthetic conditions through changes to visual quality due to increased ambient lighting and noise</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>acoustic environment, noise emissions and ambient lighting from an increase in marine traffic as experienced by other marine users.</p>	<p>Duration: <b>Short-term to Medium-term</b>                      Reversibility: <b>Fully reversible</b>                      Frequency: <b>Continuous</b>                      Affected Populations: <b>Disproportionately distributed</b>                      Risk (Likelihood and consequences): <b>Low</b>                      Uncertainty: <b>Moderate</b>                      Importance: <b>High</b></p>	<p>from an increase in marine traffic with the introduction of multiple large vessels and marine infrastructure to the marine environment and Portland Canal during all phases of the Project. The existing conditions of the marine environment and the ability for it to recover from an increase in marine vessel activity, the construction of new marine infrastructure and increase in marine shipping and transportation led to a conclusion of high resilience as adverse interactions between the Project and marine navigation can be avoided or mitigated through existing regulations and mitigation measures. Although changes to aesthetic conditions are expected, the marine infrastructure and ambient lighting are not expected to be visible to nearby residence. The predicted effects will be low in magnitude as the change will be measurable but is not expected to be directly perceived or visible to residence and marine infrastructure would only be visible to marine users navigating the Portland Canal. Sky glow effects resulting from ambient lighting and environmental conditions may be visible to some residence and marine users. Aesthetic conditions will remain similar to current levels and the marine infrastructure will not be visible from any of the key viewpoints identified. The residual effects are expected to be limited in their extent to Local Assessment Area and Open Water Assessment Area and have a duration lasting through all project phases, up to its Operations period of 30 years, and be reversible upon Decommissioning. The residual effects are expected to be continuous, and it is anticipated that it would disproportionately affect human populations who use the marine environment as a source of their livelihood and as part of their traditional activities. Through compliance with regulations and with proposed mitigation measures, the consequences of the residual effects are considered minor (local extent and low magnitude) and the likelihood that the residual effect will occur is medium. There is a moderate uncertainty associated with the pathway to effect on marine use. Potential for uncertainty is associated with data and/or modelling. The effectiveness of mitigation is expected to be moderate to low. Marine use was identified as having a high importance to participating First Nations.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

### 18.9.8. Cumulative Effects Assessment

The assessment of a designated project must consider any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are thirty-five existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with the Ksi Lisims LNG as described in [Table 7.11-25](#) of the Revised Application.

The following pathways for cumulative effects were further assessed for marine use by the Proponents in [section 7.11.11](#) of the Revised Application.

All these projects and activities have a potential to act cumulatively with Ksi Lisims LNG’s Marine Use Valued Components relating to changes in marine navigation, changes in marine fisheries and other uses, and changes in aesthetic conditions. However, only a few of these projects or physical activities are anticipated to increase the number of large vessels along the marine shipping route. The small vessels, considered as the physical activities of various fishing and aquaculture and marine shipping activities, are not expected to add to residual cumulative effects on the Marine Use Valued Components. However, large vessel traffic was considered in the cumulative effects assessment of the change in marine navigation, change in marine fisheries and other uses, and change in aesthetic conditions.

#### **18.9.8.1. Changes in Marine Navigation**

The Proponents assessed the spatial and temporal overlap with the additional marine vessels anticipated with the past, present and reasonably foreseeable future projects or activities, carrying forward projects and activities that will have the following components:

- Marine infrastructure/marine works in the Portland Canal,
- Vessels that intersect or transit the expected marine shipping route and materials and supply shipping route, and
- Vessels that transit past the Triple Island Pilotage Station.

The Prince Rupert Gas Transmission and Westcoast Connector Gas Transmission projects, and the Project’s transmission line connection will result in some marine construction activities in the Portland Canal; however, they will not result in marine infrastructure that will interact cumulatively with the Project’s marine infrastructure on marine navigation. The construction of the pipeline or transmission line may affect marine navigation temporarily if access is blocked or reduced with pipe-lay, cable-lay, or other construction activities, including dredging, trenching, seabed preparation, and lowering activities. No other projects are anticipated to have in-water marine infrastructure in the same section of the Portland Canal as the Project.

If all the identified past, present and reasonably foreseeable future projects are to proceed to operation, the cumulative effect would include 2,922 vessels per year passing the Triple Island Pilotage Station, through to the Open Water Assessment Area, on both inbound and outbound vessel movements. This total includes the maximum of 160 LNG carriers and 12 NGL product carriers visiting the Project, accounted as roughly 6 percent of the total current and future forecasted vessel traffic. Of these, 2,522 will intersect or transit the expected marine shipping route and materials and supply shipping route, mostly to and from the Port of Prince Rupert (i.e., 2,340 vessels), and 400 will transit to and from the south (i.e., from Kitimat) to the Triple Island Pilotage Station. The Proponents expect that would translate to 48 vessels per week that intersect or transit the expected marine shipping route and 8 vessels per week that intersect or transit the open water marine shipping route, past Triple Island Pilotage Station.

Given the remote location of the Project and the existing limited presence of industrial or residential marine project components, there is a low magnitude of cumulative interaction between the Project and the other identified projects or activities. This is further characterized as limited to the Regional Assessment Area, medium-term in duration, reversible, and occurring over multiple regular events. The EAO agrees that there is a medium likelihood, but low Project contribution, of cumulative residual effects on marine navigation from present and reasonably foreseeable future projects and physical activities, as adverse cumulative residual effects can be largely mitigated. The Proponents did not propose additional mitigation measures to address potential cumulative effects on marine navigation.



### 18.9.8.2. Changes to Marine Fisheries and Other Uses

To assess cumulative effects resulting in changes to marine fisheries and other uses, the Proponents used the National Framework for Assessing Cumulative Effects of Marine Shipping (2022), outlining four impacts that marine shipping has on First Nation marine uses. These included open water harvesting, shorelines harvesting, safe access to travel routes and shoreline cultural features. Wake and vessel strikes were identified as potential effects for shoreline harvesting and vessels in motion whereas obstruction was identified as the potential effect for vessels at rest.

Similar to changes to marine navigation, the PRGT and WCGT projects and transmission line will result in some marine construction activities in the Portland Canal; however, there will be limited interaction with most of the marine infrastructure as it will be laid directly on the seabed. The construction of the pipelines and transmission line, including the pipeline and cable placement activity may interact and affect marine fisheries and other uses within the 3 PFMA (PFMA 3, 4, and 104) that overlap with the Local Assessment Area and Regional Assessment Area. No overlapping commercial groundfish trawling activity was identified for the area. No other projects are anticipated to have in-water marine infrastructure in the same section of the Portland Canal as the Project.

The Proponents concluded, based on previous studies completed for EAs for similar LNG projects, that since the Project is located in a remote area with little to no other presence of industrial or residential development with in-water project components, the Project's cumulative effects on fisheries will be limited. As for potential effects from vessel wake, considering the vessel movements identified in changes to marine navigation above, the Proponents indicated that wake height and resulting waves from Project-related vessels will be well within the range of natural wave conditions, and in some cases will be less severe than waves created naturally by weather. The Proponents have identified mitigation measures to manage, or otherwise control, wake heights, which include employing a vessel Master and at least one experienced B.C. Coast Pilot who will operate the Project-related vessels. The Proponents expect that vessel speeds will not exceed 14 knots, and transit along the centre channel keeping wake wave heights to a minimum by increasing the distance from the vessel to the shoreline and maintaining 14 knot vessel transit speeds. As such cumulative effects of Project-related vessels regarding wake effects are expected to be limited.

Considering the existing conditions, current marine traffic and activities, and mitigation measures that will be implemented by the Proponents, there is a low magnitude of cumulative interaction between the Project and the other identified projects or activities. This is further characterized as being limited to the Regional Assessment Area, Open Water Assessment Area and Transmission Line Assessment Area, medium-term in duration, reversible, and occurring over multiple regular events. The EAO agrees that there is a medium likelihood, but low Project contribution, of cumulative residual effects on marine fisheries and other uses from present and future projects and physical activities, as adverse cumulative residual effects can be largely mitigated. The Proponents did not propose additional mitigation measures to address potential cumulative effects on marine fisheries and marine navigation.

### 18.9.8.3. Changes to Aesthetic Conditions

Potential changes to aesthetic conditions included considerations for changes to visual quality, acoustic environment, noise emissions and ambient lighting. An increase in marine activity from current and reasonably foreseeable future projects with marine infrastructure located in Portland Canal whose marine shipping traffic may interfere with these aesthetic conditions along the marine shipping route and materials and supply shipping route if the volume of marine shipping traffic is increased to a level that the aesthetic conditions are reduced. The Proponents indicated that there is minimal to no overlap between the Project and other projects and physical activities with in-water works near the Project

site. While there is expected overlap in marine shipping activities, primarily close to the Triple Island Pilotage Station, the proposed mitigation measures would work to reduce the potential effects to change to aesthetic conditions.

Similarly to changes to both marine navigation and marine fisheries and other uses described above, the PRGT and WCGT projects and transmission line will result in some marine infrastructure in the Portland Canal that may interact cumulatively with the Project due to the presence of vessels during their Construction phases. However, marine infrastructure is not expected to interact cumulative during the project's Operation phases. Since the Project is in a remote area with little to no other presence of industrial development near the Project site, the Project is not expected to interact cumulatively to reduce the existing aesthetic conditions of the marine environment. As has been described in potential changes to marine navigation above, the increased number of large vessels transiting the area, assuming that all identified present and reasonably foreseeable projects proceed to construction and operations, could result in some overlapping effects to visual quality due to the increased presence of large shipping vessels along the marine shipping route and materials and supply shipping route.

Given the mitigation measures that will be implemented by the Proponents and the existing marine environment around the Project site being relatively undeveloped and lacking industrial activity in this remote location, there is a low magnitude of cumulative interaction between the Project and the other identified projects or activities. This is further characterized as being limited to the Regional Assessment Area, Open Water Assessment Area and Transmission Line Assessment Area, medium-term in duration, reversible, and occurring over multiple regular events. The EAO agrees that there is a medium likelihood, but low Project contribution, of cumulative residual effects on aesthetic conditions from present and reasonably foreseeable future projects and physical activities, as adverse cumulative residual effects can be largely mitigated. The Proponents did not propose additional mitigation measures to address potential cumulative effects on marine navigation.

The EAO assessed that the potential for cumulative effects from these projects and activities is considered to be low due to distance from the Project to other pre-existing or reasonably foreseeable projects and activities and the low magnitude of cumulative residual effects identified.

The EAO concludes that no significant cumulative effects to marine use are expected as a result of the effects of Ksi Lisims LNG interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### 18.9.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the Marine Use Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 13 (Marine Transportation and Communication Plan) and noise management as part of Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The extent of significance for adverse residual effects and cumulative effects within federal jurisdiction are further described in [Appendix 15](#).

## 18.10. Human Health

### 18.10.1. Summary

Human health was selected as a Valued Component for the Ksi Lisims LNG project because exposure to contaminants or hazards (air emissions and noise) in the environment resulting from the Ksi Lisims LNG project may affect the physiological health of people in nearby communities. The Proponents considered effects to human health from exposure to project-related contaminants in the air, soil, water, sediment, and country foods and the hazard effects from noise and electromagnetic fields.

The Proponents assessed 14 exposure pathways that were considered as having potential for human health risk from contaminant or hazard exposure. Two exposure pathways were determined to be operable pathways for assessment on impacts to human health: inhalation of chemicals of potential concern and exposure to noise. Operable pathways are those where there is a chemical of potential concern or hazard arising from Ksi Lisims LNG and a human receptor that could be exposed to that chemical or hazard. Pathways are considered inoperable if there is the absence of a human receptor, no identified contaminant of potential concern (COPC) or hazards, or if the identified COPCs or hazards are managed in a way that prevents exposure. The twelve remaining pathways were characterized as inoperable, and included: ingestion and dermal contact with soil, ingestion and dermal contact with marine sediment, consumption and dermal contact with surface water, consumption and dermal contact with groundwater, ingestion of country foods (including wild meat, seafood, and vegetation), and exposure to electromagnetic fields from the Transmission Line.

This chapter focuses on the biophysical assessment of human health effects, while the social determinants of health (e.g., community well-being, mental health, health behaviours, food security) are assessed in [chapter 18.11](#) (community health and wellness).

The EAO received comments from participating Indigenous nations, members of the public and technical advisors. Key issues identified by reviewers regarding the human health valued component included:

- Concern regarding the characterization of exposure pathways related to soil, sediment, surface water, groundwater, and country foods as inoperable;
- The consideration of Gender-based Analysis Plus factors in relation to biophysical response to contaminant exposure may not be appropriately considered; and
- The development of a human health monitoring plan should be considered in a follow-up program.

The Proponents responded to concerns raised by reviewers and applied changes in the Revised Application where applicable.

The EAO did not recommend any specific Certificate conditions for the human health Valued Component, but did propose Certificate Condition 9 (Construction Environmental Management Plan) that includes management plans for both air quality and acoustic valued components relevant to the human health valued component:

Given the assessment, the EAO found that there would not be a significant adverse effect to human health and no significant cumulative effects to human health as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

### 18.10.2. Assessment Boundaries

The spatial boundaries for the human health assessment are based on the Valued Components that may affect human health (i.e., air quality and acoustics). Spatial boundaries exclude the areas within the fence line of the project or where access to the project site by the public would be restricted, except for worker-residents, because exposure to

contaminants or hazards on the Ksi Lisims LNG project site and within in the project fence line are considered occupational exposures. Occupational exposures are subject to WorkSafeBC occupational health and safety guidelines. Worker-residents refers to workers that reside at the onsite accommodations when they are off-duty.

The Local Assessment Area and Regional Assessment Area for air quality effects was the same as those found in the [chapter 18.2](#) (air quality) assessment. The Local Assessment Area includes:

- Facility Local Assessment Area for all phases as 40 km by 40 km area centred on the site; and
- Marine Shipping Local Assessment Area encompassed by the operations phase of marine shipping emissions for 5 km on either side of the marine shipping route.

The Regional Assessment Area is the same as the Local Assessment Area in all phases of the facility as well as Marine Shipping Local Assessment Area during Operations phase marine shipping. An additional Open Water Assessment Area encompasses a 12 nautical mile limit on Canada's territorial sea and the BCCPs boarding location at or near the Triple Island Pilotage Station for the Operation phase open water marine shipping route. For this assessment, only the potential electric and magnetic fields from the transmission line are considered in the context of human health since additional information regarding its right-of-way would be needed for a more detailed evaluation on potential effects to country food harvesting patterns.

The Local Assessment Area and Regional Assessment Area for exposure to noise from Ksi Lisims LNG, and to noise from marine vessels along the marine shipping route was the same as those found in the [chapter 18.1](#) (acoustic) assessment. The Local Assessment Area encompasses a 1.5 km zone in all directions around the Ksi Lisims LNG facility and along the marine shipping route. The Regional Assessment Area encompasses a 3 km zone in all directions around the Ksi Lisims LNG facility and along the marine shipping route. There was also an open water Assessment Area of 3 km in all directions from the marine shipping route between the 12 nautical miles (i.e. 22.2 km) limit of Canada's territorial sea and the BCCPs boarding location at or near Triple Island Pilotage Station.

The temporal boundaries used for the assessment of human health include:

- Construction (approximately 3-4 years);
- Operation (minimum of 30 years following Construction); and
- Decommissioning (approximately 12 months following the end of Operation).

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this report.

### 18.10.3. Existing Conditions by the Proponents

Existing health conditions were assessed by the Proponents in [section 7.14](#) of the Revised Application and are summarized here.

Pearse Island is a remote and undeveloped (no roads or infrastructure) island. The northern region of Pearse Island, where the Ksi Lisims LNG project area is located, is privately owned by Nisga'a Nation.

The only population center in proximity to Ksi Lisims LNG is the Nisga'a village of Gingolx and is located 15 km to the east of the project site. The Revised Application reported that the population of Gingolx in 2021, according to Statistics Canada, is 367 permanent residents. Other towns and population centers include Prince Rupert (approximately 80 km south of Ksi Lisims LNG), Port Edward (approximately 90 km south of Ksi Lisims LNG), Dodge Cove (approximately 80 km south of Ksi Lisims LNG and directly across the water from the Prince Rupert BC Ferry Terminal).

During the construction phase the Proponents reported that up to 800 people may be housed in a self-contained floatel located within Ksi Lisims LNG’s water lot in the Portland Canal. During the Operations phase, a workforce up to 250 people will be living in the accommodation building that would be located on the northern tip of Pearse Island. Terrestrial food harvesting on the northern region of Pearse Island, closest to the project site, is assumed to be only undertaken by members of Nisga’a Nation, since this land is owned by Nisga’a Nation. Any Indigenous nation or recreational land user can harvest country foods from other parts of Pearse Island that is not owned by Nisga’a Nation and seafood from the waters surrounding the Ksi Lisims LNG project. Recreational use and harvesting on Pearse Island are believed to be low due to the resources required to travel to the island.

Additional existing conditions that are relevant to the impacts to human health are existing air quality and noise (acoustic) conditions. The Proponents sourced the data for existing conditions for the human health analysis from the air quality and acoustic Valued Components.

**Air Quality:** The characterization of existing conditions for common air contaminants (SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub>) was based on available information collected from regional air quality monitoring stations and compared to the applicable time-averaged World Health Organization air quality guidelines. None of the common air contaminants assessed exceeded World Health Organization air quality guidelines and overall, the region surrounding Ksi Lisims LNG is considered to have very good air quality, with no major industrial or commercial sources of air pollutants nearby. For more information regarding the existing air quality conditions, refer to [chapter 18.2](#) (air quality) of this Report.

**Acoustic:** The existing noise sources near Ksi Lisims LNG were described by the Proponents as being typical of uninhabited coastal areas, where the primary sources of noise are from wind, wave action, precipitation, and wildlife (predominantly birds). For more information regarding existing acoustic conditions, refer to [chapter 18.1](#) (acoustic) of this Report.

#### 18.10.4. Potential Project Effects by the Proponents

A Human Health Risk Assessment to evaluate potential risks to Human Health from exposure to contaminants and hazards in the environment was conducted by the Proponents. Ksi Lisims LNG was not expected, as determined by the Human Health Risk Assessment, to have a measurable impact on chemical concentrations in soil, marine sediment, surface water, groundwater, and country foods; therefore, human exposure to these media were not evaluated further in the Human Health Risk Assessment. These exposure pathways were considered inoperable because there were no identified COPC or hazard, no potential human receptors present, or no exposure to a contaminant or hazard because that contaminant or hazard is managed in a way that exposure is prevented. The Proponents also determined the low frequency electromagnetic fields produced by the transmission line for Ksi Lisims LNG are not hazardous to human health and therefore exposure to electromagnetic fields was not assessed further in the Human Health Risk Assessment.<sup>27</sup>

Two operable exposure pathways, those where there is a COPC or hazard arising from Ksi Lisims LNG and a human receptor that could be exposed to that contaminant or hazard, were evaluated in the human health risk assessment: inhalation of common COPCs and noise exposure from Ksi Lisims LNG-related activities. These pathways considered inhalation of air emissions and noise exposure from the construction and operation of Ksi Lisims LNG.

##### 18.10.4.1. Inhalation of COPCs in Air

During both the Construction and Operations Phases of Ksi Lisims LNG, exhaust that contains COPCs from fuel combustion would be released into the air in the area which results in potential effects to human health. Fuel combustion during Construction would primarily occur from construction vehicles and equipment (e.g., generators). Fuel combustion during

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<sup>27</sup> Based on the publication from Health Canada, Power lines and Electrical Products: Extremely Low Frequency Electric and Magnetic Fields.

the Operations Phase would primarily be from the floating LNG facility (e.g., flaring), natural gas fired power barges, and marine vessels (e.g., LNG carriers and tugboats).

The Proponents identified eight chemicals as air emissions that are produced through Ksi Lisims LNG during the Construction and Operation phases. Three of those chemicals were identified as COPCs: SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>2.5</sub>. The remaining five air contaminants that were considered by the Proponents included carbon monoxide, volatile organic compounds, polyaromatic hydrocarbons, diesel particulate matter, and particulate matter 10 micrometres or smaller in diameter. The Proponents' assessment of each of these five air contaminants in the Technical Data Report – Human Health determined that none were classified as a COPC, and no further assessment was required.

When modelled, the Operations Phase was considered to have higher annual emission rates for each of the COPCs, and as such the Operations phase was determined to be the worst-case phase for COPC emissions to the air for air modelling. Note that under this worst-case scenario, all electricity is supplied by power barges for the Operations phase. An additional operations-phase scenario is presented in the [air quality section](#) of the Revised Application where electricity is supplied by the BC Hydro power grid via a transmission line. This scenario was not assessed by the Proponents for the human health valued component because it would have lower rates of COPC emissions and lower subsequent health risks as compared to the worst-case scenario.

The Proponents assessed four scenarios to evaluate existing conditions and predict future ground-level COPC concentrations through CALPUFF<sup>28</sup> air dispersion modelling as described in the Technical Data Report – Human Health:

- Base Case – represents the existing ground level concentrations of COPCs in the air within the Local Assessment Area/Regional Assessment Area.
- Project-Alone Case – represents the predicted future concentrations of COPC emissions within the Local Assessment Area/Regional Assessment Area from Ksi Lisims LNG only, excluding baseline contributions
- Application Case – represents the predicted future concentrations of COPCs in the Local Assessment Area/Regional Assessment Area during the Operations Phase of Ksi Lisims LNG. Baseline concentrations of COPCs are combined with the emissions presented in the Project-Alone Case to determine the predicted air quality conditions that people would be exposed to.
- Cumulative Case used for the cumulative effects assessment of the Human Health Valued Component and includes the Application Case and emissions from any reasonably foreseeable future projects within the Local Assessment Area/Regional Assessment Area.

For each scenario a location known as the Maximum Point of Impingement (MPOI) was identified. The MPOI was considered the location with the highest concentration of the COPC, and since Ksi Lisims LNG would be the only source of industrial COPCs in the air the MPOI would typically occur in the immediate vicinity of the project. The Proponent's assessment also included 19 human receptor locations, including residential areas and recreational sites, within the Local Assessment Area/Regional Assessment Area.

The Proponents identified that the predicted 24-hour SO<sub>2</sub> and NO<sub>2</sub> concentration levels at the MPOI were both greater than the World Health Organization guidelines by two micrograms per cubic metre and 36.3 micrograms per cubic metre, respectively, which indicates that there may be potential health risks at the MPOI to recreational users and country food harvesters; though the Proponents determined that the probability is low due to the rapid rate of dissipation by both SO<sub>2</sub> and NO<sub>2</sub> beyond the fence line and the low likelihood of recreational land users or country food harvesters being present near the Ksi Lisims LNG project site.

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<sup>28</sup> CALPUFF is an advanced non-steady state meteorological and air quality modelling system used to simulate atmospheric pollution dispersion.

At each of the 19 human receptor locations, the 10-minute and 24-hour exposure limits for SO<sub>2</sub> and the 10-minute, 24-hour, and annual average exposure limits for NO<sub>2</sub> were all predicted to be below the World Health Organization guidelines. The Proponents also noted that both SO<sub>2</sub> and NO<sub>2</sub> Project-alone emissions along the marine shipping route were negligible and resulted in modelled concentrations of zero micrograms per cubic metre.<sup>3</sup> As a result, contribution to the background levels of both SO<sub>2</sub> and NO<sub>2</sub> along the marine shipping route were considered negligible.

Contaminants, specifically those that have a similar mechanism of action, target organ, and toxic effect, could have additive effects that may not be identified when assessing the contaminant individually. SO<sub>2</sub> and NO<sub>2</sub> both have the same exposure route (inhalation) and can cause adverse health effects to the lungs and other organs, resulting in recognition from Health Canada that there are likely additive health risks associated with the combined exposure of SO<sub>2</sub> and NO<sub>2</sub>. The Proponents determined that additive risk from acute SO<sub>2</sub> and NO<sub>2</sub> exposure was below World Health Organization guidelines and considered minimal. PM<sub>2.5</sub> was predicted to be below World Health Organization guidelines at the MPOI, throughout the Local Assessment Area/Regional Assessment Area and at the 19 human receptor locations.

Potential effects to human health from changes in air quality along the open water Assessment Area was considered minimal, with all modelled SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub> exposure concentrations predicted to be below World Health Organization guidelines at the receptor locations along the shipping route.

Additional information regarding air quality is available in [chapter 18.2](#) (air quality) of this Report.

#### **18.10.4.2. Exposure to Noise**

During all Phases of Ksi Lisims LNG, noise generated from project activities and physical works would have the potential to adversely affect the quality of life of land users (including recreational and marine users) and nearby residents, including along the shipping route. These noise levels dissipate with distance and barriers between the noise source and the human receptor.

The Proponents modelled noise levels that would occur during the Construction and Operations Phases, noting that Decommissioning would have lower noise levels than Construction. The effect of noise was determined through considerations of annoyance rates and sleep disturbance. Six human receptor locations were chosen for the assessment based on residential locations where people may be exposed to noise over the long term for periods of more than one year to determine impacts to annoyance and sleep disturbance.

##### **Annoyance Rates**

The effect of noise is variable between individuals, where people living in rural area could have a greater expectation of peace and quiet, relative to people living in densely populated areas. Because of this variability, noise impacts to human health are based on the incremental increase of a populations' annoyance rates from the existing conditions to the Construction and Operations phases of Ksi Lisims LNG. Health Canada considers a quiet rural area to be an area with an adjusted day-night equivalent sound level (L<sub>dn</sub>) of 45 decibels A (dBA) or less due to human-made sounds. Health Canada's noise guidance uses the percent highly annoyed (%HA) to quantify annoyance due to noise effects for activities with a duration of 12 months or more. The %HA is calculated from the base case (existing noise conditions), Construction case and Operation case. Health Canada's recommended maximum increase in %HA (for more than a year) is 6.5 percent.

Because %HA only applies to the pre and post-project effects to a community, %HA does not apply to construction workers who live in the floatel or accommodations building(s), as these accommodations currently do not exist.

The Proponents predicted no measurable change in the %HA rates for residents in Gingolx, Dodge Cove, and Prince Rupert during both the Construction and Operation Phases. The Proponent's also predicted that noise along the open water Assessment Area would have minimal potential for adverse annoyance effects, as the noise generated from LNG

carriers along the open water Assessment Area would likely be less than the noise generated by natural noises such as wind and waves.

### Sleep Disturbance

Health Canada recommends sleep disturbance thresholds, derived from the World Health Organization guidelines, that are based on indoor sound levels. Since Ksi Lisims LNG would generate noise outdoors, predicted outdoor sounds were converted to indoor sound levels. Health Canada recommends the application of an outdoor-to-indoor transmission loss with windows at least partially open. A partially open window is assumed to reduce outdoor noise levels by 15 dBA, which was applied for Ksi Lisims LNG, assuming people located in the potential receptor locations may have their windows partially open at night. It is recommended by Health Canada that outdoor continuous nighttime noise should remain below 45 dBA, and intermittent noise should not exceed 60 dBA more than 15 times per night. Sleep disturbance includes difficulty falling asleep, awakenings, curtailed sleep duration, alternations of sleep stages or depths, and increased body movements during sleep. Nighttime noise for the Construction Phase was not modelled because construction activities are not anticipated to occur during nighttime hours.

Intermittent nighttime noise was predicted to exceed the Health Canada Guidelines at the worker accommodations building at the Ksi Lisims LNG site when using a marine horn. Because the purpose of a marine horn is to alert people to a potentially dangerous situation, it is not anticipated to occur more than 15 times in a single night. The accommodations building was also the only human receptor location where the continuous average outdoor sound level (51.3dBA) was greater than the threshold of no more than 45 dBA (per night) during the sleep period.

The Proponents also determined that sleep disturbance effects did not apply to the open water Assessment Area because there are no residences located within the 3 km open water Assessment Area buffer, which is the point to which noise from marine vessels is assumed to have dissipated to background levels.

Additional information regarding noise is available in [chapter 18.1](#) (acoustic) of this Report.

### 18.10.5. Proposed Mitigation Measures by the Proponents

The Proponents did not propose any mitigation measures specifically for Human Health, however mitigation measures that address Air Quality and Acoustics effects are discussed in [chapter 18.2](#) (air quality) and [chapter 18.1](#) (acoustic) of this report and would also mitigate potential effects to human health, including follow-up Programs under the IAA for air quality and acoustics.

### 18.10.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the human health Valued Component for Ksi Lisims LNG were identified.

#### 18.10.6.1. Consideration of Exposure Pathways Related to Soil, Sediment, Surface Water, Groundwater and Country Foods.

Gitga'at First Nation was concerned that the Proponents' classification of exposure pathways related to soil, sediment, surface water, groundwater, and country foods as inoperable was incomplete. Specifically for country foods, Gitga'at First Nation felt that the Proponents did not take into consideration traditional use information from all First Nations that may utilize and depend on the area for their cultural and traditional practices. Additionally, Gitga'at First Nation felt that indirect pathways such as air deposition to plants and soil were not properly assessed, for example, the deposition of SO<sub>2</sub> and NO<sub>2</sub> causing soil eutrophication. Gitga'at First Nation also suggested a multi-Nation country foods assessment.



The Proponents clarified its determination of how each pathway was determined inoperable and noted that air deposition was considered in [section 7.14.8](#) (human health) of the Revised Application. The Proponents also provided additional explanation that while wet deposition onto soil is discussed, the same applies to wet deposition onto plants, and would still be considered non-toxic to people. For the country foods assessment, the Proponents indicated that the high-level summary of harvesting frequency discussed was only to demonstrate that country food harvesting was active in the area, which was used to determine that human receptors were present in the area. With regards to soil eutrophication, the Proponents explained that model predictions did not suggest that the process of eutrophication and acidification would occur even under its conservatively modelled air quality conditions.

The EAO is satisfied that these issues have been adequately resolved for the purposes of the EA.

#### **18.10.6.2. Gender-Based Analysis Plus Factors were not Considered in Relation to Biophysical Responses to Contaminant Exposure**

Gitga'at First Nation and Women and Gender Equity Canada were concerned that Gender-based Analysis Plus factors were not appropriately considered in relation to biophysical responses to contaminant exposure. Gitga'at First Nation indicated that there is a growing recognition that factors such as age, gender, and ethnicity can result in disproportionate residual effects on health from exposure to COPCs. Women and Gender Equity Canada also indicated the Proponents identified that people “who engage in outdoor activities that would bring them closer to the project Site would experience a disproportionately higher degree of exposure” and that those who engage in outdoor activities would likely be adults, aged 20 to 64, which is most of the population of the Nisga'a Nation and other First Nations who live in the region. Women and Gender Equity Canada also suggested that the Proponents implement some type of monitoring mechanism to obtain benchmark data and report it out to the public.

The Proponents affirmed that while the statement regarding disproportionate effects to people who engage in outdoor activities would bring them closer to Ksi Lisims LNG is accurate, this risk is not impacted by sex, gender, age, or ethnicity, as anyone who may participate in recreational activities may engage in these activities. The Proponents further clarified that the disproportionate effect is based on whether an individual engages in a particular behaviour of recreational or country food harvesting activity that would bring them specifically in close proximity to Ksi Lisims LNG and does not apply to those engaging in recreational or country food harvesting activities in locations more distant from the project site (e.g., there are no disproportionate effects to terrestrial country food harvester on the mainland in Gingolx, since the effects to air quality do not extend that far).

The EAO is satisfied that these issues have been adequately addressed for the purposes of the EA.

#### **18.10.6.3. No-Follow Up Strategy Recommendation**

Gitga'at First Nation requested that there be a follow-up strategy developed for the human health valued component, and that human health monitoring plans should be a requirement. Gitxaala Nation requested to be engaged and have ongoing involvement in the development of the plan(s) and in monitoring the effectiveness of the mitigations that are actioned under the plan(s).

The Proponents responded that the modelled air quality and acoustic results did not demonstrate exceedances of the applied health-based guidelines, and so a follow-up strategy was not warranted. The Proponents also added that the modelling was conservative and that, if constructed, Ksi Lisims LNG would likely emit lower than the predicted air emissions and noise pollution. Additionally, numerous mitigation measures have been incorporated into Ksi Lisims LNG's design and engineering that leads to the prediction of low/negligible potential effects to human health.

Gitga'at First Nation and the Proponent have agreed to continue discussion regarding this concern and endeavour to reach an agreement. The EAO has proposed a Certificate condition that would require the Proponents to implement air quality and acoustics monitoring programs as part of the Construction Environmental Management Plan for EAO approval.

prior to construction. The EAO is satisfied that any additional acoustic and/or air quality monitoring would be determined through provincial and/or federal permitting processes, if merited.

### 18.10.7. The EAO's Characterization of Residual Effects

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in residual adverse effects on Human Health for the following reasons:

- Predicted 24-hour SO<sub>2</sub> and NO<sub>2</sub> air quality concentrations during the Operations Phase are greater than the World Health Organization air quality guideline; and
- Predicted nighttime noise levels at the accommodation building is greater than the sleep disturbance threshold of 45 dBA.

The EAO's characterization of the expected residual effects of the Project on human health is summarized below, as well as the EAO's level of confidence in the effects determination (including their likelihood and significance).

Table 54: Summary of Residual Effects for Human Health

Residual Effect	Assessment Rating*	Significance and Rationale
<b>Human Health from Air Quality</b> Inhalation of Contaminants of Potential Concern (SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>2.5</sub> )	Context (resilience): <b>High</b> Magnitude: <b>Low</b> Extent: <b>Local/Regional</b> Duration: <b>Medium-Term</b> Frequency: <b>Continuous</b> Reversibility: <b>Fully Reversible</b> Affected Populations: <b>Disproportionate</b> Risk (likelihood and consequences): <b>Low</b> Uncertainty: <b>Low</b> Importance: <b>Moderate</b>	<b>Not significant</b> Pearse Island is a remote, undeveloped island with no industrial sources of air contaminants nearby. The existing air quality conditions is considered very good, with no common air contaminants exceeding World Health Organization guidelines. Based on these existing conditions, a high natural resilience is predicted. The Nisga'a Village of Gingolx, located about 15 km east of the Ksi Lisims LNG project, is the closest residential centre to the Ksi Lisims LNG site. Both modelled SO <sub>2</sub> and NO <sub>2</sub> concentration exceed the 24-hour World Health Organization's guidelines only at the MPOI and are predicted to dissipate quickly to concentrations that are below guidelines. All 19 receptor locations modelled remained below 1-hour, 24-hour and annual World Health Organization guidelines and were based on a worst-case scenario. The remote location makes exposure at the MPOI locations unlikely and is predicted to have a low magnitude of effect. The residual effect is expected to occur within the local and regional assessment areas. Air quality effects would be continuous, with a medium-term duration but would stop and be fully reversible after the decommissioning of Ksi Lisims LNG, as emissions would cease. The affected populations are considered disproportionate because sub-populations such as First Nations harvesters or off duty workers may be brought closer to the Ksi Lisims LNG fence line/MPOI where air quality emissions are greater. The likelihood of effects would be low, and the consequences are minor (low magnitude with local/regional extent) for COPCs in the air, with a low risk assessment overall. There is a low level of uncertainty due to an over-estimation of predicted COPCs in the air quality modelling, and the minor exceedances at the MPOI.

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>Since risk to human health due to air quality concerns was identified by First Nations, members of the public and technical advisors, the importance was considered moderate.</p>
<p><b>Human Health from Noise</b></p> <p>Daytime and Nighttime noise based on %HA and sleep disturbance thresholds</p>	<p>Context (resilience): <b>High</b></p> <p>Magnitude: <b>Low</b></p> <p>Extent: <b>Local/Regional</b></p> <p>Duration: <b>Medium-Term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Fully reversible</b></p> <p>Affected Populations: <b>Disproportionate</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Low</b></p> <p>Importance: <b>Low</b></p>	<p><b>Not Significant</b></p> <p>Existing noise sources near Ksi Lisims LNG were described as that of uninhabited coastal areas with primary sources of noise are from wind, waves, precipitation, and wildlife such as birds. The nearest noise receptor location from Ksi Lisims LNG is the west shore of the Village of Gingolx. There is a high resilience to an increase in noise levels, based on distance to the nearest human receptor locations and the existing noise levels. Modelled predicted daytime noise levels did not exceed the %HA threshold at any of the human receptor locations; and the predicted nighttime noise level thresholds were only exceeded at the accommodations building which would be mitigated with noise insulating/dampening materials in the structural design of the building; magnitude is predicted to be low.</p> <p>The extent of noise effects is expected to occur within the local and regional assessment areas and not extend beyond the assessment areas</p> <p>Noise effects would be continuous during all phases of the project, with a medium-term duration. Impacts resulting from noise would stop once decommissioning for Ksi Lisims LNG occurred and is considered fully reversible.</p> <p>The affected population is considered disproportionate because sub-populations such as First Nations harvesters or off duty workers may be brought closer to the Ksi Lisims LNG project site, where higher levels of noise or sleep disturbance may be experienced.</p> <p>The likelihood of the predicted effects would be high. With proposed mitigations to the accommodation building, the consequence is considered minor (low magnitude with local/regional extent), with a low level of risk overall.</p> <p>There is a low level of uncertainty due to the low level of sleep disturbance modelled, coupled with conservative acoustic modelling resulting in an overestimate of modelled predictions.</p> <p>Since impacts to human health due to noise concerns did not generate a high level of interest or comments, importance is considered low.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

**18.10.8. Cumulative Effects Assessment**

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There is one existing and reasonably foreseeable project that has the potential to act cumulatively with Ksi Lisims LNG.

The potential for cumulative effects from this project is considered low due to limited-to-no spatial overlap of the dispersion plumes between the projects and the concentration of COPCs are predicted to be well-below the World Health Organizations air quality guidelines in any areas of spatial overlap.

The EAO concludes that not significant cumulative effects to human health are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### **18.10.9. Conclusion**

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the human health Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.11. Community Health and Wellness

### 18.11.1. Summary

The potential effects on community health and wellness were assessed as part of the Ksi Lisims LNG environmental assessment. This assessment included consideration of potential effects to the region's health and medical infrastructure and services, as well as effects to population health and wellness. The Proponents noted Ksi Lisims LNG would bring higher tax revenues, local spending, and opportunities for employment and income advancement for the local workforce, which could have positive effects on the physical and mental health, and various social determinants of health within the local and Regional Assessment Area. The Proponents also identified potential adverse effects resulting from Ksi Lisims LNG's physical works, shipping, increased traffic, and population changes. These adverse effects included increased demand on health and medical services, effects to population health and wellness, and effects to food security.

Key issues raised by reviewers included concerns about the potential for a variety of adverse social effects in communities in the Local Assessment Area resulting from population changes introduced by the transient Construction workforce. Reviewers also raised concerns about increased demand on health and medical services, which are already constrained in the region. To address the concerns raised, the EAO proposed Certificate Condition 17 (Socioeconomic Management Plan, Condition 16 (Worker Health and Wellness), Condition 11 (Community Feedback Process) Condition 14 (Health and Medical Services Plan), and Condition 15 (Gender and Cultural Safety Plan) to develop and implement initiatives, policies, and processes related to these topics.

The EAO then assessed the potential effects to community health and wellness given the Proponents' assessment, the proposed mitigation measures, and proposed Certificate conditions. Given these measures, the EAO found that there would be potential adverse effects to community health, community wellness, health and medical services, and food security; but that these effects would not represent significant adverse effects to community health and wellness.

The effects on community health and wellness were expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the local and Regional Assessment Areas. The EAO concluded that the potential for cumulative effects from these projects and activities was considered not significant in consideration of other past, present and future reasonably foreseeable projects and activities.

Factors not considered in this section include the following: adverse effects on emergency and ambulance services and infrastructure in neighbouring communities (covered in [chapter 18.13](#): Infrastructure and Services), and potential adverse effects on human health (covered in [chapter 18.10](#): Human Health).

### 18.11.2. Assessment Boundaries

The spatial boundaries for the assessment of effects to community health and wellness encompasses the communities with the greatest potential for experiencing those effects, either directly through project activities, or indirectly through project-related demographic changes.

- The Local Assessment Area includes: Nisga'a Lands (including all Nisga'a Villages), the City of Prince Rupert, the District Municipality of Port Edward, the North Coast A Regional District Electoral Area, Lax Kw'alaams 1 IR, and S ½ Tsimpsean 2 IRI, Dolphin Island IRI, the City of Terrace, Kitsumkaylum 1 IRI, Kshish 4 IRI, Kulspai 6 IRI, Kitselas 1 IRI, and Regional District of Kitimat-Stikine Electoral Areas C (Part 1) and E.
- The Regional Assessment Area includes the Local Assessment Area and expands to include Regional District of Kitimat-Stikine Electoral Area A and the District of Stewart.

Potential effects to community health and wellness are not expected to occur as a result of marine shipping or construction and operation of the transmission line. As such, the open water Assessment Area and the Transmission Line Assessment Area are not included in the spatial boundaries for the community health and wellness valued component.

The temporal boundaries for the assessment of community health and wellness include the following phases:

- Construction: approximately 3-4 years;
- Operations: a minimum of 30 years; and
- Decommissioning: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.11.3. Existing Conditions by the Proponents

An overview of existing conditions for community health and wellness was provided by the Proponents in [section 7.13](#) of the Revised Application. This section aims to provide a description of existing conditions of the aspects of community health and wellness most likely to be affected by Ksi Lisims LNG. Potential effects to ambulance and other emergency services are described and assessed in [chapter 18.13](#) (infrastructure and services) of this Report.

Information on existing conditions was collected primarily through secondary sources, including:

- Reports from Statistics Canada, Crown-Indigenous Relations and Northern Affairs, and other government and non-governmental organizations;
- Regional health information from health administrators and providers in B.C.;
- Peer-reviewed literature; and
- Information provided by First Nations.

Interviews with key informants were conducted to collect additional primary data. To the extent possible, the Proponents sought information that is disaggregated (i.e., broken down by age, race, ethnicity, income, education, etc.) to support an understanding of how existing conditions may differ among diverse groups.

#### Population

Census data shows that between 2016 and 2021, the populations of Terrace and Prince Rupert grew by 3.2 percent and 0.7 percent respectively. This data, however, reflects only permanent residents and fails to account for the area's temporary population, which includes individuals temporarily residing in the area for reasons of employment, and other visitors. As the capacity of health providers is typically sized and funded to match the residential population, a sudden increase in the temporary population of an area can result in a strain on such providers. Terrace, which serves as a hub for forestry, fishing, mining, and industrial development in the region, tends to experience disproportionate strains to health services as a result of economic activities in surrounding communities.

Approximately a quarter of the population of Terrace and more than 40 percent of the population of Prince Rupert reported having Indigenous identity. Many members residing in Indigenous communities in the region, including some communities that are not included in the local and Regional Assessment Areas, rely on health and medical services of Terrace, Prince Rupert, and Port Edward.

#### Health and Medical Services

The local and Regional Assessment Areas fall within the Northern Health Authority's Northwest Health Service Delivery Area (NWHSDA). Two hospitals are located in the Local Assessment Area; the Prince Rupert Regional Hospital located in

Prince Rupert and the Mills Memorial Hospital in Terrace. The closest major medical transfer centre for both hospitals is in Prince George. Mills Memorial Hospital in Terrace is a Level 4 trauma centre, providing healthcare to Terrace and surrounding communities and features 44 acute care beds and 10 emergency treatment spaces. A new hospital, scheduled to open in 2026, will replace the Mills Memorial Hospital. It will have 78 beds and is expected to be more than twice the size of the current facility. The Prince Rupert Regional Hospital provides medical services to surrounding communities and features an emergency department and 25 beds. Both hospitals in Terrace and Prince Rupert report being unable to satisfactorily meet current demands, due to both increased utilization and inadequate numbers of clinical and support staff. The two existing hospitals are equipped to accommodate sexual health services and services for communicable diseases.

The Nisga'a Valley Health Authority delivers healthcare in Nisga'a Nation territory and operates health centres in each of the four Nisga'a communities. As of November 2022, healthcare in Nisga'a communities is at capacity, meaning that the workload is comfortably managed. Metlakatla First Nation, Lax Kw'alaams Band, Gitxaala First Nation, and Kitselas First Nation each provide a variety of healthcare services to members on-reserve. Kitsumkalum First Nation provides transportation for community members attending medical appointments and supports securing funding for healthcare services. Many Indigenous peoples who do not live in their home communities seek to access services within Terrace and Prince Rupert but report various barriers to their access to the healthcare system.

### Community Health

Life expectancies for both males and females in the NWHSDA is several years lower than the provincial averages. Residents of the NWHSDA report higher rates of smoking, obesity, cardiovascular diseases, and chronic obstructive pulmonary disease, as compared to provincial averages. By contrast, residents of the NWHSDA report lower rates of high blood pressure, asthma, and most sexually transmitted and blood-borne infections, as compared to the provincial rates. Residents of the NWHSDA also report higher rates of physical activity for both males and females.

Individuals in the NWSDA report having “very good” or “excellent” physical and mental health at lower rates than the provincial average, with Indigenous respondents reporting still lower rates of health than those reported across the NWSDA and the Province. The NWHSDA also reports higher rates of schizophrenia/delusional disorders, substance abuse, and Alzheimer's Disease/dementia than provincial averages. The suicide<sup>29</sup> death rate in the NWHSDA is among the highest in B.C., with Indigenous individuals disproportionately affected. Across Canada, suicide rates among First Nations peoples, Métis and Inuit were three times higher than those for non-Indigenous people.

Community organizations in the Regional Assessment Area have voiced concern about increases in substance use in the area. Males in the NWHSDA report rates of heavy drinking that exceed the provincial average and data from the Canadian Institute for Substance Use Research indicates that alcohol-related hospitalizations exceed the provincial rate for most communities in the region. Hospitalizations for opioid use in the NWHSDA far exceeds the provincial rate and the B.C. Coroners Service reports a marked increase in illicit unregulated drug deaths since 2017. In 2021, Prince Rupert recorded a drug toxicity death rate of 34.6 for every 100,000 people (up from 14.1 per 100,000 in 2017), while Terrace recorded a drug toxicity death rate of 72.6 for every 100,000 (p from 14.2 per 100,000 in 2017). First Nations people are disproportionately represented in toxic drug poisoning deaths, with members of B.C.'s First Nations losing their lives to drug toxicity at 5.4 times the rate of the general population in 2021.

### Community Wellness

Social determinants of health are the circumstances and conditions in which people are born, grow, live, work and age, and the wider set of forces and systems shaping the conditions of daily life that can influence health and wellbeing in

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<sup>29</sup> Suicide is not itself a mental illness but may be linked to mental illness.

positive and negative ways. Social determinants of health are complex and interrelated and can change through the course of an individual's life. Section 7.13.5.2.5 of the Revised Application identifies and discusses a broad set of the intimately interconnected social determinants of health affecting the local and Regional Assessment Areas and the ways in which these indicators contribute to health outcomes. Many of these indicators are discussed in greater detail in other chapters of this Report; these include:

- [Chapter 18.12](#) (employment and economy), employment and income;
- [Chapter 18.13](#) (infrastructure and services), housing, education, and childcare; while
- Health status, health services, and food security are discussed individually in this chapter.

Developed by Crown-Indigenous Relations and Northern Affairs Canada, the Community Well-Being Index is a tool that provides a systematic way for researchers to understand how respondents' perceptions of wellbeing across various dimensions of their lives affect their overall wellness. Many of the social determinants of health discussed in Section 7.13.5.2.5 of the Revised Application are incorporated in the Community Well-Being Index. A higher score on the Community Well-Being Index suggests a higher measure of community wellness.

The Community Well-Being Index index scores for communities within the Regional Assessment Area ranged from 49 to 80, with an average score of 67.4 across all communities. Indigenous communities within the Regional Assessment Area reflected a lower average index score of 60.1, as compared to the index score for non-Indigenous communities of 77.6. The average index score for Indigenous communities in the Regional Assessment Area was slightly higher than the national average of 58.4 for Indigenous communities. The index score for non-Indigenous communities in the Regional Assessment Area was essentially the same as the national average of 77.5 for non-Indigenous communities.

### Food Security

The NWHSDA was recorded in 2012 as having the highest rate of food insecurity (18.8 percent) as compared to the provincial (11 percent) and national (12.3 percent) rates. For households with children, the rate of food insecurity in NWHSDA was higher still, at 24.8 percent.

Food insecurity, which can contribute to various adverse health and social outcomes, is influenced by factors related to the cost, availability, and accessibility of both market and country food. The communities in the Regional Assessment Area are affected by numerous factors that challenge the availability and accessibility of healthy and culturally appropriate food and contribute to the NWHSDA having the highest average monthly cost<sup>30</sup> for a healthy diet.

Rural and remote communities in the Regional Assessment Area, including Indigenous communities, tend to have limited retail infrastructure and various other barriers to accessing market foods (longer travel distance, lack of reliable and affordable public transportation, requirement for boat or floatplane transit in some communities).

Harvesting land and marine resources can help offset food insecurity for Indigenous communities, while also contributing to cultural, spiritual, and health values. However, the availability and accessibility of country foods have been adversely impacted by climate change, effects from resource development, high costs of harvesting equipment, reduced time for harvesting due in part to waged employment and regulatory barriers.

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<sup>30</sup> Average monthly cost is calculated by the B.C. Centre for Disease Control by collecting data on approximately 60 specific food items identified by Statistics Canada to make up the 'National Nutritious Food Basket'; this cost does not take into account the costs associated with accessing market food, or the cost of accessing traditional or non-market food sources. The food costing methodology also excludes stores in rural, remote, and Indigenous communities.



#### 18.11.4. Potential Project Effects by the Proponents

Ksi Lisims LNG would be located in a remote setting, which would moderate its interactions with neighbouring communities and their health services and would require the workforce to travel to the site for extended rotations. Materials and equipment would be transported by land along Highways 16 and 113/Nisga'a Highway and/or by marine vessel from Gingolx, Prince Rupert, or potentially from other coastal ports.

Construction of Ksi Lisims LNG is expected to last approximately three to four years, beginning in 2025 or later. The construction workforce is anticipated to average 400, to 450 reaching a peak of approximately 800 for roughly one year. The construction workforce would be housed in a fully self-contained floating camp (i.e., a "floatel") at the project site. The construction workforce would be bussed from park-and-ride locations in local communities to either Gingolx, Prince Rupert, or Port Edward for transfer to the site via marine vessels.

Following commissioning, Ksi Lisims LNG would be in operation for a minimum of 30 years, with a permanent workforce of between 150 and 250 individuals on-site. Every three to five years, Ksi Lisims LNG would perform scheduled maintenance work that would require a "turnaround workforce" of approximately 75 to 150 additional individuals on-site. Both the operations and periodic turnaround workforce would be housed in on-site accommodations for the duration of their rotations.

The Proponents note that the workforce would be recruited locally as much as possible, although it is anticipated that certain specialized trades may need to be sourced from elsewhere in B.C., Canada, or internationally. To the extent that members of its workforce are sourced from outside of the Local Assessment Area, the Proponents assume that members of the construction workforce would generally not relocate to the area with their families, and that few members of the 150 to 250-person operations workforce would relocate with their families.

Community health and wellness has the potential to be affected in a variety of ways, both through Ksi Lisims LNG's physical works and activities, or as a result of population growth related to the project. The Proponents identified the following potential effects community health and wellness due to Ksi Lisims LNG:

- Increases in the temporary population in the region, particularly during the Construction phase, may lead to adverse effects to:
  - Demand for health and medical infrastructure and services;
  - Community health (e.g., health behaviours, physical and mental health outcomes);
  - Community wellness (e.g., social determinants of health such as education, cost of living, and community cohesion); and
  - Demand and affordability of market foods, and availability and accessibility of country foods.
- Traffic related to Ksi Lisims LNG may lead to an increase in the number of traffic incidents in the region, with implications on health and medical infrastructure and services; and
- Physical works associated with constructing, operating and decommissioning Ksi Lisims LNG, including marine shipping activities, may result in a disruption of Indigenous land and marine use, changes to aesthetic conditions, and an altered "sense of place".

The Proponents also noted that employment opportunities and income advancement for the local workforce has the potential to improve physical and mental health outcomes, health behaviours, and other social determinants of health (e.g., food security, housing security), although these benefits may be disproportionately distributed. The presence of industrial projects and their workers may have positive effects through the production of revenue, taxes, and funding which could support the NLG and potentially other governments in the Local Assessment Area.

### 18.11.5. Proposed Mitigation Measures by the Proponents

In addition to following best management practices, the Proponents identified and committed to the following relevant mitigation measures:

- Develop and implement an employee drug and alcohol policy intended for zero substance use tolerance for on-site personnel and outlining procedures for testing, searching, disciplinary actions and support available to personnel during all Ksi Lisims LNG phases;
- Develop and implement a Health and Medical Services plan (HMSP) based on Northern Health’s Health and Medical Services Best Management Plan Guide. The HMSP will include:
  - Injury prevention measures;
  - Disease and infection management measures;
  - A workplace health promotion program;
  - An employee and family assistance program;
  - A description of medical and first aid services available to personnel on-site, including first aid/medical staff and a medical clinic; and
  - Procedures for medical emergencies requiring evacuation.
- Develop and implement a discrimination, bullying and harassment in the workplace policy with relevant training;
- Develop and implement a socioeconomic management plan, including:
  - Monitoring and reporting on skills training, employment and procurement for Ksi Lisims LNG;
  - Monitoring and reporting on the demand for community-level infrastructure and services as a result of Ksi Lisims LNG.
- Develop and implement a health, safety, security and environment framework that will outline health and safety training requirements for personnel, medical emergency response and security procedures for all Project phases. Ensure all workers are aware of WorkSafeBC’s Regulations and Guidelines for Oil and Gas Industry—Construction.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC’s draft potential federal conditions. The Key Mitigation Measures related to community health and wellness are outlined in [Appendix 2](#).

### 18.11.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the community health and wellness Valued Component for Ksi Lisims LNG were identified.

#### 18.11.6.1. Effects to Neighbouring Communities due to Changes in Population

Kitsumkalum First Nation, Gitga’at First Nation, Northern Health, the City of Terrace, and members of the public raised concerns about the various adverse effects that could result from the anticipated influx of workers relocating to, and transiting through, the communities as part of the Ksi Lisims LNG’s Construction workforce. Commenters cited research and experience linking transient workforces and industry-related population growth to an array of adverse social effects, including: increased drug use, overdoses, illegal behaviour, violence (including gender-based violence), and impacts on community members’ mental health. Gitga’at First Nation further noted that adverse social effects are often disproportionately experienced by certain sub-populations that are less likely to experience benefits of the project,

including low-income households, people with disabilities, women, children, and Indigenous peoples, including members who live in urban areas and outside of their home communities.

Kitsumkalum First Nation and the City of Terrace pointed to Terrace's position as the region's hub, which means that increases in population and economic activity throughout the region tends to result in Terrace receiving a disproportionate share of strains on the city's already-strained social, emergency, and medical infrastructure and services. Effects in population centers can extend into smaller communities, as noted by Kitsumkalum First Nation, which noted that drug use in nearby reserves tends to grow as the supply increases in town.

In response, the Proponents noted that Ksi Lisims remote location, workforce accommodations and shuttle service would serve to limit the Construction and Operations workforces' time and impact in onshore communities. The Proponents further noted that Ksi Lisims LNG would develop a set of mitigation measures designed to encourage a high standard of conduct among its employees both on-site and in the community, including a drug and alcohol policy, code of conduct, community feedback tool and an adaptive socioeconomic management plan intended to correct identified issues and continuously improve management practices. The Proponents also noted that they would be seeking input from First Nations when developing management plans including on the development of Socioeconomic Management Plan.

In consideration of the concerns raised, the EAO proposes Certificate Condition 17 (Socioeconomic Management Plan), Condition 15 (Gender and Cultural Safety Plan) and Condition 11 (Community Feedback Process).

#### **18.11.6.2. Increased Demand on Constrained Health and Medical Services**

Gitga'at First Nation, Northern Health, and members of the public expressed concern about the potential increase in demand on the region's health and medical infrastructure and services, which already have limited capacity to meet current demands. Northern Health further specified that any incremental increase should be considered significant, due to the population growth in the region, as well as retention and recruitment challenges caused by increases in housing costs and competitive industry wages.

The Proponents responded that Ksi Lisims LNG's workforce and procurement strategies, including its intent to hire as locally as the local workforce's interest and qualifications permit, would help to minimize the potential population growth. The Proponents also noted that Ksi Lisims LNG's remote location, workforce accommodations, and shuttle service would help to limit the construction and operation workforces' interactions with onshore health and medical services and would discourage family members from relocating to the area, which would also limit potential population growth in neighbouring communities.

Northern Health, Kitsumkalum First Nation, and Gitga'at First Nation challenged the Proponents' assumption that members of Ksi Lisims Construction or Operations workforces would not be joined by families to settle in local communities. Recognizing that the site is remote and that the Proponents intend to provide housing for its Construction and Operations workforce for the duration of their work rotations, these technical advisors observed that many workers on other projects in the region that similarly provided housing to its on-rotation workforce were indeed joined by family members who relocated to the area on a short- or long-term basis.

The Proponents indicated an intent to be as self-sufficient as possible with respect to providing medical support to its workforce, noting that the Ksi Lisims LNG site would include a medical clinic and medical staff, including a nurse practitioner and/or personnel with advanced first aid training (e.g., paramedics). Further, the Proponents noted an intent to develop a Health and Medical Services Plan to further detail measures to promote health and wellbeing, prevent illness and injury, and manage medical emergencies. As part of developing the Health and Medical Services Plan, the Proponents indicated intent to further consider engaging a remote physician, telehealth provider, and medivac services.

In consideration of the concerns raised, the EAO proposes Certificate Condition 14 (Health and Medical Services Plan).

**18.11.7. The EAO’s Characterization of Residual Effects**

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on community health and wellness:

- Change in community health;
- Change in community wellness;
- Change in health and medical infrastructure and services; and
- Change in food security.

The EAO’s characterization of the expected residual effects of the Project on community health and wellness is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 55: Summary of Residual Effects for the community health and wellness Valued Component

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Change in community health</b></p> <p><i>Residual adverse effects on community health may result from project-related demographic change, employment opportunities, change in working conditions, change in communicable diseases resulting from the influx of workers, change in injury and suicide rates, mental health issues and change in substance use.</i></p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Low to medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Multiple irregular events</b></p> <p>Reversibility: <b>Reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (likelihood and consequences): <b>Low to high</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>Life expectancies in the region are several years lower, with residents experiencing higher rates of smoking, obesity, cardiovascular diseases, and chronic obstructive pulmonary disease as compared to the provincial averages. The suicide death rate in the region is among the highest in B.C. and hospitalizations for opioid use in the region far exceed the provincial rate.</p> <p>Residual adverse effects to community health would be local to communities neighbouring Ksi Lisims LNG including, Terrace and Prince Rupert, which would serve as transportation and service hubs for its workforce. Effects would occur throughout Ksi Lisims LNG’s construction and operations, although the risk and magnitude of some effects would shift downward as the construction workforce disperses. Changes in many indicators of community health would not be immediately observable as they are the outcomes of processes that may extend months to years (e.g., life expectancy and chronic conditions). Other indicators, should they occur, would be observable in the near-term (e.g., injuries and health behaviours including substance use).</p> <p>The magnitude, risk, and reversibility differ depending upon the indicator of community health being considered. At a population level, the predicted magnitude of adverse effects on chronic diseases, risk conditions, risk behaviours, suicide, and life expectancy are considered low, as defined in the characterization table in <a href="#">section 7.13.7.2</a> of the Application. Adverse effects on mental health, substance use, and communicable illnesses are predicted to be medium in magnitude in accordance with the characterization table. Some adverse effects would be reversible (e.g., treating an injury or treatable health condition, changing a health behaviour), while other adverse effects may be irreversible.</p> <p>The Proponents propose to implement various measures aimed at supporting community health. These include workforce strategies designed to limit</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>population growth; traffic safety measures; a health and medical services plan; provision of on-site medical and first aid services; and access to an employee assistance plan for members of the workforce and their families. These measures are anticipated to help manage the risk and magnitude of some effects, although the likelihood and consequence of specific adverse effects range from low to high.</p> <p>Adverse effects to community health would be experienced disproportionately. Effects linked to Ksi Lisims LNG may exacerbate community health indicators among individuals and in communities with existing inequities in community health, including Indigenous peoples, 2SLGBTQIA+ communities, lone-parent families, visible minorities, and low-income households. Indigenous women living in communities accessed by Ksi Lisims LNG’s workforce are at disproportionate risk of being affected by violence and communicable diseases.</p> <p>The EAO assesses a moderate degree of uncertainty in this assessment, noting the there are many factors that would influence the likelihood and magnitude of the various indicators of community health effects. For example, health is greatly influenced by various social determinants of health which vary from person to person and intermingle to produce physical and mental health outcomes. Individuals’ physical and mental health is also influenced by their health and risk behaviours, and the consequences of these individual behaviours and outcomes may or may not be experienced on a community scale. The EAO also notes uncertainty in the scale of population growth in neighbouring communities, which could contribute to some indicators of community health.</p> <p>Participating Indigenous nations, members of the Technical Advisory Committee and members of the public indicated that effects on community health are of high importance.</p>
<p><b>Change in community wellness</b></p> <p>Residual adverse effects may result from a variety of interrelated pathways. These include (but are not limited to) changes in population and demographics; increased cost of living; decreased personal safety stemming from demographic</p>	<p>Context (resilience): <b>Low to moderate</b></p> <p>Magnitude: <b>Low to medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Multiple irregular events</b></p> <p>Reversibility: <b>Reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p>	<p><b>Not significant</b></p> <p><b>Note:</b> Community wellness incorporates consideration of various physical, social, and economic indicators, which interrelate to influence a community members’ sense of wellness. Many of these indicators are assessed separately in this report, including in other parts of this table. This section aims to characterize residual effects to community wellness in aggregate.</p> <p>The Canadian Well-Being Index for non-Indigenous communities in the Regional Assessment Area suggests a moderate level of resilience, while this same measure suggests a lower level of resilience for Indigenous communities.</p> <p>Residual adverse effects to community wellness would be local to communities neighbouring Ksi Lisims LNG, including Terrace and Prince Rupert, which would serve as transportation and service hubs for its workforce. Effects would occur throughout Ksi Lisims LNG’s construction and operations phases, although the risk and magnitude of some effects would shift downward as the construction workforce disperses and Ksi Lisims LNG’s</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>change and/or workplace settings; increased substance use; changed household and community dynamics; and changed sense of place.</p>	<p>Risk (likelihood and consequences): <b>Low to moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate to high</b></p>	<p>operations phase progresses. The remote location of Ksi Lisims LNG and the provision of on-site accommodations and health services would reduce interactions between the project’s workforce and neighbouring communities, which may limit adverse interactions and moderate additional demand on communities’ services. It is noted however, that rotational and isolated working conditions may have adverse effects on the wellness of some members of the workforce, their families and communities.</p> <p>The Proponents propose to implement various measures aimed at reducing adverse effects to community wellness. These include workforce strategies designed to limit population growth; a socioeconomic management plan; a community feedback tool to receive and respond to community issues, concerns and complaints; provision of on-site medical and first aid services; and access to an employee assistance plan for members of the workforce and their families. These measures are anticipated to manage the risk and magnitude of some effects. The EAO assesses that residual adverse effects to various indicators of community wellness would occur, noting that the magnitude and risk of these individual effects differ depending upon the indicator of community wellness being considered.</p> <p>Most indicators are predicted to have effects that are medium in magnitude (including sense of place, family dynamics, community cohesion, community safety, determinants of Indigenous community wellbeing, and cost of living. Adverse effects to housing are anticipated to be low to medium in magnitude. The risk of individual indicators of community wellness would also vary, with some indicators assigned a lower risk of adverse effects based largely on the assessment that the remote location would limit adverse interaction with the indicator (e.g., education, community cohesion). Other indicators, including family and household dynamics, and community safety are assessed a moderate risk due to the presence of a transient workforce and the strains of rotational work.</p> <p><a href="#">Section 7.13.8.2.6</a> of the Revised Application provides a thorough assessment of the many ways in which adverse effects to various indicators on community wellness would be experienced disproportionately by various human populations.</p> <p>Representatives from participating Indigenous nations, some members of the Technical Advisory Committee and members of the public have identified interest in various aspects of community wellness, noting particular concern for crime, gender-based violence, and public safety.</p>
<p><b>Change in food security</b></p> <p>Adverse effects on food security can result from disruptions in ability to successfully harvest</p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p>	<p><b>Not significant</b></p> <p>The communities in the region are affected by numerous factors that challenge the availability and accessibility of healthy and culturally appropriate food, including geographic, demographic, physical, and financial barriers. Together, these barriers contribute to the region experiencing the highest average monthly cost for a healthy diet. Access to traditional foods for First Nations has experienced increasing constraints.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>country foods and from increases cost of living, which can increase the cost of market foods.</p>	<p>Frequency: <b>Single events and multiple regular events</b></p> <p>Reversibility: <b>Reversible to irreversible</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p>Adverse residual effects on food security are anticipated to be medium in magnitude, stemming from increases in the cost of living (linked to inflation in consumer products and housing), as well as from changes in the availability and accessibility of country foods. Some of these residual effects would occur as single events (e.g., clearing areas that provide habitat and forage for harvested animals), while most effects would occur as intermittent but regular events (e.g., increases in cost of living raising cost of food, or marine shipping affecting access to marine country foods). Residual effects to food security are anticipated to begin during construction and persist through the operating life of Ksi Lisims LNG. Effects related to increased cost of living may diminish as Ksi Lisims LNG transitions to the operations phase, at which time its size of workforce would go down, putting less pressure on drivers of inflation in the cost of living. Some adverse effects on food security would be reversible following the decommissioning of Ksi Lisims LNG while others, including disruption of traditional food systems and transmission of harvesting knowledge, may result in irreversible residual effects for future generations of Indigenous communities.</p> <p>Adverse effects on food security would be experienced disproportionately, with predominantly Indigenous individuals and communities experiencing effects to traditional food harvesting. Increases in the costs of living would be experienced disproportionately, with individuals and families that fall into lower-income brackets tending to disproportionately experience economic hardship. Elderly persons, Indigenous persons, young persons, and lone-parent families are disproportionately represented within these categories. Women, Indigenous women, and 2SLGBTQQIA+ communities also have higher rates of food insecurity than their counterparts at the national level.</p> <p>The Proponents’ strategies to preferentially hire from the local workforce, increase the proportion of underrepresented groups among its workforce, and support local businesses, coupled with the EAO’s proposed conditions (including those aimed at managing effects to wildlife, fisheries and marine use), are anticipated to reduce the likelihood of residual effects. The EAO assesses that there remains a moderate risk of residual effects to food security.</p> <p>The EAO assesses a medium degree of uncertainty in this assessment, noting the following factors that would influence the likelihood and magnitude of residual effects, including: 1) the scale of population growth in neighbouring communities, 2) the degree of inflation in the cost of living, 3) the success of adaptive management practices aimed at monitoring and managing effects to housing demand, wage inflation, and access and abundance of country foods.</p> <p>Representatives from participating Indigenous nations and other Nations engaged in the environmental assessment have noted food security as being of high importance.</p>
<p><b>Change in health and medical</b></p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Medium</b></p>	<p><b>Not significant</b></p> <p>The Revised Application notes that there is limited capacity to respond to urgent and primary care and that the region’s two hospitals are unable to</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>infrastructure and services</b></p> <p>Population growth and the presence of a large transient workforce can increase demand on medical infrastructure and services.</p>	<p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Multiple irregular events</b></p> <p>Reversibility: <b>Reversible to partially reversible</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (likelihood and consequences): <b>Moderate to high</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p>satisfactorily meet current demand. In its capacity as a technical advisor, Northern Health specified that any increase should be viewed as significant. These factors suggest that the region has low resilience to changes in demand for health and medical infrastructure and services.</p> <p>Ksi Lisims LNG’s remote location, the provision of an on-site clinic with medical staff for members of the on-rotation workforce, and the measures to be included in Ksi Lisims LNG’s Health and Medical Services Plan would likely serve to reduce the need for members of the workforce to access medical care in the region. The Proponents’ strategies for preferentially hiring from the local or regional workforce, coupled with the remote location may also serve to reduce the number of individuals and families that relocate to the region, thereby limiting increased demand caused by population growth. Technical advisors indicate that experience with other industrial development projects in the region demonstrates that some degree of population growth would still be expected. Further, technical advisors note that on-site medical services would not fully divert the workforce from accessing health and medical services in the region. The EAO assesses that adverse residual effects would be medium in magnitude.</p> <p>Increased demand for health and medical services and infrastructure would be local to communities neighbouring Ksi Lisims LNG, and largely centred in Terrace and Prince Rupert. Effects would be experienced sporadically throughout Ksi Lisims LNG’s Construction and Operations, although the magnitude of some effects would shift downward as the construction workforce disperses. Residual effects to infrastructure and services are expected to be reversed upon Ksi Lisims LNG’s Decommissioning at which time its workforce would no longer be required.</p> <p>Increased demand for health and medical infrastructure and services would be experienced disproportionately among various subpopulations in the region. Included among these are subpopulations that require more frequent health and medical services, which tends to include individuals managing health challenges, young children, elderly, people with disabilities, and people experiencing pregnancy.</p> <p>Based on Ksi Lisims LNG’s remote location, mitigation measures, and the EAO’s proposed conditions, many adverse effects to health and medical infrastructure and services could be avoided. But there remains a medium to high likelihood of residual adverse effects would occur. The EAO’s notes a moderate degree of uncertainty in this assessment, as there remain a number of unknown external variables that would influence the degree to which Ksi Lisims LNG would influence demand on health and medical infrastructure and services, including 1) the scale of population growth in neighbouring communities, and 2) the success with which Ksi Lisims LNG’s on-site clinic, Health and Medical Services Plan limits demand from its workforce on health and medical services in neighbouring communities.</p>



Residual Effect	Assessment Rating*	Significance and Rationale
		Managing effects to health and medical infrastructure and services was identified as highly important to members of the technical advisory committee and the public.
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p> <p>** Employment and Income are discussed in <a href="#">chapter 18.12</a> (employment and economy). Childcare, education and housing are discussed in <a href="#">chapter 18.13</a> (infrastructure and services).</p> <p>*** The EAO incorporated consideration of the following social determinants of health in the assessment of residual effects in this table:</p> <ul style="list-style-type: none"> <li>• Health status is considered in the assessment of change to community health; and</li> <li>• Health services are considered in the assessment of change in health and medical infrastructure</li> </ul>		

**18.11.8. Cumulative Effects Assessment**

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are 22 existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG, as well as numerous forestry, fishing, aquaculture, and marine shipping activities that are not counted individually, as described in [Table 7.13-26](#) of the Revised Application.

The following pathways for cumulative effects were assessed further for infrastructure and services in [section 7.13.9](#) of the Revised Application:

- Changes in community health status (including risk behaviours, risk conditions, chronic conditions, communicable diseases, injury and suicide, mental health outcomes and substance use) resulting from population growth, change in employment status, working conditions and income growth;
- Changes in community wellness (including all social determinants of health), resulting from population growth, change in employment status, working conditions and income growth;
- Changes in food security resulting from increases in cost of living and reduced success in harvesting country foods; and
- Increased demand for health and medical infrastructure and services, resulting from temporary and permanent population growth.

Projects that are most likely to interact cumulatively with Ksi Lisims LNG’s residual effects to community health and wellness are those projects for which the labour forces would be in the region at the same time that Ksi Lisims LNG’s workforce would be present. Projects that overlap with Ksi Lisims LNG’s Construction, Operations and Decommissioning could increase the region’s population and traffic; as well as increase competition for housing, infrastructure, services (including health services), recreation and harvesting areas. Projects anticipated to overlap with the construction of Ksi Lisims LNG include construction of the hydroelectric line that will supply power to Ksi Lisims LNG, construction of the Prince Rupert Gas Transmission project, BC Hydro’s upgrades to the region’s electric transmission infrastructure, and operation of LNG Canada. Ksi Lisims LNG’s operations phase is anticipated to also overlap with the construction and

operation of Cedar LNG, operation of Port Edward LNG, and may overlap with the currently-unknown schedules for construction and operation of Totem LNG and Skeena LNG.

The assessment of the Projects' temporal overlap of projected construction and operation schedules anticipates construction to begin in the second half of 2025, with commissioning anticipated to begin in 2027. The timing of construction and operation for Ksi Lisims LNG, and for other reasonably foreseeable projects may shift, which could alter the potential for cumulative effects, and the magnitude of those cumulative effects. Acknowledging the potential for shifts in timing, the EAO assesses that residual effects to from Ksi Lisims LNG would interact cumulatively with residual effects from other past, present, and reasonably foreseeable projects.

In accordance with [Table 7.13-32](#) of the Revised Application, the magnitude of effects is measured by identifying the level at which the measurable change occurs. An effect with a low magnitude is a measurable change to indicators of community health and wellness that produces outcomes at the individual level, while an effect with a moderate magnitude produces effects measured at the household level. An effect with an outcome that is measured as the population level is rated as having a high magnitude; as such, the magnitude of an effect to community health and wellness is not a measure of the strength or severity of that effect.

The EAO assesses a moderate to high risk of cumulative effects on community health that are moderate in magnitude. These effects are anticipated to be related to increased alcohol use, substance use, and potentially increased rates of communicable disease, linked to the presence of Ksi Lisims LNG's workforce overlapping with other projects' workforces. Ksi Lisims LNG's contribution to these cumulative effects would peak during construction and would taper as Ksi Lisims LNG progresses into operations.

The EAO assesses a moderate to high risk of cumulative effects on community wellness that are moderate to high in magnitude. These effects may result from Ksi Lisims LNG and various other projects collectively effecting changes in various social determinants of health, including community safety, community cohesion, family dynamics, housing, education, and Indigenous determinants of health.

The EAO assesses a high risk of cumulative effects that are high in magnitude for food security due to the potential for increases in cost of living and the potential for avoidance or loss of access to harvested foods. Similarly, the EAO assesses a high risk of cumulative effects to health and medical infrastructure and services that are high in magnitude, as a result of population growth (including members of Ksi Lisims LNG's workforce, some family members that may join in relocating, and individuals that may relocate to take advantage of new indirect and induced employment opportunities in the region.

The EAO concludes that cumulative effects to community health and wellness as a result of residual effects of Ksi Lisims LNG would interact with the effects of other past, present, and reasonably foreseeable future projects. This is particularly the case when considering the potential for the effects of Ksi Lisims LNG to community health and wellness contributing to an interaction between the effects from multiple projects that are likely to be occurring in the region at the same time, especially in the case of the hydroelectric line and Prince Rupert Gas Transmission project where there is a high degree of confidence in overlapping construction and operation periods. Given the interaction between effects in consideration with the current context in the region and the resiliency to additional demands, the EAO concludes the cumulative effects to community health and wellness to be significant. The EAO recognizes, however, that Ksi Lisims LNG's contribution to these cumulative effects would be limited, due to the Project's remote location, and the EAO's conditions which include requirements for the Proponents to participate in regional cumulative effects initiatives, if such a committee (or its equivalent) is created by the provincial or local government.

#### **18.11.9. Conclusion**

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual effects but would have significant cumulative effects on the community health and wellness Valued Component. This conclusion considers the information

and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 17 (Socioeconomic Management Plan), Condition 16 (Worker Health and Wellness), Condition 11 (Community Feedback Process), Condition 15 (Gender and Cultural Safety Plan), and Condition 14 (Health and Medical Services Plan); and recommended Key Mitigation Measures and Follow-up Programs under IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.12. Employment and Economy

### 18.12.1. Summary

A healthy economy and high levels of employment support a healthy standard of living and allows communities to serve their population well. The Proponents assessed that Ksi Lisims LNG had the potential to introduce positive effects such as employment opportunities and economic growth in the region but may also lead to upward pressure on wages and cost of living. The Proponents then described enhancement measures to augment potential positive effects, and mitigation measures aimed at reducing the potential adverse effects to employment and economy.

Key issues raised by reviewers related to local and Indigenous employment, and the potential for disproportionate allocation of positive and adverse effects of Ksi Lisims LNG. To address these issues, the EAO proposed Certificate Condition 17 (Socioeconomic Management Plan), and Condition 11 (Community Feedback Process).

The EAO then assessed the potential effects to employment and economy given the Proponents' assessment, the proposed mitigation measures, and the proposed Certificate conditions. Given these measures, the EAO found that there would be residual effects resulting from changes in regional employment, regional business, and the regional economy, but these would not represent significant adverse effects to employment and the economy.

The effects on employment and economy from Ksi Lisims LNG are expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the local and Regional Assessment Area. The EAO concluded that the potential for cumulative effects from these projects and activities was considered not significant in consideration of other past, present and future reasonably foreseeable future projects and activities.

### 18.12.2. Assessment Boundaries

The spatial boundaries for the assessment of effects to employment and economy encompasses the communities with the greatest potential for experiencing those effects. The local and Regional Assessment Areas are the same and include: Nisga'a Lands (including all Nisga'a Villages), the City of Prince Rupert, the District Municipality of Port Edward, the North Coast Regional District Electoral Area A, Lax Kw'alaams 1 IRI, S ½ Tsimpsean 2 IRI, Dolphin Island IRI, the City of Terrace, Kitsumkaylum 1 IRI, Kshish 4 IRI, Kulpai 6 IRI, Kitselas 1 IRI, the Regional District of Kitimat-Stikine Electoral Areas A, C (Part 1) and E, and the District of Stewart.

Potential effects to employment and economy are not expected to occur as a result of marine shipping or Construction and Operation of the transmission line. As such, the open water assessment area and the transmission line assessment area are not included in the spatial boundaries for the employment and economy Valued Component.

The temporal boundaries for the assessment of employment and the economy include the following phases:

- Construction: approximately 3-4 years,
- Operations: a minimum of 30 years, and
- Decommissioning: approximately 12 months.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.12.3. Existing Conditions by the Proponents

An overview of the existing conditions related to employment and the economy was provided by the Proponents in [section 7.10](#) of the Revised Application. This chapter aims to provide a brief description of existing conditions of employment and the economy in the local and Regional Assessment Areas. Information on existing conditions was collected primarily through secondary sources, including reports from publicly available data and literature and other information provided by First Nations. Where possible, the Proponents sought information that is disaggregated (i.e., broken down by age, race, ethnicity, income, education, etc.) to support an understanding of how existing conditions may differ among diverse groups.

Employment in the Regional Assessment Area is largely dependent on forestry, mining, transportation, warehousing, and construction related to major infrastructure projects. Terrace and Prince Rupert serve as the service, supply, and population centres for the region, with both cities' populations accounting for approximately one third of the Local Assessment Area's total population of 35,700, as of 2021. Approximately one quarter of the population of Terrace and more than 40 percent of the population of Prince Rupert reported having Indigenous identity.

The Revised Application notes that as of 2021 the labour force in the Local Assessment Area was 19,130, with men accounting for 53.8 percent of the total. The average employment income earned by men in the Local Assessment Area was greater than that earned by women, while the average employment income of Indigenous individuals was recorded as lower than the average incomes of both male and female members of the non-Indigenous population. In 2021, the unemployment rate in the Local Assessment Area was 9.3 percent, which was slightly higher than the provincial average of 8.4 percent. The unemployment rate for the Indigenous population in the Local Assessment Area was notably higher, at 17.2 percent.

The Local Assessment Area shows a higher prevalence of households falling below the low-income threshold as compared to the provincial average.

### 18.12.4. Potential Project Effects by the Proponents

Construction of Ksi Lisims LNG is expected to last approximately three to four years and is anticipated to employ an average of 400 to 450 individuals, reaching a peak of approximately 800 for roughly one year. Following commissioning, Ksi Lisims LNG would be in operation for a minimum of 30 years, with a permanent workforce of between 150 and 250 individuals on-site. Every three to five years, Ksi Lisims LNG would perform scheduled maintenance work that would require a "turnaround workforce" of approximately 75 to 150 additional individuals on-site. Wages for Ksi Lisims LNG's workforce would align with wages in the oil and gas sector and are estimated to be higher than the average wage rate in the Local Assessment Area.

The Proponents note that the workforce would be recruited locally as much as possible, although it is anticipated that certain specialized trades may need to be sourced from elsewhere in B.C., Canada, or internationally. To the extent that members of its workforce are sourced from outside of the Local Assessment Area, the Proponents assume that members of the construction workforce would generally not relocate to the area with their families, and that few members of the 150 to 250-person Operations workforce would relocate with their families.

The Revised Application identified an array of direct, indirect, and induced potential effects on the local and regional economies, listed below. The scale of potential effects to employment and the economy would depend upon the length of time that Ksi Lisims LNG is powered by natural gas barges instead of the BC Hydro electrical grid, as drawing power from natural gas would require higher expenditures and create more jobs during both the Construction and Operations phases. The Proponents assert that Ksi Lisims LNG would be powered by natural gas barges up to a maximum of five years from the beginning of Construction. The Revised Application described potential changes to regional employment, regional business, and the regional economy, including the following specific potential effects:

- Ksi Lisims LNG would provide economic diversification in northwest B.C., and across the province;
- Improved access to global markets for Canadian gas may help mitigate risk of market fluctuations;
- Ksi Lisims LNG would create job opportunities for members of the local workforce and beyond;
- Procurement of labour, goods, and services for Ksi Lisims LNG would result in an increase in economic activity in the Local Assessment Area and beyond;
- Increased economic activity linked to Ksi Lisims LNG could lead to increased employment in businesses along the supply chain, in related industries, and in the region’s service industries;
- Increased employment and/or income advancement could lead to increased spending among the direct and indirect workforce;
- Ksi Lisims LNG would contribute to the local, regional, provincial, federal economies through income and property taxes;
- Wage differentials between Ksi Lisims LNG and other types of employment could increase competition for labour and place upward pressure on wages within the region;
- Increased economic activity could increase business costs, which could contribute to an increase in the cost of living;
- Transient and in-migrating workers drawn to the region for employment on Ksi Lisims LNG or related opportunities could increase the demand and cost for housing and other accommodations; and,
- Anticipated or actual increases in housing demand could incentivize real estate speculation, which could place further upward pressure on housing costs.

The Revised Application recognized that the effects to employment and the economy may be inequitably distributed, with Indigenous persons, visible minorities, and women generally experiencing fewer positive effects and having more exposure to adverse effects. The Proponents note that women and Indigenous persons tend to be underrepresented in occupations that would benefit from Project employment, which in the absence of targeted mitigation would disproportionately allocate the employment and income advancement opportunities to non-Indigenous men. Similarly, older populations may be less likely to gain opportunities for Project employment. By contrast, Ksi Lisims LNG’s targeted measures aimed at supporting local and Indigenous business may also result in a disproportionate share of contracting and procurement opportunities to be realized by these groups.

The Revised Application further notes that individuals with lower incomes, which disproportionately include Indigenous persons, visible minorities, and women, tend to experience more economic hardship, particularly as a result of increased cost of living.

#### **18.12.5. Proposed Mitigation Measures by the Proponents**

In addition to following best management practices, the Proponents identified and committed to the following relevant mitigation and enhancement measures:

- Develop and implement workforce strategies to use a British Columbian or Canadian resident construction workforce in the building of those components of Ksi Lisims LNG that will be constructed and/or assembled in Canada;
- Develop and maintain a database of Nisga’a businesses and contractors, as well as other Indigenous, local, and regional businesses and contractors. Use the database to inform businesses and contractors of procurement opportunities;
- Work with government agencies, educational institutions, and contractors to implement on-the-job training and apprenticeship programs;

- Encourage high school completion among Indigenous and other local residents through sponsored initiatives by the Proponents;
- Identify potential shortages of workers with specific skill requirements and training and work with local and regional training and education facilities and communities to increase opportunities for Indigenous and local community members to obtain training;
- Develop and implement gender equity and diversity policies that focus on hiring Nisga’a Nation members, local and indigenous persons, and women to increase employment on Ksi Lisims LNG among underrepresented populations; and
- Develop and implement procurement and contracting strategies to facilitate economic participation by local, regional, B.C., and Canadian suppliers, contractors, and service providers.

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC’s draft potential federal conditions. The Key Mitigation Measures related to employment and economy are outlined in [Appendix 2](#).

#### **18.12.6. Key Issues Raised**

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the Employment and Economy Valued Component for Ksi Lisims LNG were identified.

##### **18.12.6.1. Effects to local and Indigenous employment**

Gitxaala First Nation, Kitsumkalum First Nation, and Gitga’at First Nation generally endorsed the Proponents’ stated intent to target its workforce and contracting strategies on Indigenous and local workforces and businesses to the extent that the local workforce’s interest and qualifications permit. These parties observed, however, that in aggregate the Proponents’ procurement, contracting, and hiring strategies appeared to favor members of Nisga’a Nation, without clarifying how such opportunities would be equitably afforded to members of other First Nations. Noting that it is not clear that the region can presently provide a workforce that is adequate in number and specialization to meet Ksi Lisims LNG’s needs, Kitsumkalum First Nation and Natural Resources Canada recommended pre-emptive measures that would build the local and Indigenous workforce’s capacity, such as early training and scholarships.

The Proponents responded that Ksi Lisims LNG’s suite of workforce and procurement strategies would be targeted at increasing positive employment effects among local populations and Indigenous nations and confirmed that members of all affected First Nations would have equal access to procurement and employment opportunities. The Proponents further noted an interest in continuing to explore mitigations and enhancement measures in bilateral conversations with interested participating Indigenous nations.

To ensure that the management plan(s) that are developed to monitor and manage social and economic effects are culturally appropriate, adequately detailed, and effective, Gitxaala Nation, Kitsumkalum First Nation, and Gitga’at First Nation requested to be engaged in the development of the plan(s) and in monitoring the effectiveness of the mitigations that are actioned under the plan(s).

In consideration of the concerns raised, the EAO has proposed Certificate Condition 17 (Socioeconomic Management Plan).

##### **18.12.6.2. Disproportionate Allocation of Positive and Adverse Effects**

Gitga’at First Nation, Kitsumkalum First Nation, the City of Terrace, and members of the public raised concerns about the potential that the benefits and the adverse effects of Ksi Lisims LNG could be distributed disproportionately among

individuals in neighbouring communities. Although the effects discussed in this chapter are economic in nature, Gitga’at First Nation stressed that the effects are intrinsically linked to health and wellness in neighbouring communities, as well as the functioning of infrastructure and services in the region.

Kitsumkalum First Nation and the City of Terrace underscored that Terrace’s position as the region’s hub means that increases in population and economic activity throughout the region tends to result in Terrace receiving a disproportionate share of strains on the city’s already-strained social, emergency, and medical infrastructure and services. Rather than receiving a tax benefit of the increased economic activity, the City of Terrace reported that its citizens have experienced considerable increases in taxes.

In response, the Proponents noted that Ksi Lisims LNG would feature an array of workforce, procurement, gender equity, and diversity policies targeted at increasing and supporting positive employment effects among local communities, Indigenous persons, and women, while also limiting the potential population growth in Terrace and other neighbouring communities. The Proponents further noted that Ksi Lisims would have a socioeconomic management plan that would include monitoring and reporting mechanisms for skills training, employment, procurements, and effects on community health and wellness.

To ensure that the management plan(s) that are developed to monitor and manage social and economic effects are culturally appropriate, adequately detailed, and effective, Gitxaala Nation, Kitsumkalum First Nation, and Gitga’at First Nation requested to be engaged in the development of the plan(s) and in monitoring the effectiveness of the mitigations that are actioned under the plan(s).

In consideration of the concerns raised, the EAO has proposed proponent participation in Certificate Condition 17 (Socioeconomic Management Plan), Condition 11 (Community Feedback Process), Condition 18 (Road Transportation Management Plan), and Condition 21 (Regional Cumulative Effects Initiatives).

#### 18.12.7. The EAO’s Characterization of Residual Effects

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on employment and economy:

- Change in regional business; and
- Change in regional economy.

The EAO’s characterization of the expected residual effects of the Project on economy and employment is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 56: Summary of Residual Effects for the Economy and Employment Valued Component

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Change in regional business</b></p> <p>Project expenditures on materials, equipment and services, as well as increased spending by Ksi Lisims LNG’s direct and indirect workforce could contribute to wage</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p> <p>Frequency: <b>Multiple regular events</b></p>	<p><b>Not significant</b></p> <p>Construction on Ksi Lisims LNG would begin at the same time that other projects in the region are building workforces to support their own projects. Although this would represent an opportunity for growth among businesses in the region, these projects would likely be drawing from the same regional labour pool as Ksi Lisims LNG. In balance, the EAO assesses that the region has a moderate ability to accommodate increased competition for labour.</p>



Residual Effect	Assessment Rating*	Significance and Rationale
<p>inflation** and labour drawdown*** in the region.</p>	<p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionately distributed</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>Moderate</b></p>	<p>Wages paid to Ksi Lisims LNG’s workforce are expected exceed the existing mean wages in the region by 125 percent during Construction and 116 percent during Operations (note that the region’s existing gender wage gap means that Ksi Lisims LNG’s estimated wages are markedly higher than the mean wage for woman than it is for men). This could challenge employers of existing or new businesses in the region in attracting and retaining staff. Indeed, Ksi Lisims LNG’s own policies for local recruitment may contribute to drawing the local workforce away from their existing employment.</p> <p>The EAO assesses that a moderate level of labour drawdown could occur, placing upward pressure on wages (i.e., wage inflation). Should they occur, these effects would likely extend throughout the Local Assessment Area and persist throughout Ksi Lisims LNG’s Construction and Operations, although the effects may diminish as the size of Ksi Lisims LNG’s labour force is reduced with its transition to Operations. Labour drawdown and wage inflation associated with Ksi Lisims LNG would be expected to be reversible and cease upon completion of decommissioning.</p> <p>The effects to regional businesses are likely to be disproportionately distributed, particularly as Ksi Lisims’ LNG’s hiring and contracting policies are aimed at increasing economic participation among Indigenous-owned businesses, which may help address employment and other economic inequities often experienced by Indigenous communities and individuals.</p> <p>The EAO notes a moderate risk that labour drawdown and wage inflation could occur, and a moderate level of uncertainty in its assessment. The EAO’s uncertainty in this assessment stems from the number of unknown variables that would influence the degree to which Ksi Lisims LNG would cause labour drawdown and wage inflation in the region. These uncertainties include: 1) the extent to which individuals may be drawn away from their existing employment in order to seek employment with Ksi Lisims LNG, 2) business owners’ response to competition for labour, and 3) timing of other resource projects that would also draw from the regional labour pool.</p>
<p><b>Change in regional economy</b></p> <p>Wage inflation could result in increased operating costs, which may cause businesses to increase prices, thereby contributing to increased cost of living.</p>	<p>Context (resilience): <b>Low to moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Short to medium term</b></p>	<p><b>Not significant</b></p> <p>The region has low to moderate resilience to changes in the regional economy. Existing constraints in housing availability in Terrace and Prince Rupert, coupled with projected growth make these population centres vulnerable to depleted availability and increased costs for housing (these conditions are discussed in <a href="#">chapter 18.13</a> of this Report – Infrastructure and Services). Conditions linked to wage inflation are discussed in the section above.</p>

Residual Effect	Assessment Rating*	Significance and Rationale
<p>Increased demand for housing and accommodation, and potential for real estate speculation could place upward pressure in the price of housing, also contributing to increased cost of living.</p>	<p>Frequency: <b>Multiple regular events</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionately Distributed</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p>Ksi Lisims LNG’s remote location, intent to hire from the local workforce, and provision of on-site accommodations for its on-rotation workforce would limit additional demand on accommodation availability and affordability in population centres like Terrace and Prince Rupert, Ksi Lisims LNG’s regional hiring strategy may, however, contribute to labour drawdown, which in turn may contribute to wage inflation. Real estate speculation fueled by perceived opportunities linked to natural resource development may also contribute to rising cost of living. Together, the EAO assesses that these factors could impose increases in the cost of living that are medium in magnitude.</p> <p>Increases in the cost of living would likely extend throughout the Local Assessment Area and occur throughout Ksi Lisims LNG’s Construction and Operations, although the effects may diminish as the size of Ksi Lisims LNG’s labour force is reduced with its transition to Operations. The effects are anticipated to be reversed once Ksi Lisims LNG is decommissioned.</p> <p>Increases in the costs of living would be experienced disproportionately. Individuals and families that fall into lower-income brackets tend to disproportionately experience economic hardship as a result of increases in cost of living. Elderly persons, Indigenous persons, young persons, and lone-parent families are disproportionately represented within these categories. Upward pressure on the cost of housing tends to also disproportionately affect renters.</p> <p>The EAO assesses a moderate risk that Ksi Lisims LNG could contribute to an increased cost of living in the region and a moderate level of uncertainty in its assessment. The EAO’s uncertainty in this assessment stems from the number of unknown variables that would influence the degree to which Ksi Lisims LNG would cause increases in the cost of living. These include: 1) the uncertainties noted above in assessing the potential for wage inflation; 2) the degree to which housing speculation may occur; and 3) the degree of population growth stimulated by Ksi Lisims LNG.</p> <p>Cost of living is noted as an issue with high importance to many members of the Technical Advisory Committee and the public.</p>

\* Note: Criteria and assessment ratings are defined in [Appendix 3 - Residual Effects Characterization Definitions](#)

\*\* Wage inflation would occur if employers in the region find it necessary to increase the compensation offered in order to attract and retain workers.

\*\*\* Labour drawdown would occur if workers at other jobs in the region leave their current employers in order to secure employment with Ksi Lisims LNG. This could occur if workers are drawn to wages on Ksi Lisims LNG, or because of other factors that inspire a desire to work on the project.

### 18.12.8. Cumulative Effects Assessment

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are 17 existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with the adverse residual economic effects of Ksi Lisims LNG.

The following pathways were assessed further to assess cumulative effects to employment and economy in [section 7.10.11](#) of the Revised Application:

- Competition for labour creating labour shortages and localized wage;
- Increased costs to businesses causing businesses to raise pricing for consumables;
- Increased demand for housing; and
- Real estate speculation.

Because no adverse effects on regional employment are anticipated, changes in regional employment are not considered in the assessment of cumulative effects. Similarly, positive effects to regional business and the regional economy are not carried forward into the cumulative effects assessment. Analysis of all anticipated positive effects is included in the Revised Application.

Projects that are most likely to interact cumulatively with Ksi Lisims LNG's residual adverse effects of labour drawdown, wage inflation, and increased cost of living in the regional economy are those projects for which the labour forces would be in the region at the same time that Ksi Lisims LNG's workforce would be present. In cases where Ksi Lisims LNG overlaps temporally with other projects in the region, each of those projects would be in a position to draw from the same labour pool and the same housing stock, thereby contributing to shortages of labour and housing. Markets tend to respond to labour and housing scarcity by increasing the price of labour and housing, which then pushes the cost of living upward.

Projects anticipated to overlap with the Construction of Ksi Lisims LNG include construction of the hydroelectric line that will supply power to Ksi Lisims LNG, construction of the Prince Rupert Gas Transmission project, BC Hydro's upgrades to the region's electric transmission infrastructure, and operation of LNG Canada. Ksi Lisims LNG's Operations phase is anticipated to also overlap with the construction and operation of Cedar LNG, operation of Port Edward LNG, and may overlap with the currently unknown schedules for construction and operation of Totem LNG and Skeena LNG. [Table 7.10-42](#) of the Revised Application provides a full accounting of the projects considered in the cumulative effects assessment.

The EAO assesses a moderate potential that cumulative effects that are high in magnitude would occur during periods of time in which Ksi Lisims LNG's Operations phase, and particularly its Construction phase, overlaps with periods of high labour activity on other projects in the region. These effects may shift in magnitude as workforces on the various projects ramp up and down over time. Ksi Lisims LNG's direct contribution to these cumulative effects would cease upon its decommissioning, although the potential shift in demographics and economic activity in the region suggest that the cumulative effects would be irreversible.

The EAO concludes that not significant cumulative effects to employment and the economy are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

### 18.12.9. Conclusion

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the employment and economy Valued Component. This conclusion considers the information and analysis presented in this

chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 17 (Socioeconomic Management Plan) and Condition 11 (Community Feedback Process); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

The EAO also acknowledges that Ksi Lisims LNG would contribute to a number of positive effects to employment and the economy in the region, including.

- Increased regional employment;
- Increased regional economic activity (e.g., the gross domestic product);
- Increased government revenues in the form of taxes and royalties;
- Economic potential for regional businesses, including opportunities for increased revenues, and opportunities for establishing new businesses; and
- Increased consumer spending from direct, indirect and induced workforce.

## 18.13. Infrastructure and Services

### 18.13.1. Summary

Well-functioning infrastructure and services enable communities to provide facilities and amenities that support the functioning and well-being of their residents. The Proponents identified potential effects that Ksi Lisims LNG could introduce to neighbouring communities' infrastructure and services, the communities' housing and accommodations, and transportation infrastructure. The Proponents also described mitigation measures aimed at reducing those effects.

Reviewers from the Technical Advisory Committee raised concerns about the potential for increased demand on constrained infrastructure and services; increased demand for housing and temporary accommodations; and effects linked to increased traffic. To address these issues, the EAO proposed the following Certificate Conditions: Condition 17 (Socioeconomic Management Plan), Condition 11 (Community Feedback Process), and Condition 18 (Road Transportation Management Plan). In addition, the Proponents are required to participate in and/or contribute to a regional and social and economic management and monitoring committee of the Proponents is required under Condition 21 (Regional Cumulative Effects Initiatives) if such a committee (or its equivalent) is created by the provincial or local government.

The EAO then assessed the potential effects to infrastructure and services given the Proponents' assessment, the proposed mitigation measures, and proposed Certificate conditions. Given these measures, the EAO found that there would be residual effects resulting from changes in demand for infrastructure and services, transportation infrastructure, and accommodation availability but concluded that these residual effects would not represent significant adverse effects to Infrastructure and Services.

The effects on infrastructure and services from Ksi Lisims LNG are expected to overlap cumulatively with other past, present, and reasonably foreseeable future projects and activities within the local and Regional Assessment Area. The EAO concluded that the potential for cumulative effects from these projects and activities was considered not significant in consideration of other past, present and future reasonably foreseeable future projects and activities.

Factors not considered in this section include the following:

- Potential adverse effects on health and medical services and infrastructure covered in [chapter 18.11](#) (community health and wellness), and
- Potential adverse effects of cost of living, including cost of housing and accommodations, covered in [chapter 18.12](#) (employment and economy).

### 18.13.2. Assessment Boundaries

The spatial boundaries consider the geographic extent over which Ksi Lisims LNG may affect infrastructure and services due to the Project's demand for infrastructure and services, or due to project-related changes to population, demographics, employment, and income.

- The Local Assessment Area includes: Nisga'a Lands (including all Nisga'a Villages), the City of Prince Rupert, the District Municipality of Port Edward, the North Coast A Regional District Electoral Area, Lax Kw'alaams 1 IR, and S ½ Tsimpsean 2 IRI, the City of Terrace, Kitsumkaylum 1 IRI, Kshish 4 IRI, Kulspai 6 IRI, Kitselas 1 IRI, and Regional District of Kitimat-Stikine Electoral Areas C (Part 1) and E.
  - The Local Assessment Area also includes the highway corridors between Terrace and Nisga'a Lands (Highway 113/Nisga'a Highway), between Prince Rupert and Terrace (Highway 16), and between Northwest Regional Airport and Terrace (Highway 37).

- The Regional Assessment Area includes the Local Assessment Area but expands to include Kitimat-Stikine A Regional District Electoral Area and the District of Stewart.

Potential effects to infrastructure and services are not expected to occur as a result of marine shipping or construction and operation of the transmission line. As such, the open water assessment area and the transmission line assessment area are not included in the spatial boundaries for the infrastructure and services valued component.

The temporal boundaries for the assessment of infrastructure and services include the following phases:

- Construction: approximately 3-4 years,
- Operations: a minimum of 30 years, and
- Decommissioning: approximately 12 months.

Project components and the anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.13.3. Existing Conditions by the Proponents

An overview of existing conditions for infrastructure and services was provided by the Proponents in [section 7.12](#) of the Revised Application. This section aims to provide a description of the existing conditions of infrastructure and services most likely to be affected in communities located near Ksi Lisims LNG, with a focus on the population centres around Terrace and Prince Rupert. The Proponents anticipate that Terrace and Prince Rupert are likely to experience the highest concentration of effects. Health and social services are described in [chapter 18.11](#) (community health and wellness) of this Report.

Information on existing conditions was collected primarily through secondary sources, including socioeconomic and Indigenous Knowledge studies, regulatory applications and reviews of reports for other major projects, statistical information, and local media. Interviews with key informants were conducted to confirm secondary data and collect additional primary data. To the extent possible, the Proponents sought information that is disaggregated (i.e., broken down by age, race, ethnicity, income, education, etc.) to support an understanding of how existing conditions may differ among diverse groups.

#### 18.13.3.1. Population

Census data shows that between 2016 and 2021, the populations of Terrace and Prince Rupert grew by 3.2 percent and 0.7 percent respectively. This data, however, reflects only permanent residents and fails to account for the area's temporary population, which includes individuals temporarily residing in the area for reasons of employment, and other visitors. Because the capacity of infrastructure and service providers is typically sized and funded to match the residential population, a sudden increase in the temporary population of an area can result in a strain on such providers. Terrace, which serves as a hub for forestry, fishing, mining, and industrial development in the region, tends to experience disproportionate strains as a result of economic activities in surrounding communities.

Approximately a quarter of the population of Terrace and more than 40 percent of the population of Prince Rupert reported having Indigenous identity. Nearly all the populations of the First Nation communities within the Local Assessment Area identified as Indigenous. Many members residing in Indigenous communities in the region, including some communities that are not included in the local and Regional Assessment Areas, rely on the infrastructure and services of Terrace, Prince Rupert, and Port Edward.

#### 18.13.3.2. Regional Infrastructure, Services and Utilities

Water distribution and sewage systems in Terrace, Prince Rupert, and Port Edward are sufficient to meet current capacity demand. Neither Terrace nor Port Edward report constraints on water or sewage treatment capacity but Prince Rupert

has experienced challenges linked to distribution systems in need of repair and/or replacement. In recent years, households in Prince Rupert have periodically received boil water advisories, with some advisories lasting for months. Prince Rupert has work underway to upgrade its aging sewage and water treatment infrastructure.

The Forceman Ridge Waste Management Facility serves residences and businesses in the greater Terrace area and was estimated to have an additional 85 years remaining in its lifespan. Between 2019 and 2020, the facility noted a 116 percent increase in total waste disposal, mostly from industrial projects from outside of the Terrace area. The Prince Rupert landfill has similarly seen substantially increased waste volumes, which required the City of Prince Rupert to expand the landfill to extend its lifespan by approximately 30 years.

### Education and Childcare

The Coast Mountains School District 82 provides education services in Terrace, including serving the learning needs of the urban Indigenous population in the community. Numerous students of Nisga'a heritage from the Nass Valley also attend school in Terrace. Enrollment with Coast Mountain School District has been in decline since 2010 and as of 2022 has the capacity to increase its student population by approximately 40 percent. The Prince Rupert School District 52, which serves communities of Prince Rupert and Port Edward and has similarly faced declining enrolment and has the capacity to increase enrollment by approximately 30 percent.

Primary and secondary students living on Nisga'a Lands are served by School District 92 (Nisga'a), which is part of B.C.'s publicly funded school system. Kitselas First Nation offers educational services on-reserve to support their community members. The Kitsumkalum Education Department offers educational services to support Nation members living on- and off-reserve achieve their educational goals. Two post-secondary institutions serve the Regional Assessment Area: the Coast Mountain College and the University of Northern British Columbia.

Parents of young children in Terrace and Prince Rupert experience constraints in the availability and affordability of childcare services. Childcare service providers in Prince Rupert report being unable to meet the current demand, which had reportedly grown in recent years as nearby industrial projects have drawn families to the area. In Terrace, a needs assessment commissioned by the city identified an immediate need for 720 childcare spaces, citing staff recruitment and retention as key constraints.

### **18.13.3.3. Emergency Services**

#### Ambulance Services

Ambulance services in Terrace and Prince Rupert have experienced increased demand in recent years. To meet the demand, both the Terrace and Prince Rupert Fire Departments have been increasingly called upon to respond to medical calls in addition to fire calls. This increased draw on the fire departments' capacity has led to increased overtime costs and periodic ambulance delays. Recently, the Prince Rupert City Council supported limiting fire department support to critical calls only and are seeking avenues to recover costs when firefighters are needed to drive the ambulance. Beyond managing its existing resource constraints, the British Columbia Emergency Health Services have expressed concerns about responding to industrial sites in remote areas, as the time required to travel to and from these remote areas could leave home communities with fewer emergency staff and resources for long periods of time.

The Revised Application notes that Nisga'a Lisims Government's Department of Enforcement and Emergency Response supports ambulance units in the Nass Area, including the three ambulance units housed in Gitlaxt'aamiks, Laxgalts'ap, and Gitwinksihlkw. Gingolx does not currently operate emergency response transportation but, rather employs a resident nurse and emergency responders who can stabilize patients.

## Fire Protection

Fire protection and emergency response services are provided by the Terrace and the Prince Rupert Fire Departments within their respective municipal boundaries. The two fire departments have a mutual aid agreement to address large-scale incidents and serious highway-related incidents (e.g., along Highway 16), when required. Each of the Nisga'a villages have fire departments, including Laxgalt'ap Village, which is equipped with a First Responder and Rescue One truck and provides first responder, fire, and roadside emergency response services to all Nisga'a communities.

## Police Services

Police Services in the Local Assessment Area are delivered by two integrated detachments<sup>31</sup> of the Royal Canadian Mounted Police (RCMP) – one located in Terrace and the other in Prince Rupert. Between 2015 and 2020, Terrace's RCMP saw decreases in crime rates and caseloads, although calls for service appear to have increased in the subsequent reporting periods. In Prince Rupert, the RCMP reports marked increases in crime rates from 2010 to 2014 and higher per officer caseloads as compared to the provincial average. The RCMP detachment in Stewart services Highway 37a and the section Highway 37 between the 75 km and 309 km markers.

The RCMP Lisims-Nass Valley detachment serves the four Nisga'a Villages. One First Nations Community Police Officer provides services to Kitselas and Kitsumkalum.

### 18.13.3.4. Housing and Accommodations

The Greater Terrace Housing Needs Assessment (2020) forecasts a significant shortage of housing supply from 2020 through 2025, with the potential for housing deficits to persist beyond 2025, should economic development in the region remain high in the following years. The report links the constraints on the availability and affordability of housing to industrial development, noting that these constraints further challenge employers in attracting and retaining staff. The North Coast Regional District's Housing Needs Regional Study (2022) reports upward pressure on the cost of housing, linked to buyers from outside of the Regional District and short-term rentals taking the place of longer-term rentals. Kitsumkalum First Nation reports that finding land suitable for housing is an ongoing issue with 20 families on a waitlist in 2016 and a projected increase to between 40 to 65 families by 2031. Assessments of housing conditions in various Indigenous communities in the Local Assessment Area reveal that the proportion of homes that are in need of major repair exceeds that of Prince Rupert and Terrace.

Rental vacancy rates for Terrace and Prince Rupert have fluctuated since 2010, but consistently within rates that suggest a healthy rental market. Throughout that time period, however, rental prices have steadily increased. As of 2021, 16.9 percent of households in Terrace and 20.7 percent of households in Prince Rupert report spending 30 percent or more of household income on shelter, with renters representing a disproportionate share of these numbers.

As of August 2022, there were 79 hotels, motels, bed and breakfasts, lodges, cabins, recreational vehicle parks and campsites in Terrace, Prince Rupert and their surrounding communities; totalling approximately 2,000 rooms and sites. The Nisga'a villages host an additional 17 rooms and 56 campsites. Two workforce accommodation sites in the Local Assessment Area offer capacity for a combined total of 500 individuals.

There are several social housing services in the Local Assessment Area, but sources report that the supply generally fails to meet the growing need for social and emergency housing options. Both Terrace and Prince Rupert have social housing and emergency shelter beds, but report increased demand, long waitlists, and a growing number of people experiencing

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<sup>31</sup> An integrated detachment is comprised of two or more provincial and/or municipal police units working out of the same detachment building. Both Terrace and Prince Ruperts' RCMP detachments are integrated municipal/provincial detachments.



homelessness. Prince Rupert has seen a 66 percent increase in homelessness between 2018 and 2021, with a disproportionate share of those experiencing homelessness identifying as Indigenous.

#### **18.13.3.5. Transportation**

The primary road infrastructure in the Local Assessment Area includes:

- Highway 16, which connects Prince Rupert to Terrace and beyond;
- Highway 113/Nisga’a Highway, which extends from west of Terrace to Gingolx and provides paved access to the settlements of the Nisga’a Nation; and
- Highway 37, which connects Terrace to Kitimat.

Car accident statistics for communities in the Local Assessment Area are stable from 2017 to 2019. The number of car accidents decreased in 2020, with the exception of Highway 113, which experienced an uptick in crashes. Data shows an increase in crashes in Terrace and Prince Rupert from 2020 to 2021.

The Northwest Regional Airport located south of Terrace serves as the region’s hub for air transportation. Between 2013 and 2019, the airports’ passenger traffic increased approximately 40 percent but subsequently decreased in 2020 and 2021 as a result of the COVID-19 pandemic. Commercial air traffic increased 22 percent between 2018 and 2019, with the increase attributed to transiting project workforce.

The Port of Prince Rupert currently has six main terminals in operation, with an expansion poised for completion in 2024 to increase its container-handling capacity. A key feature of the port’s transportation infrastructure is its a direct connection to Canadian National Railway Company’s northern mainline, which links the port to destinations across Canada and the Midwest of the United States.

#### **18.13.4. Potential Project Effects by the Proponents**

Ksi Lisims LNG would be located in a remote island setting, which would limit its interactions with many utilities and services and would require the workforce to travel to the site for extended rotations. Materials and equipment would be transported by land along Highways 16 and 113/Nisga’a Highway and/or by marine vessel from Gingolx, Prince Rupert, or potentially from other coastal ports.

Construction of Ksi Lisims LNG is expected to last approximately three to four years, beginning in 2025 or later. The construction workforce is anticipated to average between 400 and 450 people, reaching a peak of approximately 800 for roughly one year. The construction workforce would be housed in a fully self-contained floating camp (i.e., a “floatel”) at the project site, which would provide a potable water supply, electrical power, communications and waste containment systems. The construction workforce would be bussed from park-and-ride locations in local communities to either Gingolx, Prince Rupert, or Port Edward for transfer to the site via marine vessels.

Following commissioning, Ksi Lisims LNG would be in operation for 30 years, with a permanent workforce of between 150 and 250 individuals on-site. Every three to five years, Ksi Lisims LNG would perform scheduled maintenance work that would require a “turnaround workforce” of approximately 75 to 150 additional individuals on-site. Both the operations and periodic turnaround workforce would be housed in on-site accommodations for the duration of their rotations.

The Proponents note that the workforce would be recruited locally as much as possible, although it is anticipated that certain specialized trades may need to be sourced from elsewhere in B.C., Canada, or internationally. To the extent that members of its workforce are sourced from outside of the Local Assessment Area, the Proponents assume that members of the construction workforce would generally not relocate to the area with their families, and that few members of the 150 to 250-person operations workforce would relocate with their families.

A variety of infrastructure and services have the potential to be affected, both through Ksi Lisims LNG’s direct demand on infrastructure or services, or as a result of population growth related to the project. The Proponents identified the following potential effects to infrastructure and services due to Ksi Lisims LNG:

- Increased demand for infrastructure and services, including community recreation facilities, education, childcare services, and waste management facilities;
- Increased demand for emergency services, linked in part to increased traffic volumes and to Ksi Lisims LNG’s remote location;
- Increase in demand for housing and other forms of accommodations; and
- Increased use of regional transportation infrastructure (e.g., Highways 16 and 113/Nisga’a Highway and regional airports).

#### 18.13.5. Proposed Mitigation Measures by the Proponents

In addition to following best management practices, the Proponents identified and committed to the following relevant mitigation measures:

- Develop and implement a worker code of conduct, including ethics, inclusivity and respectful workplace training;
- Provide cultural awareness training to all personnel and contractors;
- Security personnel and access control will be provided at the site;
- Develop and implement emergency management and response, including fire prevention and protection measures. Appropriate fire response equipment and personnel trained to use it will be maintained at the site;
- Develop and implement waste management measures to manage waste, including hazardous and construction waste, recyclables, and wildlife attractants;
- Develop and implement a community feedback tool or process to receive and address community suggestions, concerns, and complaints;
- Develop and implement workforce strategies that support the hiring of a British Columbian or Canadian resident construction workforce in the building of those components of Ksi Lisims LNG that will be constructed and/or assembled in Canada;
- Develop and maintain a database of Nisga’a businesses and contractors, as well as other Indigenous, local and regional businesses and contractors. Use the database to inform businesses and contractors of procurement opportunities;
- Develop and implement gender equity and diversity policies that focus on hiring Nisga’a Nation members, local and Indigenous persons and women to increase Project employment among underrepresented populations;
- Develop and implement procurement and contracting strategies to facilitate economic participation by local, regional, British Columbian and Canadian suppliers, contractors, and service providers;
- Develop and implement traffic safety measures for project-related travel between Prince Rupert, Terrace, and Gingolx;

As part of the substituted process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform IAAC’s draft potential federal conditions. The Key Mitigation Measures related to infrastructure and services are outlined in [Appendix 2](#).

### 18.13.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the infrastructure and services Valued Component for Ksi Lisims LNG were identified.

#### 18.13.6.1. Increased demand on constrained infrastructure and services

Northern Health, Kitsumkalum First Nation, Gitxaala Nation, Gitga'at First Nation, the City of Terrace, and members of the public raised concerns about the impact of population growth on infrastructure and services, many of which already operate at or beyond capacity. In particular, the City of Terrace and Kitsumkalum First Nation noted that Terrace's position as the region's hub means that increases in population throughout the region tends to result in Terrace receiving a disproportionate share of strains on the city's already-strained social, emergency, medical, and recreational services, relative to the revenue and other benefits that Terrace receives.

The Proponents responded that Ksi Lisims LNG's workforce and procurement strategies, including its intent to hire as locally as the local workforce's interest and qualifications permit, would help to minimize the potential population growth. The Proponents further noted that Ksi Lisims LNG would develop a set of mitigation measures designed to encourage a high standard of conduct among its employees both on-site and in the community, including a community feedback tool and an adaptive socioeconomic management plan intended to correct identified issues and continuously improve management practices. The Proponents also noted that they would be seeking input from First Nations when developing management plans including on the development of Socioeconomic Management Plan.

The Proponents also noted that Ksi Lisims LNG's remote location, workforce accommodations, and shuttle service, would help to limit the construction and operation workforces' interactions with onshore infrastructure and services. Further, the remote location would discourage family members from relocating to the area, which would also limit potential population growth in neighbouring communities.

Northern Health, Gitga'at First Nation, and Kitsumkalum First Nation challenged the Proponents' assumption that members of Ksi Lisims construction or operations workforces would not be joined by families to settle in local communities. Recognizing that the site is remote and that the Proponents intend to provide housing for its Construction and Operations workforce for the duration of their work rotations, these Technical Advisors observed that many workers on other projects in the region that similarly provided housing to its on-rotation workforce were indeed joined by family members who relocated to the area on a short- or long-term basis.

In consideration of the concerns raised, the EAO has proposed Condition 17 (Socioeconomic Management Plan), Condition 11 (Community Feedback Process), Condition 18 (Road Transportation Management Plan). In addition, the Proponents are required to participate in and/or contribute to a regional and social and economic management and monitoring committee of the Proponents is required under Condition 21 (Regional Cumulative Effects Initiatives) if such a committee (or its equivalent) is created by the provincial or local government.

#### 18.13.6.2. Increased demand for housing and temporary accommodations

Gitga'at First Nation, Kitsumkalum First Nation, and the City of Terrace raised concerns about the critical shortage of available and affordable housing in Prince Rupert and Terrace, noting that their experience with other projects in the region suggest that Ksi Lisims LNG would likely cause impacts to housing that would be larger in magnitude and longer lasting than those predicted in the Revised Application. Kitsumkalum First Nation and Gitga'at First Nation further cautioned that changes to the availability and affordability of housing in Prince Rupert and Terrace could increase the demand for housing in smaller communities and within Indigenous communities, many of which struggle to meet existing demand.

Gitga'at First Nation noted that the effects of limited available or affordable housing are experienced disproportionately by Indigenous individuals and members of other subpopulations that are vulnerable to the changes in housing costs. Gitga'at First Nation noted that research conducted by B.C. Housing shows that through 2020 and 2021, over 80 percent of the population experiencing homelessness in Prince Rupert and Terrace identified as Indigenous.<sup>32</sup>

The Proponents indicated that by providing housing to Ksi Lisims LNG's Construction and Operations workforce, combined with its contracting and procurement strategies designed to preferentially engage the local workforce, will minimize the potential for impact on housing in the region.

In consideration of the concerns raised, the EAO proposes Condition 17 (Socioeconomic Management Plan) designed to address and mitigate housing being used by workers.

### **18.13.6.3. Effects linked to increased traffic**

Kitsumkalum First Nation and the public raised concerns about the effects linked to the land transportation of workforce and construction materials, and indirect effects to traffic linked to increased disposable incomes in the region. Kitsumkalum First Nation expressed concern for the increased risk of vehicle collisions and wildlife strikes, which have the potential to further stress the region's already-strained emergency and health services. Kitsumkalum First Nation also noted that Highway 113/ Nisga'a Highway is narrow, winding, not presently in good condition, has few safe pull-outs to facilitate passing, and has limited cellular service.

The Proponents noted that the number of Project-related vehicle trips on Highway 113/ Nisga'a Highway would range from an estimated six to nine trips per week during Construction (peaking at 11 to 17 per week), and approximately four to six trips per week during Operations. This estimate relies on the Proponents' intent to shuttle its workforce from local communities to marine ferry locations to reduce the potential for traffic congestion along Highway 16 and Highway 113/ Nisga'a Highway. The Proponents further noted that Highway 16 would also be used to transport personnel and supplies but that an estimate of vehicle trips was not yet available.

The Proponents expressed an intent to include mitigation measures designed to reduce Project-related demands on the road system in its socioeconomic management plan and indicated interest in working with members of Indigenous communities to address increased traffic on Highway 113/ Nisga'a Highway. Kitsumkalum First Nation requested that the Proponents' traffic-related mitigation measures apply to sub-contractors, suppliers, and shuttle service providers.

In consideration of the concerns raised, the EAO has proposed Certificate Condition 18 (Road Transportation Management Plan) requiring the Proponents to assess traffic impacts resulting from Project-related activities, and to develop and implement Condition 17 (Socioeconomic Management Plan) and Condition 11 (Community Feedback Process).

### **18.13.7. The EAO's Characterization of Residual Effects**

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would result in the following residual adverse effects on infrastructure & services:

- Change in infrastructure and services (specifically, effects on emergency services, utilities and waste management, and childcare);
- Change in accommodation availability and affordability; and

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<sup>32</sup> Homelessness Services Association of BC. (2021, December). 2020/21 Report on Homeless Counts in B.C. Retrieved from <https://www.bchousing.org/publications/2020-21-BC-Homeless-Counts.pdf>

- Change in transportation infrastructure.

The EAO’s characterization of the expected residual effects of the Project on infrastructure & services is summarized below, as well as the EAO’s level of confidence in the effects determination (including their likelihood and significance).

Table 57: Summary of Residual Effects for the infrastructure and services valued component

Residual Effect	Assessment Rating*	Significance and Rationale
<p><b>Change in infrastructure and services</b></p> <p>This effect would include an increase in demand on existing infrastructure and services, including childcare, emergency and safety services, education, recreation and utilities. The effect could occur as a result of demand from Ksi Lisims LNG’s Construction or Operations workers transiting population centres, or population growth linked to the project.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Medium-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionally distributed</b></p> <p>Risk (likelihood and consequences): <b>Moderate</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>Communities neighbouring Ksi Lisims LNG, including Terrace and Prince Rupert, have capacity for growth for some infrastructure and services but are currently experiencing critical constraints on the ability to meet current demand for childcare and ambulance services, and a growing demand on fire and police services in some areas. The remote location of Ksi Lisims LNG and the provision of on-site accommodations and services would reduce interactions between the project’s workforce and neighbouring communities, which would moderate the potential demand on infrastructure and services. This remote location could, however, increase the risk of transportation-related instances that could require emergency services, and could magnify the effect of situations requiring emergency assistance due to the distance that emergency services must travel to respond.</p> <p>Residual adverse effects to infrastructure and services would be local to communities neighbouring Ksi Lisims LNG, and largely centred in Terrace, Prince Rupert, and Gingolx. Effects would be continuous throughout Ksi Lisims LNG’s construction and operations, although the magnitude of some effects would shift downward as the construction workforce disperses and Ksi Lisims LNG’s operations phase progresses. Residual effects to infrastructure and services are expected to be reversed upon Ksi Lisims LNG’s decommissioning at which time its workforce would no longer be required.</p> <p>Residual adverse effects would be experienced disproportionately among distinct human populations, including populations that already experience challenges in accessing infrastructure and services and would be increasingly affected by competition for such services. These populations include low-income families and Indigenous women requiring reliable transportation, and individuals requiring childcare. Additionally, distinct populations, including Indigenous women and children, could be vulnerable to safety issues that may arise from increased activity and population density in communities that may serve as transit hubs and/or experience population growth as a result of the project.</p> <p>Based on Ksi Lisims LNG’s remote location, mitigation measures, and the EAO’s proposed conditions, many adverse effects to infrastructure and services could be avoided, but there remains a medium likelihood of residual adverse effects. The EAO’s certainty in</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>this assessment is moderate as there remain a number of unknown external variables that would influence the degree to which Ksi Lisims LNG would influence demand on infrastructure and services, including:</p> <ul style="list-style-type: none"> <li>• The scale of population growth in neighbouring communities,</li> <li>• The specific mitigation measures that would be applied in adaptive management, and</li> <li>• The effectiveness of these measures.</li> </ul> <p>Managing effects on infrastructure and services was identified as highly important to members of the technical advisory committee and the public.</p>
<p><b>Change in accommodation availability and affordability</b></p> <p>Increased temporary or permanent population in communities neighbouring Ksi Lisims LNG would place additional demand on the availability of housing and temporary accommodations.</p>	<p>Context (resilience): <b>Low</b></p> <p>Magnitude: <b>Low to medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Medium-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionally distributed</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>Terrace and Prince Rupert, which will serve as the transit and supply hubs for Ksi Lisims LNG, are currently experiencing critical housing shortages and therefore have low capacity to support additional demand. Ksi Lisims LNG’s remote location, intent to hire from the local workforce, and provision of on-site accommodations for its on-rotation workforce would limit the potential that workers would seek to relocate to the area. Some specialized members of the workforce would, however, be sourced from outside the region, while others may opt to relocate, which would place an additional demand on accommodation availability, causing a potential effect of low to medium magnitude.</p> <p>Residual effects on housing and accommodations would be local to communities neighbouring Ksi Lisims LNG, and largely centred in Terrace, Prince Rupert, and Gingolx. Effects would be continuous throughout Ksi Lisims LNG’s construction and operations and would be reversed upon Ksi Lisims LNG’s decommissioning at which time its workforce would no longer be required.</p> <p>Increased demand for housing may affect distinct populations differently as a decrease in the number of available housing options tends to place upward pressure on the cost of housing (in price or rent), which can disproportionately affect low-income families, people on fixed incomes, and renters. Elderly persons, Indigenous persons, and young persons are disproportionately represented within these categories.</p> <p>The Proponents’ project location, design, and mitigation measures would likely work together to lower the risk of potential for adverse effects to housing and accommodation availability. But recognizing the uncertainties related to the ultimate composition of Ksi Lisims LNG’s construction and operations workforce (i.e., the proportion that would be drawn from outside of the region to supplement the</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>local workforce), the number of family members that may also relocate to the region, the type of accommodations to be sought by any in-migrating members of the workforce (e.g., temporary or permanent accommodations), and experiences with housing effects stemming from other industrial development projects in the region, the EAO assesses a moderate level of uncertainty in this assessment.</p> <p>Managing the effects on housing and accommodations was identified as highly important to a number of members of the technical advisory committee and the public.</p>
<p><b>Change in transportation infrastructure</b></p> <p>Transportation of Ksi Lisims LNG’s workforce and other materials would increase demand on transportation infrastructure in the region. Increased traffic on Highway 113/Nisga’a Highway is of particular concern. Ksi Lisims LNG would bring an increase in air traffic at the Northwest Regional Airport, which has increased in recent years due to industrial projects in the region.</p>	<p>Context (resilience): <b>Moderate</b></p> <p>Magnitude: <b>Medium</b></p> <p>Extent: <b>Local</b></p> <p>Duration: <b>Medium-term</b></p> <p>Frequency: <b>Continuous</b></p> <p>Reversibility: <b>Reversible</b></p> <p>Affected Populations: <b>Disproportionally distributed</b></p> <p>Risk (likelihood and consequences): <b>Low</b></p> <p>Uncertainty: <b>Moderate</b></p> <p>Importance: <b>High</b></p>	<p><b>Not significant</b></p> <p>Transporting Ksi Lisims LNG’s workforce and some portion of its supplies and materials would employ two key roadways: Highway 16, which is in reasonable condition and can support increased traffic, and Highway 113/Nisga’a highway, which technical advisors indicate would require improvements to safely support increased traffic. The Northwest Regional Airport in Terrace has seen increased demand in recent years (with the exception of 2020 and 2021, which were affected by the COVID-19 pandemic) and is currently undergoing expansion to support increased growth. These factors suggest a moderate degree of resilience to changes in demand.</p> <p>The Proponents note that project-related vehicle trips would be a maximum of 17 per week during construction and six per week during operations, assuming that the project workforce is bussed to the ferry transfer points rather than using personal vehicles. The extent to which the Proponents must hire transient workers to supplement the local workforce would place additional demand on the airports. Together, these effects are assessed to be medium in magnitude.</p> <p>Residual adverse effects to transportation infrastructure would be local to communities neighbouring Ksi Lisims LNG and the road infrastructure that connects them. Effects would be continuous throughout Ksi Lisims LNG’s construction and operations, although the magnitude of effects would shift downward as the construction workforce disperses and Ksi Lisims LNG’s operations phase progresses. Residual effects to transportation infrastructure are expected to be reversed upon Ksi Lisims LNG’s decommissioning at which time its workforce would no longer be required.</p> <p>Increased traffic and wear and tear along Highway 113/Nisga’a Highway are likely to disproportionately affect members of Kitsumkalum First Nation and Nisga’a Nation as this is the road that provides access to the Nisga’a Villages and Kitsumkalum lands. Considering the Proponents’ projected traffic volumes, together with the EAO’s condition requiring the implementation of a shuttle service for the workforce, restrictions on personal vehicle use, and a traffic assessment for Highway 113/Nisga’a Highway, the EAO</p>

Residual Effect	Assessment Rating*	Significance and Rationale
		<p>assesses that the risk of adverse effects on transportation infrastructure is low.</p> <p>A number of unknown external variables influence the degree to which Ksi Lisims LNG would influence transportation infrastructure in the region, including:</p> <ul style="list-style-type: none"> <li>• The outcome of a traffic assessment for Highway 113/ Nisga’a Highway;</li> <li>• The accuracy of projected traffic volumes during construction and operation, and</li> <li>• The workforce’s uptake of shuttle service.</li> </ul> <p>These factors contribute to the EAO’s uncertainty rating of moderate.</p> <p>Managing effects on transportation infrastructure was identified as being of importance to members of the Technical Advisory Committee and the public.</p>
<p>* Note: Criteria and assessment ratings are defined in <a href="#">Appendix 3 - Residual Effects Characterization Definitions</a></p>		

**18.13.8. Cumulative Effects Assessment**

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are eight to twelve existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG, as described [Table 7.12-25](#) of the Revised Application.

The following pathways for cumulative effects were assessed further for infrastructure and services in [section 7.12.11](#) of the Revised Application:

- Increased temporary and permanent population placing additional demands on infrastructure and services in the Regional Assessment Area;
- Increased temporary and permanent population placing additional demands on housing availability and upward pressure on cost of housing;
- Transportation of projects’ supplies and personnel increasing regional traffic on roadways and at airports; and
- Increased temporary and permanent population causing an increase in regional road traffic.

Projects that are most likely to interact cumulatively with Ksi Lisims LNG’s residual effects to infrastructure and services are those projects for which the labour forces would be in the region at the same time as Ksi Lisims LNG’s workforce; which could increase the region’s population, traffic and demand for housing, infrastructure and services. Projects anticipated to overlap with the construction of Ksi Lisims LNG include construction of the hydroelectric line that will supply power to Ksi Lisims LNG, construction of the Prince Rupert Gas Transmission project, BC Hydro’s upgrades to the region’s electric transmission infrastructure, and operation of LNG Canada. Ksi Lisims LNG’s operations phase is anticipated to also overlap with the construction and operation of Cedar LNG, operation of Port Edward LNG, and may overlap with the currently unknown schedules for construction and operation of Totem LNG and Skeena LNG.



The assessment of the projects' temporal overlap on Ksi Lisims LNG's projected construction and operation schedule, which anticipates construction to begin in the second half of 2025, with commissioning anticipated to begin in 2027. The timing of construction and operation for other reasonably foreseeable projects may shift, which could alter the potential for cumulative effects.

The EAO assesses a moderate potential for cumulative effects that are medium in magnitude to regional infrastructure, services, housing, and traffic. Ksi Lisims LNG's provision of on-site housing and shuttle service for its workforce would mitigate the potential for individuals traveling to the region to impose additional pressure on the region's infrastructure, services, housing, and roadways. The EAO's Certificate Condition 18 (Road Transportation Management Plan) would further mitigate the potential for cumulative effects.

The EAO concludes that not significant cumulative effects to infrastructure and services are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### **18.13.9. Conclusion**

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the infrastructure and services Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including Condition 17 (Socioeconomic Management Plan), Condition 11 (Community Feedback Process), Condition 18 (Road Transportation Management Plan), the Proponents participation in Condition 21 (Regional Cumulative Effects Initiatives); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 18.14. Archaeological and Heritage Resources

### 18.14.1. Summary

Archaeological and Heritage Resources consist of physical evidence of ancient plants and animals (fossils), or cultural materials including ancient campsites, culturally modified trees, historical structures, and burial sites. These resources are non-renewable and susceptible to damage from land-altering activities, and have value to Indigenous peoples, the public and other stakeholders.

The Proponents assessed the potential effects to archaeological and heritage resources (including damage to historical, archeological, and palaeontological sites) through a review of Indigenous knowledge and Indigenous use information, a desktop review of recorded historic places, a desktop review of paleontological potential, and Project-specific archaeological field studies consisting of a preliminary field reconnaissance, followed by two archaeological impact assessments: one of the terrestrial footprint of Ksi Lisims LNG on the Nisga’a Category A Lands, and the other of the intertidal footprint of Ksi Lisims LNG.

Potential effects to archaeological and heritage resources identified by the Proponents included the loss of information about or alteration to Project site contents or context, disturbance to or destructions of archaeological and heritage resources through site clearance and ground disturbance resulting from construction, and the possibility for chance find encounters where previously unknown archaeological and/or heritage resources are discovered during ground disturbing activities.

The main issues raised by reviewers were the potential effects to archaeological and heritage resources within marine, intertidal, and shoreline areas resulting from vessel wake and any accidents or malfunctions, and the destruction of post-1846 culturally modified trees which are not protected by the *Heritage Conservation Act* as archaeological sites and thus not subject to alteration permits but are culturally important. Additionally, reviewers identified the potential for ground disturbance from Ksi Lisims LNG activities to affect undiscovered historical, archaeological, and palaeontological sites, particularly along the Transmission Line Assessment Area where archaeological studies have not yet been completed.

The EAO assessed the potential effect to archaeological and heritage resources and the proposed Certificate Condition 9 (Construction Environmental Management Plan) requiring the Proponents to include an archaeological and heritage resources management incorporating chance find protocols. The plan would require the development of a chance finds procedure for archaeological and heritage resources to mitigate the effects of any newly discovered sites.

Additionally, as identified in the [Joint Permitting / Regulatory Coordination Plan](#), pre-1846 archaeological sites and remains are protected in B.C. under the *Heritage Conservation Act*. Permits are required for inspections, investigations, and alterations of these sites.

Given the assessment, mitigation measures, and proposed condition, the EAO found that there would not be a significant adverse effect to archaeological and heritage resources.

As the Proponents did not anticipate any negative residual effects on archaeological and heritage resources, there was no assessment of cumulative effects in the Application. The EAO did not identify additional potential for existing and reasonably foreseeable projects and activities to act cumulatively with Ksi Lisims LNG for archaeological and heritage resources.

### 18.14.2. Assessment Boundaries

The spatial boundaries for the archaeological and heritage resources assessment included the following areas:

- Ksi Lisims LNG’s terrestrial footprint of all the proposed project components including overburden storage areas, anchor points, access road corridors, and marine features, plus a 10 m buffer. This was considered both the Local Assessment Area and Regional Assessment Area (Local Assessment Area/Regional Assessment Area).
- The Transmission Line Assessment Area is the marine and/or terrestrial area within which a portion of the transmission line between Ksi Lisims LNG and Nisga’a Lands (as defined under the Nisga’a Treaty) is proposed to be developed. The transmission line within the transmission line Assessment Area would connect via an additional transmission line that would be developed on Nisga’a Land to the BC Hydro grid.

As identified by the Proponents in Table 6.1 (section 6.4) the Open Water Assessment Area is not applicable for this Valued Component.

The temporal boundaries for Ksi Lisims LNG include:

- Construction (approximately 3-4 years) because potential effects on archaeological and heritage resources are expected to be fully mitigated prior to or during Construction and are thus not considered for the Operation or Decommissioning phases of Ksi Lisims LNG.

Project components and anticipated duration of activities are described in detail in [section 2.2](#) (project description and schedule) of this Report.

### 18.14.3. Existing Conditions by the Proponents

The existing archaeological and heritage resources conditions in the region were assessed in [section 7.15](#) of the Revised Application by the Proponents and are summarized here.

The Proponents identified six archaeological sites during two archaeological impact assessments conducted in 2022 which assessed both the terrestrial and intertidal portions of the Local Assessment Area/Regional Assessment Area. These six archaeological sites were all pre-1846 culturally modified trees with one or more culturally modified trees recorded in each archaeological site. A total of 38 individual pre-1846 culturally modified trees are attributed to these archaeological sites with 22 located within or partially within the Local Assessment Area/Regional Assessment Area.

There were five areas of potential identified within the Local Assessment Area/Regional Assessment Area within which 40 surface tests were excavated, all yielding negative results for unidentified archaeological sites.

The Proponents also identified an additional 18 post-1846 culturally modified trees, not protected under the Heritage Conservation Act within the Local Assessment Area/Regional Assessment Area. Two post-1846 culturally modified trees are located within one of the six identified archaeological sites and 16 post-1846 culturally modified trees are located outside of the archaeological sites within the Local Assessment Area/Regional Assessment Area.

Portions of the Local Assessment Area/Regional Assessment Area, including a proposed overburden storage area west of Whiskey Bay and proposed road corridors to the overburden storage area and southern floating liquified natural gas anchor points, were not assessed during the Archaeological Impact Assessments conducted. Further inspection of those areas or any other changes to the project footprint is a recommendation of the Archaeological Impact Assessment report.

Additionally, any changes to project infrastructure within the Local Assessment Area/Regional Assessment Area that result in the addition of lands that were not assessed as part the Ksi Lisims LNG-specific Archaeological Impact Assessments or paleontology study will be reviewed by a professional archaeologist and/or paleontologist. Based on the results of those reviews, additional archaeological field assessment or paleontological study may be required prior to construction.

While the *Heritage Conservation Act* does not mandate areas to be assessed, during the BCER’s review of permit applications for Ksi Lisims LNG, the Heritage Conservation review team would recommend conditions to the decision maker to review all areas needing pre-impact assessment be completed prior to Construction commencement.

Through a review of existing information used to describe recorded historic places, (i.e. distinct from sites that are archaeological) included the Regional District of Kitimat-Stikine’s community heritage registry and the Province’s Remote Access to Archaeological Data application, the Proponents identified that there are no historic places recorded in the Local Assessment Area/Regional Assessment Area.

The Proponents reviewed sources of existing information for the desktop paleontological review including B.C.’s Important Fossil Areas, locations of previously recorded fossil sites documented in the Fossil Occurrence Database, published geological maps, topographic maps and aerial imagery, and scientific literature and did not identify any paleontological sites within 50 km of the Local Assessment Area/Regional Assessment Area. The assessment area is outside of B.C.’s designated Important Fossil Areas. Based on this desktop review, the Proponents’ assessment of the paleontological potential of the Local Assessment Area/Regional Assessment Area and the Transmission Line Assessment Area identified that the entire area is considered to have low fossil potential.

Through a review of the provincial government Remote Access to Archaeological Data application, 25 recorded archaeological and heritage sites were identified within the Transmission Line Assessment Area. This included pre- and post-1846 archaeological sites, including 18 culturally modified tree sites, three surface lithic sites, one subsistence feature sites (fish trap), one cairn site, one subsurface cultural materials site (e.g., fauna and fire altered rock), and a Provincially Recognized Heritage Site (GfTm-13) which included the historic Arrandale and Nass Harbour salmon canneries. Further, many other areas within the Transmission Line Assessment Area are modelled as having moderate to high archaeological potential.

#### 18.14.4. Potential Project Effects by the Proponents

In the Revised Application and [Appendix F: Updated Transmission Line Assessment Area Supplemental Information](#), the Proponents identified the following potential effects to archaeological sites during construction of Ksi Lisims LNG, including the transmission line:

- Loss of information about or alteration to archaeological site contents or context.

Project site clearance and ground disturbance resulting from construction could disturb or destroy archaeological and heritage resources. There would also be the possibility for chance find encounters where previously unknown archaeological and/or heritage resources are discovered during ground disturbing activities.

Within [Appendix F: Updated Transmission Line Assessment Area Supplemental Information](#), the Proponents identified that archaeology works, including a desktop based Archaeological Overview Assessment to inform the need to undertake an Archaeological Impact Assessment, are anticipated as required for a Heritage Investigation Permit under the *Heritage Conservation Act*. In addition to the *Heritage Conservation Act*, requirements under the *Land Act*, and Nisga’a Treaty, will also mitigate or partially mitigate the impacts of the construction of the transmission line on archaeological and heritage resources.

#### 18.14.5. Proposed Mitigation Measures by the Proponents

The following are the relevant mitigation measures proposed by the Proponents:

- Planning and design will avoid identified archaeological and heritage sites unless otherwise approved by the responsible regulator(s); and
- In cases where avoidance is not feasible or practical, mitigation will involve systematic data recovery. A chance find procedure will be established for activities associated with the transmission line, and will identify mitigation to be followed if archaeological, historical, or paleontological materials are unexpectedly discovered during construction activities.

As part of the substituted environmental assessment process, the EAO has identified Key Mitigation Measures for effects within federal jurisdiction to inform the IAAC's draft potential federal conditions. The Key Mitigation Measures related to archaeological and heritage Valued Component are outlined in [Appendix 2](#).

#### **18.14.6. Key Issues Raised**

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the archaeological and heritage Valued Component for Ksi Lisims LNG were identified.

##### **18.14.6.1. Effects Along Shipping Route**

Lax Kw'alaams Band and Metlakatla First Nation requested that the potential effects to archaeological and heritage resources within marine, intertidal, and shoreline areas resulting from vessel wake and any accidents or malfunctions be assessed. In response, the Proponents identified that the anticipated effects due to vessel wake is considered in the [marine use Valued Component](#), which utilizes vessel wake modelling available from primary scientific literature as well as an analysis completed for the Cedar LNG project. The Proponents asserted that these studies provide a sufficient understanding of the order of magnitude for vessel generated wake from Ksi Lisims LNG and as a result do not plan to complete predictive vessel generated wake modelling for Ksi Lisims LNG. Further, the Proponents committed to collaborate with First Nations on the development of management plans, mitigation measures, and responses to regulatory requirements.

In response to these concerns, the EAO proposed provincial Certificate Conditions 13 (Marine Transportation Communication Plan), 11 (Community Feedback Process) and recommended Key Mitigation Measures for marine transportation routes to IAAC that would provide a means for First Nations to report on concerns related to marine shipping, including schedules, operational safety zones, collision prevention measures and emergency response procedures. The EAO was satisfied that this issue was adequately addressed for the purpose of the environmental assessment.

##### **18.14.6.2. Destruction of Post-1846 Culturally Modified Trees**

Lax Kw'alaams Band and Metlakatla First Nation expressed concern regarding the destruction of post-1846 culturally modified trees. Post 1846- culturally modified trees are not protected by the *Heritage Conservation Act* as archaeological sites, and thus not subject to alteration permits, but are culturally important. In response, the Proponents identified that all the culturally modified trees recorded in the assessment area were within Category A Lands defined in the Nisga'a Final Agreement. The Proponents further noted that the proposed mitigation measures for alterations to post-1846 culturally modified trees (if needed) would be completed in accordance with Nisga'a Lisims Government standards and would be detailed in the Construction Environmental Management Plan.

In response to these concerns, the EAO proposed archaeological and heritage resource management as part of the Construction Environmental Management Plan.

##### **18.14.6.3. Effects to Unknown Archeological and Heritage Sites**

Lax Kw'alaams Band and Metlakatla First Nation requested direct engagement on additional archaeological investigations undertaken prior to Construction and specific details on the development of an archeological and heritage resource plan for Ksi Lisims LNG. Additionally, Lax Kw'alaams Band and Metlakatla First Nation requested that the chance find procedure be applied to all areas potentially effected by Ksi Lisims LNG, including marine and intertidal areas, as well as during all phases, including Decommissioning.

In response, the Proponents identified that the Archaeological Impact Assessment report recommended further inspection for the overburden storage area west of Whiskey Bay, proposed road corridors to the overburden storage area,

and southern Floating Liquified Natural Gas anchor points. The Proponents identified that this work would be completed prior to Construction. Additionally, during the BCER's review of permits required under the *Heritage Conservation Act* for Ksi Lisims LNG, the Heritage Conservation review team would recommend conditions to the decision maker to review all areas needing pre-impact assessment be completed prior to Construction commencement. The Proponents committed to notifying Metlakatla First Nation and Lax Kw'alaams Band in advance of the additional Archaeological Impact Assessment and provide an opportunity to review the draft report. The Proponents anticipate that participants selected by Nisga'a Lisims Government will participate in the additional field work as these locations are within Nisga'a Category A Lands.

In response to these concerns, the EAO included Certificate Condition 9 (Construction Environmental Management Plan) which would include a chance find procedure to mitigate any effects to any newly discovered sites anywhere where surface disturbance would occur.

Further, the EAO is confident that subsequent permitting requirements with the BCER review of permits required under the *Heritage Conservation Act*, will address other areas not yet assessed.

#### **18.14.7. The EAO's Characterization of Residual Effects**

After considering the proposed mitigation measures and conditions proposed, the information contained in the [Joint Permitting/Regulatory Coordination Plan](#) and the Regulatory Coordination Tracking Table, the EAO concludes that the Project would not result in residual effects on the archaeological and heritage resources for the following reasons:

- The required chance finds procedure would help mitigate effects to any sites that are discovered during Construction and Decommissioning;
- Any pre-1846 archaeological sites discovered would be protected under the *Heritage Conservation Act* and permits would be required for inspection, investigations, and alterations of these sites;
- Culture and heritage protection measures and monitoring will be developed and implemented as part of the Construction Environmental Monitoring Plan for cultural and heritage resources; and,
- Additional investigations are required under the *Heritage Conservation Act* for the disturbance along the proposed Transmission Line.

Therefore, no additional characterization of residual effects was completed for archaeological and heritage resources.

#### **18.14.8. Cumulative Effects Assessment**

The assessment of a designated project must take into account any cumulative effects that are likely to result from the project in combination with other physical activities that have been or will be carried out. There are no existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG.

The potential for cumulative effects from these projects and activities is considered negligible due to proximity of project to the pre-existing projects and activities and lack of residual effects identified.

The EAO concludes that not significant cumulative effects to archaeological and heritage resources are expected as a result of the effects of the project interacting with the effects of other past, present and reasonably foreseeable future projects and activities.

#### **18.14.9. Conclusion**

The EAO is satisfied that Ksi Lisims LNG would not have significant adverse residual or significant cumulative effects on the Archaeological and Heritage Resources Valued Component. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well

as the proposed conditions identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)). The effects within federal jurisdiction are described in [Appendix 15](#).

## 19.0 APPENDIX 7 - RISKS OF MALFUNCTIONS AND ACCIDENTS

### 19.1. Background

Malfunctions and accidents were assessed due to their importance to First Nations, marine and roadway users, and the public, and to meet provincial<sup>33</sup> and federal environmental and impact assessment requirements<sup>34</sup>. Unplanned events that could arise from malfunctions or accidents associated with Project-related activities may result in effects to environmental, economic, social, cultural, heritage, and health Valued Components, greenhouse gases, and Indigenous Interests.

According to the EAO's Effects Assessment Policy<sup>35</sup>, a malfunction is considered a failure of a device, piece of equipment, or a system to function as intended and an accident is an unexpected occurrence or unintended action. The Proponents applied the Transportation Safety Board of Canada's definitions specifically for marine accidents and incidents<sup>36</sup>. This chapter considers potential malfunctions and accidents, identifies the mechanisms that would be implemented during design, construction, and operation to mitigate the impacts of these potential events throughout the life of Ksi Lisims LNG, and assesses the potential effects of these events throughout the life of the project.

#### 19.1.1. Assessment Methods

The boundaries of the assessment for malfunctions and accidents included:

- **The Project footprint** – including terrestrial and marine infrastructure, such as the floating LNG facilities (see [Figure 2-5](#) for a map of conceptual Project layout).
- **The updated transmission line assessment area**– including an approximately 500 m buffer on either side of the terrestrial portions of the three potential route options and an approximately 1 km buffer on either side of the marine portions of the conceptual route options;
- **Project-related marine shipping routes to and from the Project footprint** – includes the open water marine shipping route from the 12 nautical mile (nm) Canadian territorial sea limit, the marine shipping route past Triple Island and continuing to the Project Site; and the materials and supply (including personnel) shipping route from Prince Rupert/Port Edward and Gingolx to the Project Site (see [Figure 2-6](#) for a map of project overview, including marine shipping route; and
- **Project-related ground transportation routes** – includes from Terrace and/or Prince Rupert/ Port Edward to Gingolx via Highway 113/ Nisga'a Highway and, as applicable, Highway 16 (see [Figure 2-4](#) for a map of project location).

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<sup>33</sup> Section 25(2)(c) of the Act requires that the risks of malfunctions or accidents be considered in every assessment.

<sup>34</sup> Subparagraph 22(1)(a)(i) of the IAA specifies that the assessment of a designated project must take into account the effects of malfunctions and accidents.

<sup>35</sup> BC Environmental Assessment Office. 2020. Effects Assessment Policy Version 1.0. [https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/environmental-assessments/guidance-documents/2018-act/effects\\_assessment\\_policy\\_v1\\_-\\_april\\_2020.pdf](https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/environmental-assessments/guidance-documents/2018-act/effects_assessment_policy_v1_-_april_2020.pdf)

<sup>36</sup> TSBC (Transportation Safety Board of Canada). 2021. Policy on Occurrence Classification. <https://www.tsb.gc.ca/eng/lois-acts/evenements-occurrences.html>.



The Proponents assigned risk scores to assess the residual effects of malfunctions and accidents to Valued Components using a matrix, which considers likelihood on the vertical axis and consequence on the horizontal axis (Table 57). A description of the risk scores is as follows:

- **Low** – does not require any preventative or mitigation action;
- **Moderate** – risk within the “as low as reasonably practicable” principle, where efforts to reduce risk should be continued until the incremental level of effort (in terms of cost, time, human power, or other expenditure of resources) is grossly disproportionate to the incremental risk reduction achieved;
- **High** – requires implementation of temporary controls as soon as practical to reduce risk level to the lowest feasible value. Initiate permanent risk mitigation as necessary; and
- **Extreme** – requires implementing temporary controls immediately to reduce risk level to lowest feasible value. Initiate permanent risk mitigation immediately.

Table 58: Risk matrix to assess risk of malfunctions and accidents for Ksi Lisims LNG

		Consequence					
		Insignificant	Minor	Moderate	Major	Severe	Catastrophic
Likelihood	Frequent	Moderate	High	Extreme	Extreme	Extreme	Extreme
	Likely	Moderate	Moderate	High	Extreme	Extreme	Extreme
	Possible	Low	Moderate	Moderate	High	Extreme	Extreme
	Unlikely	Low	Low	Moderate	Moderate	High	Extreme
	Very Unlikely	Low	Low	Low	Moderate	Moderate	High
	Rare	Low	Low	Low	Low	Moderate	Moderate

The Proponents’ risk scoring was based on definitions for likelihood (i.e., rare, very unlikely, unlikely, possible, likely, and frequent) as described in Table 9.3-2 – Likelihood Ratings for Malfunctions or Accident Scenarios, in [Section 9](#) of the Revised Application. Also, the definitions of the consequence rankings (i.e., insignificant, minor, moderate, major, severe, and catastrophic) used in the Proponents’ risk scoring varied by valued component and considered the definitions of magnitude and duration of effects to the Valued Components, as described in Table 9.3-3 – Consequence Ratings for Valued Components, in [Section 9](#) of the Proponents’ Revised Application.

Risk assessment for onshore safety, and safety of the floating LNG facilities, included results of a hazard identification study and a preliminary quantitative risk assessment. The hazard identification study included two reports, one for the onshore and marine infrastructure, onshore processes, utilities equipment, and mooring systems<sup>37</sup>, and one for the

<sup>37</sup> PSRG (Process Safety and Reliability Group). 2022a. Western LNG Ksi Lisims LNG Project FLNG HAZID Review. Prepared for Western LNG. June 24, 2022; [https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58\\_KsiLisimsLNG\\_AppE\\_Nav\\_Safety\\_Assessment\\_Final.pdf](https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58_KsiLisimsLNG_AppE_Nav_Safety_Assessment_Final.pdf)

floating LNG facilities<sup>38</sup>. The purpose was to identify events that could lead to health and safety risks, environmental risks, and asset damage and provide actions to reduce the risk to as low as reasonably practical.

The quantitative risk assessment study used preliminary design information for the onshore facilities and the floating LNG facilities and included information on inventories of hydrocarbons and other materials in various areas of the facility<sup>39</sup>. The quantitative risk assessment assessed approximately 500 hypothetical scenarios related to potential leaks or other events that could lead to hazards. Individual risk is presented as risk contours, which show the geographical distribution of individual risk. The contours connect locations in and around the facility with equal risk is expressed in the number of events per year of an incident capable of causing a fatality at the specified location.

When assessing the shipping (offshore) safety component of malfunctions and accidents, the Revised Application included a [Navigation Safety Assessment](#) (NSA)<sup>40</sup>, at the recommendation of Transport Canada<sup>41</sup>. The NSA included the following surveys, studies, analyses and manuals (see [Appendix E](#) of the Revised Application):

- Marine Traffic Survey (Attachment E.1);
- Marine Route Analysis (Attachment E.2);
- Casualty Data Survey and Risk Analysis (Attachment E.3);
- Design Vessel Ship Specifications (Attachment E.4);
- Terminal Site Plans & Berth Procedures (Attachment E.5);
- Documents to be used for Contingency Planning & Hazardous and Noxious Substances (Attachment E.6); and
- Terminal Operations Manual (schedule of communication that each vessel will follow, checklists for arrival and departure, and requirements for notification, documentation, reporting, as well as navigation and safety information and port operation information) (Attachment E.7).

The Revised Application includes a figure showing the spatial extent of a worst-case scenario along the marine shipping route (Figure 9.3-1 – Key Environmental Features Near the Marine Shipping Route, in [Section 9](#) of the Revised Application).

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<sup>38</sup> 2 PSRG. 2022b. Western LNG Ksi Lisims LNG Project Onshore HAZID Review. Prepared for Western LNG. June 24, 2022:

[https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58\\_KsiLisimsLNG\\_AppE\\_Nav\\_Safety\\_Assessment\\_Final.pdf](https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58_KsiLisimsLNG_AppE_Nav_Safety_Assessment_Final.pdf)

<sup>39</sup> PSRG. 2022c. Quantitative Risk Assessment (QRA) for the Western LNG Ksi Lisims LNG Project. Prepared for Western LNG. October 14, 2022:

[https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58\\_KsiLisimsLNG\\_AppE\\_Nav\\_Safety\\_Assessment\\_Final.pdf](https://www.projects.eao.gov.bc.ca/api/public/document/66d10351d68b6500223e6b59/download/58_KsiLisimsLNG_AppE_Nav_Safety_Assessment_Final.pdf)

<sup>40</sup> Ksi Lisims LNG – Appendix E – Navigation Safety Assessment:

[https://www.projects.eao.gov.bc.ca/api/public/document/652f6ee6bfcd3c002295ded0/download/58\\_KsiLisimsLNG\\_AppE\\_Nav\\_Safety\\_Assessment.pdf](https://www.projects.eao.gov.bc.ca/api/public/document/652f6ee6bfcd3c002295ded0/download/58_KsiLisimsLNG_AppE_Nav_Safety_Assessment.pdf)

<sup>41</sup> Transport Canada's Independent Memo (August 14, 2023). An Integrated National Safety Assessment Process (NSA) – Addendum to Transport Canada's Federal Authority Advice Record.

<https://www.projects.eao.gov.bc.ca/api/public/document/64da99ef0286480022126372/download/Navigation%20Safety%20Assessment%20Overview%20-%20August%202023.pdf>

## 19.2. Potential Project Effects and Proposed Mitigations

### 19.2.1. Summary of Potential Project Effects

The Proponents assessed the potential effects from malfunctions and accidents on Valued Components and Indigenous interests in [Chapter 9](#) of the Revised Application, which is summarized in Table 58. Malfunctions and accidents that could occur during construction, operations, and decommissioning of Ksi Lisims LNG were considered under the following scenarios:

- Terrestrial and marine spills of a hazardous material (e.g., diesel, gasoline, refrigerant, lubricants, oils), not including LNG;
- Terrestrial and marine fires or explosions;
- Loss of containment of LNG or a hazardous material (e.g., condensate, refrigerants) from the floating LNG facilities, including the resultant embrittlement of infrastructure from exposure to extreme temperatures;
- Emergency LNG production unit shutdown including flaring;
- Carrier or vessel near-miss incidents, grounding, collisions or allisions<sup>42</sup> (includes resultant loss of propulsion fuel);
- LNG carriers or natural gas liquids (NGL) product vessel spills; and
- Project-related transportation incidents (roadway and marine).

Table 59: Risk Assessment of potential hazards identified for Ksi Lisims LNG

Hazard	Likelihood	Consequence	Risk = Likelihood x Consequence
Terrestrial and marine spills of a hazardous material (not LNG)	Possible*	Insignificant to Moderate	<b>Low</b> for air quality <sup>§</sup> , and infrastructure services <sup>†</sup> .
			<b>Moderate</b> for vegetation and wetlands, wildlife and wildlife habitat, human health <sup>§</sup> , surface water, freshwater fish and fish habitat, marine resources, marine use, and community health and wellness <sup>†</sup> .
Terrestrial and marine fires or explosions	Unlikely	Insignificant to Major	<b>Low</b> for acoustic environment <sup>§</sup> , marine use and infrastructure and services <sup>†</sup> , air quality <sup>§</sup> , surface water, freshwater fish and fish habitat, marine resources, archaeology and heritage resources, and greenhouse gases.
			<b>Moderate</b> for vegetation and wetlands, wildlife and wildlife habitat, and community health and wellness <sup>†</sup> .
Loss of containment of LNG or a hazardous	Rare (marine use, vegetation and	Insignificant to Moderate	<b>Low</b> for air quality, marine use, vegetation and wetlands, wildlife and wildlife habitat.

<sup>42</sup> “Allision” is when a vessel underway collides (strikes) with a stationary object such as a vessel at berth or fixed structure like a pier or buoy.

Hazard	Likelihood	Consequence	Risk = Likelihood x Consequence
material from the floating LNG facilities <sup>‡</sup>	wetlands, and wildlife and wildlife habitat) Possible* (air quality, marine resources, and greenhouse gases)		<b>Moderate</b> for greenhouse gases, and marine resources.
Emergency LNG production unit shutdown including flaring	Possible*	Insignificant to Minor	<b>Low</b> for acoustic environment <sup>§</sup> .
			<b>Moderate</b> for air quality <sup>§</sup> , greenhouse gases, and wildlife and wildlife habitat.
Carrier or vessel near-miss incidents, grounding, collisions or allisions	Rare	Minor to Major	<b>Low</b> for air quality <sup>§</sup> , human health <sup>§</sup> , vegetation and wetlands, wildlife and wildlife habitat, community health and wellness <sup>†</sup> , marine resources, marine use, and infrastructure and services <sup>†</sup> .
LNG carriers or NGL product vessel spills <sup>‡</sup>	Rare	Insignificant to Major	<b>Low</b> for air quality, marine use, marine resources, community health and wellness, human health, wildlife and wildlife habitat, greenhouse gases, and infrastructure and services.
Project-related transportation incidents	Possible*	Insignificant to Severe	<b>Low</b> for air quality <sup>§</sup> .
			<b>Moderate</b> for surface water, vegetation and wetlands, fish and fish habitat, human health <sup>§</sup> , wildlife and wildlife habitat.
			<b>High</b> for infrastructure and services <sup>†</sup> , marine resources, and marine use.
			<b>Extreme</b> for community health and wellness <sup>†</sup> .
*Since these potential malfunctions or accidents are predicted to be possible for Ksi Lisims LNG, it would be similarly possible for potential effects to Valued Components from these malfunctions and accidents; therefore, the EAO has carried these effects forward to <a href="#">Appendix 15</a> on Federal matters in this Report.			
<sup>‡</sup> According to the Proponents’ Transmission Line Assessment Area Supplemental Information <a href="#">Table F-9</a> – Potential Malfunctions and Accidents Associated with the Transmission Line, in <a href="#">Appendix F</a> of the Revised Application– these specified malfunctions and accidents scenarios would not be applicable to the Transmission Line Assessment Area.			
<sup>†</sup> According to the Proponents’ Table 6.4-1 – Relevant Assessment Areas for Each Valued Component, in <a href="#">Section 6</a> the Revised Application the Transmission Line Assessment Area (and similarly the updated Transmission Line Assessment Area) would not be relevant for the assessment of project effects to groundwater, employment and economy, infrastructure and services, and community health and wellness because project effects would not be expected to overlap with these Valued Components in the Transmission Line Assessment Area (and similarly the updated Transmission Line Assessment Area). Also, according to <a href="#">Section 6</a> of the Revised Application, the spatial boundaries described in Section 6.4.1 (including Table 6.4-1) were applied to the assessment of malfunctions and accidents by the Proponents.			

Hazard	Likelihood	Consequence	Risk = Likelihood x Consequence
<p><sup>§</sup>According to the Proponents' Table F-4 – Potential Interactions with Valued Components, in <a href="#">Appendix F</a> of the Revised Application, the air quality, acoustic, and human health Valued Components were not carried forward in the assessment of potential effects in the updated Transmission Line Assessment Area because no further assessment was warranted compared to the Transmission Line Assessment Area as presented in the Revised Application.</p>			

For Project-related transportation incidents (roadway and marine), the Revised Application considered potential off-site incidents located along terrestrial transportation routes from Terrace to Gingolx (via Highway 113/ Nisga'a Highway) and from Terrace to Prince Rupert/Port Edward (via Highway 16), as well as marine transportation routes directly from Prince Rupert/Port Edward and Gingolx to the Project Site. Transportation on Highway 113/ Nisga'a Highway and Highway 16 would be expected to be by bus (personnel) or transport truck (materials and goods), while from Gingolx and/or Prince Rupert/Port Edward, personnel, materials and/or goods would take a marine vessel (or barge) to the Project Site. Among the seven different types of malfunction and accident scenarios that were assessed for Ksi Lisims LNG, Project-related transportation incidents were identified as posing greater than moderate risks to some Valued Components, so additional details related to this specific scenario have been provided in this chapter.

As described in [Chapter 18.13](#) (Infrastructure and Services) of this Report, even with the proposed mitigations in place, Ksi Lisims LNG would still be expected to increase traffic along Highway 113/ Nisga'a Highway and Highway 16. The Proponent estimates there would be six to nine Project-related vehicle trips per week on Highway 113/ Nisga'a Highway during Construction (peaking at 11 to 17 per week), and approximately four to six trips per week during Operations. The Proponents further noted that Highway 16 would also be used to transport personnel and supplies during the life of the project, but that an estimate of vehicle trips was not yet available. According to the Revised Application, increases in Project-related traffic could increase risks for a single-vehicle or bus accident, a multi-vehicle accident, or a collision with wildlife. The Proponents identified the most likely times for a vehicular incident would be during rain or snow events, at dawn and at dusk, or if the road is foggy and that such roadway incidents could result in injuries or fatalities to the driver and/or passengers in the vehicle(s) or bus, injuries or fatalities to wildlife, as well as releases of hazardous substances into the environment.

For Project-related transportation incidents occurring in the marine environment, the Revised Application identified three main marine routes associated with Ksi Lisims LNG: 1) materials and supply shipping route (Gingolx); 2) materials and supply shipping route (Prince Rupert/Port Edward); and 3) open water marine shipping route for LNG carriers and NGL product vessels (see [Marine Route, Appendix E](#)). The Proponents anticipate that during Construction there would be approximately 9-10 vessels and barges per week, and during Operations there would be approximately 4 vessels and barges carrying a combination of materials and personnel per week. Beyond vessels and barges carrying materials and personnel, Ksi Lisims LNG would also contribute to an additional 8 to 12 NGL product vessel and 140 to 160 LNG vessel transits a year during Operations, accounted as roughly 6 % of the total current and future forecasted large marine vessel traffic if all present and future projects and activities are built and proceed to operation.

The Proponents determined that roadway and marine Project-related incidents were considered possible during the life of the Project (i.e., the event would reasonably be expected to occur once in every 1,000 years). Given this likelihood, the Revised Application identified that potential traffic incidents could pose a insignificant to major consequences resulting in low to high risk infrastructure and services depending on the severity of the incident and the resources required to respond. The Proponents found that marine Project-related transportation incidents could also pose a high risk for effects to marine resources, and marine use resulting in moderate to major consequences, depending on the severity of the incident and the resources required to respond, including the type and amount of material spilled, and the location and

timing of the incident. Also according to the Proponents' analysis, Project-related transportation (roadway and marine) incidents could pose an extreme risk for effects resulting in minor to severe consequence to community health and wellness, depending on the severity of the incident (e.g., type of injury sustained, if fatalities are incurred), the resources required to respond, if highway closures resulted from the incident, or if a spill occurred in the marine environment near a harvesting location.

As described in [Appendix F – updated transmission line assessment area supplemental information](#), the Proponents also considered potential for off-site effects to Valued Components within the updated Transmission Line Assessment Area between the Project Site and Nisga'a Lands, including approximately 15 to 29 km of terrestrial transmission line and approximately 15 to 23 km of submarine cable, depending on selection of the final route. The Revised Application also found there would be a consistent level risk of a roadway or marine transportation incident during transmission line construction as other Project-related transportation incidents assessed for Ksi Lisims LNG.

Beyond the Proponents' findings on the potential effects of Project-related transportation incidents, no other residual effects from malfunctions and accidents were identified to pose greater than a moderate risk. The following is a summary of the additional residual effects from malfunctions and accidents that could reasonably be expected to result in moderate to high environmental consequences as identified in Revised Application:

- Terrestrial and marine spills of a hazardous material (considered possible) could have a moderate consequence for surface water, freshwater fish and fish habitat, marine resources, marine use, and community health and wellness
- Terrestrial and marine fires or explosions (considered unlikely) could have a moderate consequence for vegetation and wetlands, and wildlife and wildlife habitat; and a major impact to community health and wellness;
- Loss of containment of LNG or a hazardous material from the floating LNG facilities could have a moderate consequence on marine resources (considered possible) and wildlife and wildlife habitat (considered rare);
- Carrier or vessel near-miss incidents, grounding, collisions, or allisions (considered rare) could have moderate consequence for vegetation and wetlands, wildlife and wildlife habitat, and community health and wellness; and major consequence for marine resources, marine use, and infrastructure and services;
- LNG carrier or NGL product vessel spills (considered rare) could have moderate consequence for wildlife and wildlife habitat and greenhouse gases; and major consequence for infrastructure and services; and
- Project-related transportation (marine and roadway) incidents (considered possible) could also have moderate consequence to wildlife and wildlife habitat.

The EAO considers the risk assessment for Ksi Lisims LNG to be conservative because where a range of potential consequences to a valued component is predicted, the more conservative consequence is reported for the final risk assessment score. The likelihood of an incident occurring may be influenced by a variety of factors, such as the likelihood of a causal disturbance occurring, or the likelihood of mitigation being successful.

### 19.2.2. Mitigation measures

The Revised Application identified that Ksi Lisims LNG would integrate layers of prevention and response measures to comply with the robust regulatory regime applicable to LNG projects in B.C., thereby reducing the likelihood of Project-related malfunctions or accidents occurring and to manage or reduce potential consequences in the unlikely event that one should occur. Mitigation and monitoring measures proposed by the Proponents that would be implemented to prevent and respond to malfunctions and accidents, required through other permitting and approvals, are described in the [Joint Permitting / Regulatory Coordination Plan](#) for Ksi Lisims LNG. Project design would be a factor in mitigating the

effects of malfunctions and accidents and Ksi Lisims LNG would be designed in accordance with applicable legal requirements, CSA Z276 (LNG — production, storage, and handling), CSA EXP276.2:19 (design requirements for near-shoreline floating LNG facilities) and any other applicable standards. The front-end engineering design process would include design of engineering controls to prevent or contain spills as part of the LNG facility permit processes. The design would also include safety shutdown systems that detect fire or gas, secondary containment systems, and emergency shutdown systems.

The Proponents identified the following relevant mitigations to reduce or avoid adverse residual effects:

- Develop and implement an Emergency Response Program for operations in accordance with the requirements set out in the Emergency Management Regulation and section 8 of the Liquefied Natural Gas Facility Regulation under the [Energy Resources activities Act](#) (2008), and the CSA 15 Z246.2 (Emergency preparedness and response for petroleum and natural gas industry systems) for operations;
- Planning and design will avoid the potential for Ksi Lisims LNG-related activities to cause a forest fire. If the fire danger rating (available at [bcwildfire.ca](#)) at the site reaches high or extreme, additional measures such as restricting activities that would increase fire risk will be implemented;
- Construction and operations personnel traveling to and from the site during crew rotations will be required to travel in multi-passenger vehicles (e.g., vans or buses) to reduce the number of vehicles transiting Highway 113/Nisga'a Highway;
- Project vehicles traveling on Highway 113/Nisga'a Highway will carry fire suppression tools (e.g., fire pump can);
- The Health, Safety, Security and Environment Program Facility Operating Procedures will include training for on-site personnel so that they know how to respond to an incident;
- Develop and implement a Health, Safety, Security and Environment Program framework that will outline health and safety training requirements for personnel, medical emergency response and security procedures for all Ksi Lisims LNG phases. Ensure all workers are aware of Work Safe B.C.'s [Regulations and Guidelines for Oil and Gas Industry— Construction \(Pipelines, Facilities, Roads\)](#);
- LNG carriers will be piloted by a BCCP from just west of Triple Island to the site and back to Triple Island; and
- BCCPs aboard LNG carriers and NGL vessels will assess potential issues (e.g., inclement weather) and adjust speed to change arrival time at the site, if required.

In addition to informing the risk assessment for Ksi Lisims LNG, the Proponents' forward-looking risk analysis and "what-if" scenario planning process also informed development of select additional safety-related plans and programs through the NSA, hazard identification study, and preliminary quantitative risk assessment. These additional safety-related plans and programs have been incorporated into proposed mitigation measures that would be implemented by the Proponents, which include requirements for emergency response planning under the *Energy Resource Activities Act* (2008) (ERAA) and environmental emergency planning under the *Environmental Emergency Regulation*, 2019 of the *Canadian Environmental Protection Act*, 1999. For the full list see [Section 9 Malfunctions and Accidents](#) and Table A-1 in [Appendix A – Summary of Mitigation Measures](#), in the Proponents' Revised Application. The NSA also highlighted additional recommendations to the Proponents for enhanced safety measures for project carriers and terminal operations above and beyond existing regulations:

- The Project would have an acceptance program for LNG carriers and NGL product vessels. The acceptance program would include a vetting component. The vetting process would involve checking that LNG carriers and NGL product vessels have up-to-date certifications and have not been flagged by other operators or agencies as

out of compliance with industry requirements. The Project's vetting would use the Ship Inspection Report Program administered by the Oil Companies International Marine Forum;

- LNG carriers and NGL product vessels would use an existing marine route from Dixon Entrance to the Triple Island pilot boarding station, through Brown Passage, to Chatham Sound, Main Passage, Portland Inlet and Portland Canal, ending at Wil Milit on Pearse Island, unless a deviation is required for safety or operational requirements, as determined by the LNG carrier captain or pilot;
- Within the Compulsory Pilotage Areas defined in the *Pilotage Act* (i.e., between the Triple Island pilot boarding station and the Project's marine terminal), LNG carriers and NGL product vessels would be under the guidance of one or more pilots from the BCCPs, with local knowledge of the waterway to help guide the vessel safely to its destination consistent with the existing pilotage system on Canada's West Coast administered by the Pacific Pilotage Authority (PPA);
- The EAO is aware that Vessel Traffic Service zones have been established along Canada's West Coast in order to increase marine safety, and mariners would be informed by CCG's MCTS of LNG carriers and NGL product vessels transiting to and from the Ksi Lisims LNG's marine terminal within the Prince Rupert MCTS' Vessel Traffic Service zone boundary. The Proponents would work with applicable agencies to investigate the feasibility of added communication services along the marine route;
  - The EAO is recommending a Key Mitigation Measure under IAA for a Marine Communication Plan, which would require the Proponents to provide information to Indigenous groups which may affect marine use and use CCG's MCTS to inform Indigenous mariners of Project-related LNG carriers and NGL product vessels transiting to and from the marine terminal;
- Further safety assessment would be completed before the start of operations, including the jointly BCCP-/ PPA-led Navigational Risk Assessment (NRA) including full mission bridge simulations informing escort tug requirements, tug specifications, and speed profiles for the design of LNG carriers and NGL product vessels, incorporating the learnings from safety assessment and reviewed by applicable agencies;
- The safe speed of vessels is required under the Convention on the International Regulations for Preventing Collisions at Sea, 1972 and the Collision Regulations under the *Canada Shipping Act, 2001*. The EAO is recommending a Key Mitigation Measure under IAA for a Marine Transportation Communication Plan that would address how Project-related vessels would operate in accordance with any recommended speed profile for LNG carriers and NGL product vessels to be informed by the jointly BCCP-/ PPA-led NRA and to be communicated in operational guidance to pilots or a notice to industry;
- If approved, Ksi Lisims LNG would be required to support the BCCP/ PPA in the completion of the NRA. The Project would incorporate feedback from the NRA into Project design and planning, including, but not limited to, tug specifications, berthing procedures for the marine terminal, marine terminal Aids to Navigation, and operating limits for the marine terminal;
- The Proponents would work with applicable agencies to evaluate if and where additional communication services and Aids to Navigation should be implemented along the marine route to enhance marine navigation safety;
- As outlined in the marine use section of this Report ([Chapter 18.9](#)), the Proponents would develop a Terminal Operations Manual that would require LNG carriers and NGL product vessels to follow specific operational procedures for safe cargo management onboard the ship at the marine terminal consistent with industry guidelines;



- The Proponents would also be required to develop a Terminal Information Guide which contains information which would typically be required in a Port Information Book. The Terminal Information Guide would provide information about the marine terminal and shipping route.
- The Proponents would subscribe to Western Canada Marine Response Corporation and will incorporate its services in the Project's Emergency Response Plan, which would leverage Western Canada Marine Response Corporation's professional training, contingency plan testing and associated services to help in preparedness in the event of an incident;
- Project-related tugs will be equipped, and tug crews trained, for first response. Tugs would be outfitted with firefighting and spill response equipment. Tug services contracts would require that the crews onboard the tugs are trained in first response, including firefighting, deployment of oil spill response equipment and other emergency procedures; and
- Frameworks for spill response are outlined in the Contingency Planning and Hazardous Substances document developed as part of the Project-specific NSA, which aims to address the risk of cargo release along routes and during loading.

In addition to the Proponents providing buses to transport workers traveling to the Project Site via Highway 113/ Nisga'a Highway, the Proponents would develop and implement traffic safety measures for Project-related travel between Prince Rupert, Terrace and Gingolx as component of provincial Condition 18 (Road Transportation Management Plan) to be developed in consultation with First Nations and the Ministry of Transportation and Infrastructure. According to Table A.1 – [Summary of Mitigation Measures in Appendix A](#) of the Revised Application, traffic safety measures for Project-related travel has a high likelihood of success with low level of risk and uncertainty, while providing buses to transport workers has moderate likelihood of success with low risk and some uncertainty. The EAO agrees with the Proponents that by implementing the proposed mitigation measures, including reducing the number of vehicles using Highway 13/ Nisga'a Highway through use of buses for Project personnel during construction, the probability of Project-related transportation incidents would be reduced.

The supplemental information on the transmission line assessment area considered potential malfunctions of the transmission line could result in a full or partial shutdown of LNG production; however, no additional mitigation measures were identified beyond those originally proposed. In the unlikely event of a fire occurring during operation of the transmission line, the Proponents predicted there could be potential for exceedance beyond the original risk characterizations, when considering that an on-site workforce would not be anticipated for transmission line operations. Lack of on-site workers would increase the risks for a fire spreading on the landscape if it went undetected for more than a short period of time. The potential consequence of a fire could be major for vegetation and wetlands, and wildlife and wildlife habitat depending on the extent of the resultant forest fire. However, with the additional mitigation measures outlined below, the final risk score remained moderate based on the Proponents' analysis<sup>43</sup>:

- Meet or exceed the minimum vertical and horizontal clearances and separations from wire to ground outlined in applicable standards<sup>44</sup>;

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<sup>43</sup> Appendix F – updated transmission line assessment area supplemental information:

[https://www.projects.eao.gov.bc.ca/api/public/document/66d1012c36aa890022deead2/download/61\\_KsiLisimsLNG\\_AppF\\_TLAA\\_Revised.pdf](https://www.projects.eao.gov.bc.ca/api/public/document/66d1012c36aa890022deead2/download/61_KsiLisimsLNG_AppF_TLAA_Revised.pdf)

<sup>44</sup> Applicable Standards include: [1] BC Hydro Transmission Engineering Technical Standards, Procedures and Guidelines, Manual ES41K, Section 1.1 Revision 2, December 2013; [2] CAN/CSA Standard C22.3 No. 1-20 Overhead Systems (for clearance and separations that are not specified in the relevant BC Hydro Standard); and [3] BC Hydro Transmission Engineering Standard ES41C Section 1, May 2010 Right-of-Way Dimensions for New Overhead Transmission Lines.

- Implement measures for integrated vegetation management for control of vegetation in transmission RoW in accordance with the applicable standards<sup>45</sup>;
- Reducing the fuel load created from vegetation management activities to maintain transmission line corridors in a condition that would reduce the potential for fire to spread in accordance with the *Wildfire Act* and Regulation;
- If large numbers of transmission line workers are anticipated to be traveling via Highway 113/Nisga'a Highway, provide buses to transport workers to reduce the number of individual vehicle trips as part of provincial Condition 18 (Road Transportation Management Plan); and
- During construction, develop and implement spill prevention and response measures, including appropriate equipment refueling and servicing procedures.

### 19.3. Key Issues Raised

During early phases of the environmental assessment, the EAO and the IAAC received comments from the public, First Nations, and technical advisors regarding accidents, malfunctions, and public safety, including concerns for potentially adverse environmental and human health effects from Project-related accidents and malfunctions, availability of local emergency response resources, and the Proponents' role in emergency response or clean-up activities if an accident or malfunction should occur. Below, the EAO has summarised key issues raised by participating Indigenous nations during review of the Proponents' Application for Ksi Lisims LNG.

#### 19.3.1. Marine Terminal/ Shipping Safety and Potential for Malfunctions and Accidents to Impact Environmental Factors of Importance to First Nations

Kitsumkalum First Nation, Council of Haida Nation, Metlakatla First Nation, Lax Kw'alaams Band, Gitxaala Nation, Kitselas First Nation, Gitga'at First Nation, and Nisga'a Nation identified concerns related to increased risks for Project-related marine transportation incidents due to increase vessel traffic, potential for accidental release of diesel fuel or bunker oil into the environment, potential for malfunctions and accidents from extreme weather events. Several First Nations raised concerns with the potential effects from accidents and malfunctions on environmental values including, freshwater fish and fish habitat, groundwater, vegetation, wildlife, marine resources, and surface water.

Nisga'a Nation expressed concerns for impacts of malfunctions and accidents on environmental health, harvested resources, human health and wellbeing, and that a spill could affect land, water, hunting and fishing grounds.

The EAO is of the view that if Ksi Lisims LNG is approved, these issues would be addressed to an adequate level through existing regulatory frameworks, as well as provincial Condition 9 (Construction Environmental Management Plan), Condition 13 (Marine Transportation Communication Plan), and Condition 18 (Road Transportation Management Plan), the EAO's recommended malfunctions and accidents-related Key Mitigation Measures under IAA, and standard federal conditions for malfunctions and accidents. The Provincial Condition 13 (Marine Transportation Communication Plan) would need to be developed by the Proponent in consultation with First Nations, Nisga'a Nation, the Council of Haida Nation, and CCG. The EAO's recommended Key Mitigation Measures under IAA would also require the proponent to develop and implement an Accidents and Malfunctions Response Plan and a Communication Plan for accidents and malfunctions, in consultation with First Nations and relevant authorities.

In particular, the EAO's considered that:

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<sup>45</sup> For example: Western Electricity Coordinating Council Standard FAC-003-1

- To reduce the likelihood of a marine-related traffic incident or an hazardous materials spill into the environment the Proponents would be required to develop and implement a number of contingency plans reviewed by relevant agencies, including an Emergency Response Program for operations in accordance with the ERAA and CSA Z246.2, an Environmental Emergency Plan in accordance with the *Environmental Emergency Regulations*, 2019 of the *Canadian Environmental Protection Act, 1999*, an Emergency Response Plan to be informed by the Revised Application's [Contingency Planning and Hazardous and Noxious Substances Document](#), and the EAO's recommended Key Mitigation Measures under IAA for the Proponent to conduct safety assessments of marine navigation and berthing before the first LNG or NGL vessel arrives and participate in a joint BCCP/ PPA NRA to identify and implement mitigation measures.
- The Proponents identified that their assessment of potential effects to Valued Components from malfunctions and accidents could provide an indirect understanding of potential to effects on Indigenous interests and cultural use; However, the actual effect of a malfunction or accident on Indigenous interests or cultural use may be different than what is described, as perception of contamination by affected community members may extend beyond the actual effects.
- The EAO is of the view that Project-related marine transportation and shipping activities associated with Ksi Lisims LNG must meet all application international standards and Canadian regulations set out by Canada's compliance-based marine safety and security system, which is designed to protect life, property, and the marine environment.
- The EAO is satisfied that the assessment malfunctions and accidents undertaken by the Proponents is conservative, and has adequately considered extreme weather events relevant to the Project and effectiveness of spill response that could then influence the magnitude, duration, and extent of the effects from a spill, in addition to considering how extreme weather events could affect other risks related to the malfunctions and accidents scenarios that were assessed for Ksi Lisims LNG (loss of containment of LNG or spill of NGL resulting in effects to air quality or human health; weather-related impediments for emergency response, including fires or explosions; weather-related risks associated with vessel groundings, collisions, or allisions).
- The EAO is of the view that potential effects to Valued Components, including freshwater fish and fish habitat, vegetation and wetlands, wildlife and wildlife habitat, marine resources, and surface water have been adequately identified and assessed for this EA, noting that the Revised Application did not identify any potential for an interaction with groundwater (see rationale in [Section 9.3.5](#) – interactions with Valued Components Including Residual Effects, of the Revised Application).
- An assessment of potential effects from Ksi Lisims LNG to the Indigenous interests of each Indigenous nation is provided in [Appendix 5](#) of the Assessment Report. The EAO has considered the potential for effects to Indigenous Interests from a malfunction or accident resulting in a spill of hazardous materials entering the environment, including pathways of effects to marine use, marine resources, and community health and wellness (see the EAO's Assessment and Conclusions in [Section 19.4](#) below).

The Council of Haida Nation still had outstanding concerns regarding emergency response and preparedness, especially regarding response times for the north coast of Haida Gwaii.

The EAO also received a comment from Gitxaała Nation that it does not share the view that GHG release from a fire or explosion can be considered minor consequence, emphasizing that GHG impacts are cumulative, methane is a potent greenhouse gas, and the consequence should be assessed in a manner other than minimization compared to larger categories. The EAO considers that in the unlikely event of an accident or malfunction, even a relatively large one-time event would be small in comparison to annual GHG emissions of the facility.

### 19.3.2. Emergency Preparedness and Safety Risks

Gitga'at First Nation expressed concern for community confidence in the quality of emergency resources with the increase in industrial activity, shipping, and accidents, and Council of Haida Nation expressed concern that existing capabilities for emergency response are limited, especially regarding response times for the north coast of Haida Gwaii and how this was carried forward in the analysis.

- The EAO considered that Project-related marine shipping and transportation activities associated with Ksi Lisims LNG would be required to meet all applicable international standards and Canadian regulations set out by Canada's compliance-based marine safety and security system, which is designed to protect life, property, and the marine environment.
- The province relies on federal authority and leadership to regulate ship-source spill in the marine environment, noting that provincial ministries, health authorities, and local and Indigenous governments would work closely with these federal agencies to coordinate spill response activities, and that incident command structure uses a consensus-based approach.
- CCG's preparedness and response mandate under the *Canadian Shipping Act, 2001* covers all pollution types<sup>46</sup> and CCG would be responsible for ensuring an appropriate response to a spill involving LNG and/or fuel oil. If an LNG or diesel fuel spill occurred, ECCC would participate in the initial response by providing scientific advice including, but not limited to, site-specific weather, sensitivity mapping, trajectory modelling, advice on fate and effects of spilled products, and advice on shoreline clean-up and assessment.
- The EAO is aware that CCG puts as much responsibility on the owner as possible for the initial response plan, which are incorporated into the standard operating procedures for a facility or a ship and CCG's focus is more in-depth training of staff, including facility/ship employees that may manage the initial response. The EAO's recommended Key Mitigation Measure under IAA for an Accidents and Malfunctions Response Plan would allow opportunity for CCG to work with the Proponents on this plan, which would also require that all Project employees (including tug operators) to complete relevant accident prevention and response training, and that all tugs would need to be equipped with firefighting and spill response equipment.
- Further, the EAO's recommended Key Mitigation Measure under IAA for an Accidents and Malfunctions Response Plan would need to be implemented in consultation with First Nations and relevant authorities and require the Proponents to provide details on the roles and responsibilities of all parties involved in responding to an incident, including the Proponents, Western Canada Marine Response Corporation, tug operators, relevant authorities, or any other responders.

Lax Kw'alaams Band, Council of Haida Nation, and Gitxaala Nation requested the development of emergency response plans. Gitxaala Nation expressed concern for the dangers of vessel collisions on smaller harvesting vessels or fishing gear. Gitxaala Nation expressed that they are risk averse when considering effects to rights and traditional activities, such that even a rare likelihood, catastrophic consequence event may be considered extreme risk to Gitxaala Nation. Gitxaala Nation also expressed concern for members utilizing waterways, and in particular marine vessel wake and its effect on

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<sup>46</sup> Definition of pollution: (a) a substance that, if added to any waters, would degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans; and (b) any water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state, that it would, if added to any waters, degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans.

small vessels and harvesters on the shore. Nisga’a Nation expressed concern for safety of Project workers transiting from Prince Rupert or Gingolx to the Project Site via water taxi.

- The EAO is of the view that if Ksi Lisims LNG is approved, these issues would be addressed to an adequate level through existing regulatory frameworks, as well as provincial Condition 9 (Construction Environmental Management Plan), Condition 13 (Marine Transportation Communication Plan), and Condition 18 (Road Transportation Management Plan), the EAO’s recommended malfunctions and accidents-related Key Mitigation Measures under IAA, and standard federal conditions for malfunctions and accidents.
- The proposed provincial Condition 13 (Marine Transportation Communication Plan) to be developed in consultation with First Nations and relevant agencies, would require the Proponents to establish reporting mechanisms for First Nations and marine users to report on any concerns related to LNG carrier interference with marine use. Also, the EAO’s recommended Key Mitigation Measure for a Marine Communication Plan, to be developed in consultation with First Nations and relevant authorities, would require the Proponents to establish a procedure for proactive and regular communications with First Nations, including about collision prevention measures, and also to use a feedback protocol for First Nations to report adverse effects on marine use.

Kitsumkalum First Nation expressed concern for a malfunction or accident along Highway 113/ Nisga’a Highway, including from increased traffic and risk for community safety, access, and wildlife. Kitselas First Nation expressed concern about the potential increases in vehicular accidents and traffic delays for Nation members associated with Project-related augmentation in regional traffic.

The EAO is of the view that if Ksi Lisims LNG is approved, these issues would be addressed to an adequate level through provincial Condition 18 (Road Transportation Management Plan), in particular that:

- The Proponents have committed to providing buses to transport workers travelling on Highway 113/ Nisga’a Highway to reduce the overall number of individual vehicle trips during construction, as well as developing and implementing traffic safety measures for Project-related travel between Prince Rupert, Terrace and Gingolx.
- The EAO has proposed provincial Condition 18 (Road Transportation Management Plan) that include requirements for the Proponents to develop an emergency response plan to address any transportation-related accidents or malfunctions, implementing adaptive management procedures addressing transportation effects on infrastructure and services, and include traffic management details to address project-related increases in traffic.

During Application Review, First Nations (Gitxaala Nation, Kitselas First Nation, Lax Kw’alaams Band, Metlakatla First Nation) requested more information from Transport Canada and Canada Coast Guard about Canada’s compliance-based marine safety and security system.

- In response to Gitxaala Nation and Kitselas First Nation, Transport Canada responded with additional information regarding its approach to “Place of Refuge” pre-assessment, which is done by working with Indigenous partners to identify locations suitable for marine ships to seek out assistance, where the areas could impact First Nations.
- In response to Lax Kw’alaams Band and Metlakatla First Nation, Transport Canada clarified that anchoring is a common law right of navigation, and commercial vessels are generally free to anchor temporarily and for a reasonable period of time in any appropriate location, unless such anchoring is specifically prohibited by statute or regulation, or the anchorage falls within the jurisdiction of a port authority.
- CCG provided more details about the Search and Rescue presence in the Nisga’a territory, which is limited to a Bay class motor lifeboat based in Prince Rupert, RCM SAR Station 64 in Prince Rupert, and RCM SAR station 65 from Lax Kw’alaams Band. CCG estimates that the anticipated response time from these resources to Pearse Island area could be up to 2 hours depending on weather and time of day.

- Transport Canada, CCG, and ECCC also identified that as a requirement under Annex 5 of the Canada - United States Dixon Entrance – Geographical Annex Joint Marine Pollution Contingency Plan<sup>47</sup>, the CCG - Western Region, and United States Coast Guard (USCG) - Seventeenth District, are responsible for the joint organization of exercises to ensure the efficacy and support of both the joint contingency plan, the CCG’s Western Region’s North Coast Area Plan, and the equivalent USCG response plans;
- According to CCG, the Coastal Nations Coast Guard Auxiliary is currently developing a primary search and rescue (SAR) resource in Gingolx with an anticipated operational date of 2024/2025, including having a SAR dedicated small vessel capable of providing fast response in most conditions, day or night.
- Also, according to CCG, each year applications to the Indigenous Community Boat Volunteer Program can be made with the support of the Coastal Nations Coast Guard Auxiliary, and to date, vessels have been purchased or refurbished in 7 communities on the West Coast.
- According to Transport Canada, CCG, and ECCC the Government of Canada will be continuing to partner with First Nations communities to develop and implement integrated marine response planning, including the Coast Integrated Response Plan, First Nation territory response plans, and geographic response plans, including Lax Kw’alaams Band and Metlakatla First Nation.
  - Transport Canada, CCG, and ECCC identified that it would be the responsibility of the Proponents to contract adequate resources for the Project ahead of time to account for all the possible emergencies outlined in the [malfunctions and accidents section](#) of the Revised Application.
  - Also, the EAO is aware that Federal authorities, including the CCG, have communicated this expectation to the Proponents that the project operator and vessels associated with the Project would need to have the necessary resources for dealing with emergencies.

Through review of the Application, Kitselas First Nation requested additional details from BCER about emergency response program and environmental emergency plan requirements, if Ksi Lisims LNG is approved to proceed to permitting.

- BCER identified that both the Emergency Response Program, and the Emergency Response Plan, must also be in compliance with BCER’s Emergency Management Regulation, and the incorporated CSA standard, Z246.2 “Emergency preparedness and response for petroleum and natural gas industry systems” which includes direction on the training, organization and implementation of response actions to any incident, including those with an environmental impact.
- BCER outlined that prior to the start of construction, permit holders must have a CORE emergency response plan developed that focuses on incident management organization, common response actions, including all necessary training, competencies and capacities to initiate and manage a response to any incidents related to their activities, incident reporting and public safety actions.
- Also, BCER outlined that prior to commencement of operations / introduction of any process fluids, permit holders must also have a supplemental emergency response plan developed and accepted by the BCER, and are required to conduct a successful full-scale exercise, with a scenario developed from one of their primary risks.

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<sup>47</sup>Annex 5, Canada – United States, Dixon Entrance – Geographical Annex (CANUSDIX) to the Canada – United States Joint Marine Pollution Contingency Plan (JCP), [https://www2.gov.bc.ca/assets/gov/environment/air-land-water/spills-and-environmental-emergencies/docs/materials/canusdix-annex\\_jan08.pdf](https://www2.gov.bc.ca/assets/gov/environment/air-land-water/spills-and-environmental-emergencies/docs/materials/canusdix-annex_jan08.pdf)

The EAO is of the view that, if Ksi Lisims LNG is approved, these issues would be addressed to an adequate level by the existing safety response and regulatory frameworks, provincial Condition 9 (Construction Environmental Management Plan), the EAO's recommended Key Mitigation Measures under IAA, and standard federal conditions for malfunctions and accidents.

### 19.3.3. Contamination of Country Foods Due to Release of Chemicals into the Environment

Metlakatla First Nation expressed concern for the potential for contamination of harvested resources including shellfish and seaweed due to fuel or oil spills. Gitxaala Nation expressed concern regarding potential contamination of culturally important plants (e.g., marine and near-shore vegetation), including perceived changes in flavour which has the potential to lead to change in use or reliance on less healthy foods through avoidance and attendant impacts to the First Nation's rights. Kitsumkalum First Nation expressed concern about the perceived impact on health of eating contaminated country foods. Lax Kw'alaams Band expressed uncertainty related to how long impacts to harvesting could last from a malfunction or accident that resulted in contamination and that contamination could affect knowledge transmission, continuity of use and sense of connection with ancestors and place.

The EAO is satisfied that the potential for negative effects from malfunctions and accidents resulting in a spill of hazardous materials into the terrestrial or marine environment affecting organisms that are harvested by First Nations has been adequately identified and assessed for Ksi Lisims LNG. The EAO is also of the view that the issue would be further addressed by the existing regulatory framework, the provincial Condition 9 (Construction Environmental Management Plan including spill prevention and response measures), Condition 13 (Marine Transportation Communication Plan), Condition 18 (Road Transportation Management Plan), the EAO's recommended malfunctions and accident-related Key Mitigation Measures under IAA, and standard federal conditions for malfunctions and accidents. In particular, the EAO's considered that:

- As identified in the Revised Application for Ksi Lisims LNG, the actual effect of a malfunction or accident on Indigenous interests or cultural use may be different than what's described, and perception of contamination by affected community members may extend beyond the actual effects.
- The EAO acknowledges there is uncertainty about how community members may respond to the real and/or perceived risks related to potential malfunctions or accidents and the feelings of stress or avoidance behaviours by affected community members has been considered in this analysis. The EAO considers that real and/or perceived risks due to Project-related marine vessel traffic, or the potential for accidental release of hazardous materials into the terrestrial or marine environment could have effects on human health, marine use, marine resources, consumption of country foods, knowledge transmission, cultural continuity, and community health and wellness.
- The EAO concluded that Project-related spills would pose a low to high risk to certain Valued Components linked to consumption of country foods (i.e., freshwater fish and fish habitat, marine resources, human health, and community health and wellness) depending on the scenario;
- To address potential effects due to project-related transportation incidents including spills, the EAO has proposed for the Road Transportation Management Plan and Marine Transportation Communication Plan to be developed in consultation with First Nations, in addition to the EAO's recommended Key Mitigation Measures under IAA, and the standard federal conditions related to malfunctions and accidents.
- The EAO notes that the potential effects due to malfunctions and accidents on Indigenous Interests is discussed further in [Appendix 5](#) of the Assessment Report.

### *Potential for Effects on Sacred Places and Heritage Sites*

Gitxaala Nation expressed concern about the potential effects of marine accidents on valuable heritage sites. The Council of Haida Nation expressed concern about any oil spill or other vessel incident causing interference with traditional use of a resource or site. Following the application of mitigation measures, effects from onshore terrestrial or marine spills are not predicted to result in the loss of information about or alteration to an archaeological or heritage site within the Project footprint; However, during Application Review, the Proponents revised the Application to clarify that a terrestrial or marine spill within or near to sacred places and heritage sites, or other important cultural landscapes identified by First Nations, could result in increased avoidance and a change in conditions for members of those First Nations<sup>48</sup>.

- According to the Revised Application, archaeology and heritage resources could be affected if a fire or explosion occur in archaeological sites that are outside of the Project fenceline (any archaeology or heritage resources inside the fenceline are anticipated to be removed for construction). The risk assessment identified the consequences of a fire or explosion on archaeology and heritage resources as minor, after the application of the following mitigation measures:
  - The front-end engineering design process, which would incorporate engineering controls that are designed to prevent spills which may result in a fire or explosion as part of the LNG facility permitting;
  - Development and implementation of an integrity management program as required by ERAA that specifies practices that should be followed for environmental protection, safety, and continued operation;
  - Development and implementation of an emergency response program for operations in accordance with ERAA and CSA Z246.2; and

The EAO is of the view that, if Ksi Lisims LNG is approved, the issue would be addressed to an adequate level by:

- the existing regulatory framework, including requirements for the Proponents to develop an Emergency Response Plan to be informed by the Contingency Planning and Hazardous and Noxious Substances Document;
- other emergency management and response procedures to be included in the construction environmental management plan that would outline fire prevention and protection measures, and provisions to ensure that appropriate fire response equipment and personnel trained to use it would be maintained on-site;
- the EAO's recommended malfunctions and accidents-related Key Mitigation Measures under IAA, to be informed by the joint BCCP/ PPA NRA; and
- the federal conditions for malfunctions and accidents.

## **19.4. The EAO's Assessment and Conclusions**

A summary of the expected risks of Ksi Lisims LNG malfunctions and accidents to the Valued Components assessed is provided below in Table 59. The EAO's conclusions considered the proposed mitigation measures, including those required as part of the existing regulatory framework, and other measures proposed as provincial Certificate conditions, and/ or recommended by the EAO as Key Mitigation Measures under IAA.

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<sup>48</sup> Thomas D. Andrews and Susan Buggiey, "Canadian Aboriginal Cultural Landscapes in Praxis," in *Managing Cultural Landscapes*, by Ken Taylor and Jane Lennon (Oxfordshire, England: Routledge, 2012), 253.



Table 60: Summary of Potential Risks to Valued Components for Ksi Lisims LNG

Valued Components	Risk Rating	Rationale
Air Quality	<p><b>Low</b> (spills of hazardous materials not LNG; fires or explosions; loss of containment; vessel or carrier near-miss, grounding, collision or allision; LNG Carrier or NGL product vessel spill; and Project-related transportation incidents)</p> <p><b>Moderate</b> (emergency shutdown)</p>	<p>A spill of hazardous materials in the terrestrial or marine environment would temporarily impact local air quality; however, with mitigation measures (including design standards) the consequence of a hazardous spill affecting air quality would be insignificant.</p> <p>In the unlikely event of a fire or explosion, compounds such as fine particulate matter, carbon monoxide, sulphur dioxide, and nitrogen oxides may be released into the atmosphere. The air quality following a fire or explosion is expected to be within B.C.'s air quality objectives for airborne contaminants and the effects on air quality would be reversible as the smoke and particulates disperse. With the mitigation measures preventing spills that would cause fires or explosions in the first place, the consequences of potential effects of a fire or explosion to air quality would be minor.</p> <p>The consequence of the loss of containment of LNG on air quality would be insignificant because natural gas is non-toxic and therefore would result in short-term effects. If condensate was released, it would have minimal effects on air quality as very little would evaporate, and most would remain in liquid form. Similarly, the consequence from the release of NGL due to a product vessel spill would be insignificant. With mitigations, potential effects to air quality from a grounding, collision, or allision resulting in a release of diesel or bunker fuel that were to ignite would have a minor consequence on air quality.</p> <p>There could possibly be an unplanned shutdown resulting in a flaring event, including release of nitrogen dioxide, carbon monoxide, sulphur dioxide, and fine particulate matter. The consequence of flaring on air quality is minor based on modelling of two worst-case flaring scenarios, which showed that emissions are anticipated to remain below the B.C. air quality objectives.</p> <p>There would be a possibility for a transportation incident affecting local air quality, with insignificant consequences. Short-term, localized effects to air quality could occur if a vehicular accident or marine incident resulted in a fire, or a marine incident resulted in loss of containment, which would release criteria air contaminants or natural gas into the air.</p>
Acoustic	<b>Low</b> (fires or explosions; and emergency shutdown)	An explosion may cause a temporary increase in the sound levels on-site. However, the consequence of an onshore or offshore fire or explosion on the acoustic environment is expected to be insignificant. The consequence of an emergency shutdown including flaring would be insignificant, given that the off-shift workers will be in the workers accommodation building and the other nearest receptors are in Gingolx, 15 km east of the Project Site. In both cases, B.C.'s noise guidelines do not apply in emergency situations.
Surface Water	<p><b>Low</b> (fires or explosions)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; and Project-related transportation incidents)</p>	The probability of a spill of hazardous materials is considered possible (i.e., expected to occur once in every 1,000 years), and the consequence of a spill into surface water is predicted as moderate. The risks would primarily occur during construction when equipment would be working around watercourses. During operation, effects on

Valued Components	Risk Rating	Rationale
		<p>surface water would not be anticipated because of the layout of the land-based facilities and proximity of equipment to streams.</p> <p>The consequence of potential effects of a large-scale fire or explosion on surface water would be minor. If a fire escapes the Project fenceline, after it is extinguished a small portion of the ash and burnt woody debris could enter freshwater streams and wetlands over time. With the implementation of spill response measures, the consequence of a vehicular accident resulting in effects to surface water would be minor.</p>
<p>Vegetation and Wetlands</p>	<p><b>Low</b> (loss of containment; vessel or carrier near-miss, grounding, collision or allision)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; fires and explosions; and Project-related transportation incidents)</p>	<p>Risk for hazardous material spills affecting vegetation and wetlands would be low and the consequence would be minor, including during construction when equipment would be working around wetlands. During operations, effects to vegetation and wetlands resulting from a spill of a hazardous material would not be anticipated because of the layout of the land-based facilities (design mitigation) and proximity of equipment to vegetation and wetlands. Hazardous materials would be stored in unvegetated areas that have been cleared during construction and refueling would occur in designated areas with spill response equipment.</p> <p>If a fire escapes the Project boundary, or in the transmission line RoW, resulting in a wildfire (worst-case scenario) there could be losses to vegetation and wetlands. Despite the local climate and precipitation (up to approximately 2,400 millimetre per year) it is possible, although unlikely, that a malfunction or accident could result in wildfire within the vegetated portions of the Project footprint during summer months. In the unlikely event of a large-scale fire that escaped the Project's boundaries, the consequence to wetlands and vegetation would be moderate. For the Transmission Line Assessment Area, the Proponents identified that the consequences of a terrestrial fire during operation of the transmission line could exceed the characterization provided, but with additional proposed mitigation measures, the overall risk would remain moderate.</p> <p>Potential loss of containment could result in effects to wetland function from condensates that do not ignite, with minor consequence depending on the volume spilled, how quickly spill response and clean-up occurred, and the methods used for clean-up. The type of wetland, species sensitivity, and the time of year would all contribute to the effects to wetland function. Condensates will be stored on the floating LNG facilities in the marine environment; therefore, the risk for spills of a hazardous material affecting vegetation and wetlands would be low.</p> <p>The worst-case scenario for loss of containment of LNG or hazardous material spill from the floating LNG facilities, is a breach of one of the storage tanks within the hold of a floating LNG facilities and an ignition source nearby that results in a fire; however, the NSA determined that the breach of an floating LNG storage tank is not a credible scenario due to design features, the low speed of vessels and LNG carriers as they are berthing and deberthing, and that the LNG carriers would be tethered to tugs.</p> <p>With the implementation of mitigation measures, the consequences of a Project-related roadway incident affecting vegetation, and wetlands would be minor. A marine incident resulting in a spill of bunker fuel or marine diesel near a shoreline</p>

Valued Components	Risk Rating	Rationale
		<p>may affect estuarine and tidal wetlands, while the consequence of a spill affecting vegetation and wetlands in the open ocean area between Triple Island and the 12 nm limit would be minor. However, if a spill made it to the shores of Haida Gwaii, clean-up may be delayed as land access is difficult.</p>
<p>Wildlife and Wildlife Habitat</p>	<p><b>Low</b> (loss of containment; vessel or carrier near-miss, grounding, collision or allision; LNG Carrier or NGL product vessel spill)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; fires and explosions; emergency shutdown; and Project-related transportation incidents)</p>	<p>The consequence of potential effects to wildlife and wildlife habitat from spills of hazardous materials would be minor, especially during construction when equipment may be working around undisturbed wildlife habitats. The consequence of an NGL spill on wildlife would be minor to moderate, depending on the time of year.</p> <p>In the rare event loss of containment affected wildlife and wildlife habitat, the consequences would be insignificant to moderate depending on the time of year and whether any species at risk were present.</p> <p>An emergency shutdown resulting in a flaring would not directly affect wildlife and wildlife habitat, but noise from flaring may deter some species from using the area during the event. The consequence would be minor.</p> <p>The consequence of a grounding, collision, or allision (strike) affecting wildlife and wildlife habitat would be moderate, where a malfunction or accident could result in releases of marine diesel or bunker fuel potentially affecting marine birds, bears, wolves, and other wildlife using shoreline habitats, which is considered rare likelihood.</p> <p>Depending on the species affected, the consequences of a wildlife-vehicle collision could be minor to moderate, while the consequences of a marine incident, including release of diesel fuel or bunker oil that reach the shoreline used by wildlife, would be moderate.</p> <p>For the Transmission Line Assessment Area, the Proponents identified that the consequences of a terrestrial fire during operation of the transmission line could exceed the characterization provided should the fire spread on the landscape, but with the additional proposed mitigation measures, the overall risk would remain moderate.</p>
<p>Freshwater Fish and Fish Habitat</p>	<p><b>Low</b> (fires or explosions)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; and Project-related transportation incidents)</p>	<p>The probability of a spill of hazardous materials is considered a possibility (i.e., 1 in every 1,000 year occurrence). The consequence of potential effects to freshwater fish and fish habitat from a spill are considered minor to moderate, depending on whether riparian habitat is affected and whether fish are killed. These risks would primarily occur during construction when equipment may be working around watercourses. During operations, effects on freshwater fish and fish habitat are not anticipated because of the layout of the land-based facilities and proximity of equipment to streams.</p> <p>Consequences of a large-scale fire or explosion on fish and fish habitat would be short-term and minor. If a fire escapes the Project fenceline, after it is extinguished a small portion of the ash and burnt woody debris will enter freshwater streams and wetlands over time. For the Transmission Line Assessment Area, the Proponents identified that the consequences of a terrestrial fire during operation of the</p>

Valued Components	Risk Rating	Rationale
		<p>transmission line could exceed the characterization provided, but with the additional proposed mitigation measures, the overall risk would remain low.</p> <p>With the implementation of spill response measures, the consequence of a vehicular accident resulting in effects to freshwater fish and fish habitat would be minor.</p>
<p>Marine Resources</p>	<p><b>Low</b> (fires or explosions; vessel or carrier near-miss, grounding, collision or allision; and LNG Carrier or NGL product vessel spill)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; and loss of containment)</p> <p><b>High</b> (Project-related transportation incidents)</p>	<p>A spill of a hazardous material from the Project Site or floating LNG facilities affecting the shoreline could affect intertidal vegetation and marine resources associated with shallow habitats (e.g., clams). A spill would be noticed quickly, and response efforts would be initiated rapidly. The consequence of potential effects to marine resources would be moderate, due to species sensitivity and known toxicity of some materials (e.g., diesel fuel), and the anticipated response time for clean up.</p> <p>In the unlikely event of a large-scale fire or explosion, the adverse consequences on marine resources would be short-term and minor.</p> <p>The consequences of a loss of containment would range from insignificant to moderate depending on the timing of the breach and the presence of species at risk. The worst-case scenario for loss of containment of LNG or a hazardous material from the floating LNG facilities (i.e., breach of one of the storage tanks and an ignition source nearby that results in a fire) was determined as not a credible scenario by the NSA.</p> <p>With the mitigation measures in place, the consequence of a vessel grounding, collision, or allision (strike) that resulted in a spill of marine diesel or bunker fuel and affects marine resources is moderate to major, depending on the number of individuals affected. The consequence of a spill on marine resources in the open water area would be moderate.</p> <p>The consequences of an LNG Carrier or NGL product vessel spill on marine resources would be minor and the likelihood is considered rare.</p> <p>Consequences of a Project-related marine incident that results in a spill of marine diesel or bunker fuel and affects marine resources could be moderate to major, depending on the number of individuals affected; the consequence of a spill on marine resources in the open water area would be moderate.</p> <p>The EAO considered that real and/or perceived risks for spills of hazardous material into the environment could have a negative effect on marine resource should affected community members experience avoidance behaviours due to stress about harvesting marine resources, noting there is uncertainty about how community members may respond to real and/or perceived risks of spills.</p>
<p>Marine Use</p>	<p><b>Low</b> (fires or explosions; loss of containment; vessel or carrier near-miss, grounding, collision or allision; and LNG Carrier or NGL product vessel spill)</p>	<p>Marine use may be affected by an offshore spill if emergency response activity around the spill means that other marine vessels are prevented from using the area of Portland Channel until the spill has been mitigated. Effects on marine traffic would be expected to be short-term (i.e., hours to days). The consequence of an onshore or offshore spill on marine use would be insignificant to moderate.</p> <p>An offshore fire that extends beyond the safety zone may interfere with other marine users in the area until the fire or explosion is managed. Any effect on marine traffic is expected to be short-term in duration (i.e., hours). With the mitigation measures</p>

Valued Components	Risk Rating	Rationale
	<p><b>Moderate</b> (spills of hazardous materials not LNG)</p> <p><b>High</b> (Project-related transportation incidents)</p>	<p>described above and the required emergency response procedures, the consequence on marine use is expected to be insignificant.</p> <p>In the rare event that loss of containment of LNG or a hazardous material from the floating LNG facilities, or LNG Carrier or NGL Product Vessel Spills, resulted in effects on marine use, the duration of the effect would be short-term (i.e., minutes to hours). With mitigation measures and required emergency response procedures, the consequence on marine use would be insignificant.</p> <p>In the rare event that a carrier or vessel grounding, collision, or allision would result in temporary effects to marine use, emergency response efforts may block or partially block navigable waters for other vessels and First Nations’ use until the LNG carrier or NGL product vessel can be removed. The effects on other marine users would short-term (i.e., hours to days) before the vessel could be released from its location.</p> <p>A grounding, collision, or allision (strike) that resulted in a release of marine diesel or bunker fuel could affect fisheries through contamination and bioaccumulation, avoidance of harvesting areas, or a formal restriction on harvesting in the affected area. In most cases, impacts to a harvesting area would be reversible within a few years following clean-up activities. Consequences of a carrier or vessel grounding, collision, or allision that resulted in the release of marine diesel or bunker fuel would be major, with the consequence in the open water area (i.e., Triple Island to the 12 nm) moderate, depending on volume and location of the spill, and effectiveness of the clean-up efforts. The EAO considered that real and/or perceived risks for spills of hazardous materials into the environment could have a negative effect on marine use should affected community members experience avoidance behaviours due to stress about harvesting from marine areas, noting there is uncertainty about how community members may respond to real and/or perceived risks of spills.</p> <p>Project-related marine transportation incident could affect marine use because emergency response efforts may block or partially block navigable waters for other vessels and First Nations until the vessel involved in the incident can be removed. The effect is expected to be short-term (i.e., hours to days).</p> <p>Consequences of Project-related marine transportation incidents resulting in release of marine diesel or bunker fuel would be moderate to major, depending on the volume of material spilled, the location of the incident, and the timing of the incident (e.g., whether the incident took place during a First Nation’s harvesting activity or open fishing period). The consequence of such a spill in the open water area (i.e., Triple Island to the 12 nm) would be considered moderate and according to the Transportation Safety Board of Canada’s records of marine incidents in Canadian waters for 2022, this risk is substantially lower than that posed by such incidents from the fishing vessels<sup>49</sup>. The third-party transmission line may include a subsea portion, and it is expected that this would be routed to reduce potential for interaction with marine vessels, and the final routing will be indicated on charts and signs will be posted indicating its location.</p>

<sup>49</sup> TSBC. 2022. Marine transportation occurrence data from January 1995. <https://www.tsb.gc.ca/eng/stats/marine/data-6.html>.

Valued Components	Risk Rating	Rationale
<p>Infrastructure &amp; Services</p>	<p><b>Low</b> (spills of hazardous materials not LNG; fires or explosions; LNG carrier or NGL product vessel spills; and vessel or carrier near-miss, grounding, collision or allision)</p> <p><b>High</b> (Project-related transportation incidents)</p>	<p>Local resources (i.e., from Prince Rupert or Gingolx) would not be anticipated to provide emergency response support (i.e., police and/or fire department) due to the lack of resources in Gingolx and the Project being outside of the municipal boundary of Prince Rupert.</p> <p>If an onshore fire or explosion spread into the marine environment, or a fire or explosion originated offshore, the CCG may provide assistance. The consequence of an onshore or offshore fire or explosion on infrastructure and services would be insignificant. Depending on the type of incident, the response needs for multiple response events occurring at the same time may exceed the capacity of local resources and the effects would be short-term (i.e., days) and reversible. With the proposed mitigation measures and regulatory requirements, the consequences on local infrastructure and services from a potential fire or explosion would be insignificant to major.</p> <p>If a vehicular accident occurred outside of the Project Site, it is expected that local emergency response services (i.e., police, fire, or ambulance) would respond. The consequence of a vehicular accident affecting infrastructure and services would be insignificant to major, depending on the severity of the accident and the resources required to respond. Ksi Lisims LNG has committed to reducing the number of trips on Highway 113/8 Nisga’a Highway by using buses for workers during construction and through the development and implementation of traffic safety measures for Project-related travel between Prince Rupert, Terrace and Gingolx.</p> <p>Consequence of Project-related transportation incidents would be insignificant to major depending on the type and severity of the incident and the resources required to respond, and where the incident occurred. An incident in the open water area (i.e., Triple Island to the 12 nm) would be insignificant to moderate.</p> <p>An LNG carrier or NGL product vessel spill would rely on Project personnel, Western Canada Marine Response Corporation, or local SAR, depending on the material and volume spilled, the location and whether there are fatalities. The consequences of an LNG carrier or NGL product vessel spill affecting infrastructure and services would be insignificant to major depending on the type and severity of the incident and the resources required.</p>
<p>Community Health and Wellness</p>	<p><b>Low</b> (vessel or carrier near-miss, grounding, collision or allision; and LNG Carrier or NGL product vessel spill)</p> <p><b>Moderate</b> (spills of hazardous materials, not LNG; and fires or explosions)</p> <p><b>Extreme</b> (Project-related transportation incidents)</p>	<p>Community health and wellness could be affected by a spill of hazardous material through effects on the terrestrial or marine environment and organisms that are harvested for human consumption. If the spilled material bioaccumulates, there could be potential for health effects to individuals who eat contaminated food. Also, changes in perception associated with ecological change and the quality of country foods could result, leading to decisions by First Nation and non-First Nation community members to forego consumption of country foods from locations around a spill, or potentially a short-term change in the reliance on less healthy foods. The consequence would be insignificant to moderate, depending on the type and number of organisms affected, noting that the perception of contamination by affected community members may extend beyond the actual effects.</p>

Valued Components	Risk Rating	Rationale
		<p>Community health and wellness could potentially be affected by a terrestrial or marine fire or explosion, if the fire or explosion affected terrestrial resources (e.g., berries) or marine organisms (e.g., crabs, fish) that are harvested for human consumption. If a large-scale fire were to escape the Project footprint, there would be potential that wildlife habitat would be affected, which could change availability of traditional use food (e.g., hunted animals, vegetation species), potentially leading to a short-term change in reliance on less healthy foods. Also, changes in perception associated with ecological change and the quality of country foods could result, leading to decisions by First Nation and non-First Nation community members to forego consumption of country foods from locations around a fire and associated clean up efforts. There is potential that fire or explosion could result in injury or fatality to an off-shift worker. With mitigation measures in place to reduce the risk of a terrestrial or marine fire or explosion, the consequence would be insignificant to major.</p> <p>Community health and wellness could also be affected in the rare event of a carrier or vessel grounding, collisions, or allisions (strikes) leading to release of diesel fuel or bunker oil into the environment, or an LNG carrier or NGL product spill. If hazardous materials were to enter the marine environment affecting marine organisms (e.g., crabs, fish) that are harvested for human consumption, any areas affected by a spill of hazardous materials or NGLs would be required to be remediated. If there were residual risks to human health through the consumption of marine organisms once remediation is complete, a local harvesting ban may be established for the affected area. Also, changes in perception associated with ecological change and the quality of country foods could result, leading to decisions by First Nation and non-First Nation community members to forego consumption of country foods from locations around a spill, potentially leading to a short-term change in the reliance on less healthy foods. The EAO considered that real and/or perceived risks for spills of hazardous materials into the environment could have a negative effect on knowledge transmission, cultural continuity, and community health and wellness should affected community members experience avoidance behaviours and stress about harvesting country foods, noting there is uncertainty about how community members may respond to real and/or perceived risks of spills.</p> <p>Consequence of an LNG carrier or NGL product spill would be minor, and consequence of a carrier or vessel grounding, collision, or allision (strikes) resulting in a spill would be insignificant to moderate, depending on the type and number of organisms affected. Consequence of a vessel collision or grounding resulting in a spill in the open water area (i.e., Triple Island to the 12 nm) would be insignificant to moderate as well, due to the presence of fish and marine birds being present and potentially harvested from this area.</p> <p>Project-related transportation incidents could affect community health and wellness through injuries or fatalities to community members, effects on the terrestrial or marine environment and organisms that are harvested for human consumption, chemical releases or spills into the terrestrial or marine environment that affect organisms that are harvested for human consumption, or ability of community members to access employment, childcare, and food, due to road closures.</p>

Valued Components	Risk Rating	Rationale
		<p>Consequences of a Project-related transportation incident affecting community health and wellness would be minor to severe, depending on the type of injury sustained, if fatalities are incurred, if highway closures result from the accident, or if a spill occurred in the marine environment near a harvesting location. Also, changes in perception associated with ecological change and the quality of country foods could result, leading to decisions by First Nation and non-First Nation community members to forego consumption of country foods from locations around a spill, potentially leading to a short-term change in the reliance on less healthy foods.</p>
Human Health	<p><b>Low</b> (vessel or carrier near-miss, grounding, collision or allision; and LNG Carrier or NGL product vessel spill)</p> <p><b>Moderate</b> (spills of hazardous materials not LNG; and Project-related transportation incidents)</p>	<p>The probability of a spill of hazardous materials is considered a possibility (i.e., 1 in 1,000 year occurrence) for Ksi Lisims LNG, posing a moderate risk to human health in the event that hazardous materials entered freshwater or marine environments affecting marine organisms harvested for human consumption (e.g., crabs, fish). If a spill occurred during operations, the Proponents would enact its emergency management program, which would be developed in accordance with the ERAA.</p> <p>Any areas potentially affected by a hazardous spill would be remediated in accordance with the Contaminated Sites Regulation under <i>the Environmental Management Act</i>. If residual risks to human health remained once remediation was complete, a local harvesting ban could be established to reduce exposure of contaminants of concern the area. Consequence of potential effects of a hazardous spill to human health would be minor.</p> <p>Similar to hazardous spills, human health could be affected by a transportation-related incident (considered possible) if the incident resulted in a spill of a material (e.g., gasoline) that entered freshwater or marine environments affecting organisms harvested for human consumption (e.g., fish, crabs). Consequence would be minor. Also, in the rare event that a vessel grounding, collision, or allision affected terrestrial or marine environments and organisms harvested for human consumption, the consequence to human health would be minor.</p> <p>The risk to human health from a LNG carrier or NGL product vessel spill that does not immediately ignite would be asphyxiation and toxic effects. When NGLs are converted to gas they are expected to disperse and the length of time this takes depends on the weather conditions at the time of release. Potential effects to personnel on-site were not considered in this analysis because exposure would be managed through the Proponent’s Health, Safety, Security and Environment framework process. Off-shift workers, or other people in the vicinity of the vapour cloud may also experience adverse effects, but wind would dissipate any vapours away from the off-shift workers accommodation, and the closest community is 15 km away, and it is unlikely that a vapour cloud would have high enough concentrations to harm humans.</p> <p>NGLs may affect human health if the constituents that do not evaporate or dissipate enter the marine environment and affected organisms harvested for human consumption (e.g., crabs, fish) and consequence would be minor.</p>
Archaeology and Heritage Resources	<b>Low</b> (fires or explosions)	<p>A fire or explosion could potentially affect archaeological sites that are outside of the Project fenceline (any archaeology or heritage resources inside the fenceline are anticipated to be removed for construction) or pre- and post-contact archaeological</p>



Valued Components	Risk Rating	Rationale
		<p>and heritage sites within the Transmission Line Assessment Area. With the proposed mitigation measures the consequence would be minor.</p> <p>While a terrestrial or marine spill is not predicted to result in the loss of information about or alteration to an archaeological or heritage site within the Project footprint following the application of mitigation measures, a terrestrial or marine spill within or near to sacred places and heritage sites or other important cultural landscapes identified by First Nations could result in increased avoidance and a change in necessary conditions for community members.</p>
Greenhouse Gases	<p><b>Low</b> (fires or explosions; and LNG Carrier or NGL product vessel spill)</p> <p><b>Moderate</b> (loss of containment; and emergency shutdown)</p>	<p>In the unlikely event of a fire or explosion effecting greenhouse gases, release of carbon dioxide to the atmosphere would contribute to global emissions. The type and volume of material consumed in a fire or explosion would affect the level of GHGs released. The GHGs release from a fire or explosion would be limited compared to the overall Project GHG emissions or compared to provincial fire emissions. Therefore, consequence of a fire or explosion affecting GHGs would be minor.</p> <p>Accidental loss of containment of LNG or refrigerants into the atmosphere would result in a one-time release of GHGs that would increase the Project's GHG emissions. The volume of LNG released would depend on how quickly the release is detected and the emergency shutdown system can be activated to eliminate the source of the release. Even relatively large one-time events would be small in comparison to annual emissions. The consequence of an accidental release would be considered minor.</p> <p>An emergency LNG production unit shutdown that includes flaring would release GHGs to the atmosphere because of combustion of stored hydrocarbons. An estimate of 381 tonnes of carbon dioxide equivalent would be anticipated during maintenance flaring and an emergency shutdown event would have a similar level of emissions. The consequence of an emergency flaring event would be minor.</p> <p>In a rare event, an LNG carrier incident resulting in a cargo spill would release methane, a GHG, to the atmosphere. This would result in an increase in GHG emissions with a moderate consequence ranking.</p>

The EAO considered the views of the Proponents, Technical Advisors and First Nations in its conclusions. The EAO acknowledges that there is a high level of concerns regarding public safety and environmental risks associated with LNG activities. The EAO has proposed the following Certificate conditions related to malfunctions and accidents, including managing the risks of Project-related transportation incidents through the development of specific management plans:

- Condition 9 (Construction Environmental Management Plan) to include emergency response, spill prevention and response, waste management, and hazardous waste management;
- Condition 13 (Marine Transportation and Communication Plan) which in addition to other requirements, will require the Proponents to establish mechanisms for regular communication of Project activities that may affect marine use with marine users, and establish a grievance process for First Nation marine users experiencing loss of marine access, fishing equipment, or other marine use effects; and
- Condition 18 (Road Transportation Management Plan) to be implemented for the life of the Project, including emergency response planning, measures to reduce Project-related increases to traffic, and adaptive management procedures to address transportation effects on local infrastructure and services.

In addition to standard federal conditions for preventing and reducing risks of malfunctions and accidents, the EAO recommends the following Key Mitigation Measure under IAA:

- Marine Transportation Communication Plan, to be developed in consultation with Indigenous groups and relevant authorities.

In conclusion, the EAO is satisfied that the risks of accidents and malfunctions associated with Ksi Lisims LNG have been adequately identified and assessed for this EA. Considering the Proponents' risk analysis was conservative, that the proposed design, mitigation, and contingency measures would lower the likelihood and reduce the severity of a potential accident or malfunction, existing regulatory frameworks would set a high standard of safety for project operations, the EAO's proposed conditions and recommended Key Mitigation Measures under IAA, as well as the standard federal conditions for malfunctions and accidents, the EAO is of the view that the potential for severe- and high-risk effects due to malfunctions and accidents would be appropriately reduced and/or managed to an acceptable level for Ksi Lisims LNG.

## 20.0 APPENDIX 8 - DISPROPORTIONATE EFFECTS ON DISTINCT HUMAN POPULATIONS AND GENDER BASED ANALYSIS PLUS

### 20.1. Background

Section 25(2)(d) of the Act requires that every assessment consider the disproportionate effects on distinct human populations, including populations identified by gender. Paragraph 22(1)(s) of the IAA specifies that the assessment of a designated project must take into account the intersection of sex and gender with other identity factors. The effects of a project may not affect all members of the population in the same way. Some individuals and sub-groups may be more vulnerable to adverse effects; others may be better positioned to experience positive effects.

GBA Plus<sup>50</sup> is an analytical tool used to support the development of responsive and inclusive policies, programs, and other initiatives. GBA Plus is a process for understanding who is impacted by a project and in assessing how they may experience impacts differently. GBA Plus can inform how to develop mitigation measures to address differential impacts to diverse sub-populations. "Diverse sub-populations" in the context of GBA Plus refers to underrepresented groups of populations such as women, youth, Elders, racialized persons, Indigenous peoples, 2SLGBTQQIA+, disabled people, members of First Nations who live outside of their reserve(s), etc. Individuals can identify as members of any variety of these or other sub-populations, which intersect to shape their perspectives, ideologies, and experiences. GBA Plus guides practitioners to consider how these intersecting factors of individuals' identity, together with systemic inequalities, may influence individuals' unique experiences.

The Proponents embedded GBA Plus analysis throughout the Revised Application, to support identification of disproportionate effects. [Table 7.13-3 in the Community Health and Wellness section](#) of the Revised Application describes sub-populations considered in the assessment of Ksi Lisims LNG and the rationale for their inclusion. Sub-populations included in the assessment were identified via community engagement and through a review of literature describing effects of other similar projects on diverse sub-populations.

To the extent possible, the Revised Application includes data that is disaggregated to allow for a deeper understanding of how different intersecting factors affect various population groups. Where disaggregated data was not available, the Proponents sought to provide qualitative data from key informant interviews to supplement publicly available data.

### 20.2. Inclusive Engagement

Throughout the environmental assessment process for Ksi Lisims LNG, the EAO and the Proponents have endeavoured to use inclusive engagement methods to promote equitable access to project information and opportunities for input.

The Proponents and the EAO took the following steps to reach diverse sub-populations of potentially impacted populations:

- The Proponents engaged Nisga'a Nation and sought their guidance on how best to engage Nisga'a citizens and communities with the objective of identifying and engaging directly with subgroups of the Nisga'a Nation population (specifically vulnerable populations) to understand their perspectives on how Project interactions may affect them differentially and/or disproportionately;
- The Proponents identified and engaged with organizations that work with and/or represent under-represented, potentially impacted populations. Examples included organizations that provide supportive housing, shelter, and related services; organizations that represent visible minority groups; and organizations that work with or

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<sup>50</sup> Further information about GBA Plus is available here: <https://www.canada.ca/en/women-gender-equality/gender-based-analysis-plus.html>

advocate for the homeless, low-income households, and other vulnerable populations. The Proponents shared information with these organizations, worked to identify issues, interests, and concerns with respect to the Project; seek feedback on potential means of limiting adverse effects and enhancing beneficial effects on vulnerable sub-populations; and seek qualitative and quantitative information on vulnerable subpopulations;

- Project information materials were provided to the public and stakeholder groups by the EAO and the Proponents in both digital and print form, allowing for those without access to a computer to learn about the Project. Physical materials were made readily available at public locations (e.g., municipal libraries, local government offices) in local and regional communities. Digital materials and key project updates were made available on the EAO's [Ksi Lisims LNG website](#), the IAAC's [Ksi Lisims LNG registry](#), and the [Proponents' project website](#);
- The EAO held in-person, evening Open Houses in Terrace and Prince Rupert, at multiple stages of the environmental assessment;
- In addition to in-person Open Houses, the EAO held multiple virtual information sessions. In Early Engagement, which took place in 2021 during a time when travel and public gathering was challenging; IAAC and the EAO held two information sessions on successive days – each at a different time to allow for flexibility in options. The EAO also held afternoon virtual information sessions during each subsequent phase of the environmental assessment to provide an opportunity to those who were unable to attend the evening in-person Open Houses or preferred a virtual format; and,
- The Proponents held community meetings in neighbouring First Nations communities. Venues for in-person information sessions were, to the extent possible, located in accessible facilities. Virtual meetings were offered for those unable to access in-person sessions.

### 20.3. Existing Conditions by the Proponents

The Revised Application notes that the region in which Ksi Lisims LNG is located is largely dependent on natural resources and industrial development. Terrace and Prince Rupert serve as the service, supply, and population centres for the region, and are each home to just over 12,300 residents as of 2021 (12,300 for Prince Rupert and 12,017 for Terrace). Approximately one quarter of the population of Terrace and more than 40 percent of the population of Prince Rupert reported having Indigenous identity.

The Revised Application notes that as of 2021, men make up just over half of the local labour force and tend to earn more on average than women. The average employment income of Indigenous individuals was recorded as lower than the average incomes of both male and female members of the non-Indigenous population. As of 2021, the general unemployment rate in the region<sup>51</sup> was slightly higher than the provincial average, while the unemployment rate for the Indigenous population in the Local Assessment Area was notably higher (17.2 percent, as compared to the provincial average of 8.4 percent).

Both Terrace and Prince Rupert have a shortfall of housing supply and some neighbouring First Nations communities indicate constraints on meeting demand for housing among its members. Both Terrace and Prince Rupert report increased demand for supportive housing and a growing number of individuals experiencing homelessness. Additionally, food insecurity is higher in the region as compared to provincial or federal rates, particularly for households with children.

Life expectancies for both males and females in the region is several years lower than the provincial averages. Residents of the region report higher rates of smoking, obesity, cardiovascular diseases, and chronic obstructive pulmonary disease, as compared to provincial averages. By contrast, residents of the region report lower rates of high blood pressure,

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<sup>51</sup> The “region” referenced in this section is the Regional Assessment Area defined in [chapter 18.12](#) (employment and economy) of this Report.

asthma, and most sexually transmitted and blood-borne infections, while having higher levels of physical activity as compared to the provincial rates.

Additional information about existing conditions can be found in the following chapters of this Report: [chapter 18.11](#) (community health and wellness), [chapter 18.12](#) (economy and employment), and [chapter 18.13](#) (infrastructure and services).

## 20.4. Potential Project Effects by the Proponents

Ksi Lisims LNG would be located in a remote island setting, which would limit its interactions with many mainland communities and would require the workforce to travel to the site for extended rotations. Materials and equipment would be transported by land along Highways 16 and 113/ Nisga'a Highway and/or by marine vessel from Gingolx, Prince Rupert, or potentially from other coastal ports.

Construction of Ksi Lisims LNG is expected to last approximately three to four years, beginning in 2025 or later. The construction workforce is anticipated to average 400 to 450 people, reaching a peak of approximately 800 for roughly one year. The construction workforce would be housed in a fully self-contained floating camp (i.e., a “floatel”) at the project site. The construction workforce would be bussed from park-and-ride locations in local communities to either Gingolx, Prince Rupert, or Port Edward for transfer to the site via marine vessels.

Following commissioning, Ksi Lisims LNG would be in operation for a minimum of 30 years, with a permanent workforce of between 150 and 250 individuals on-site. Every three to five years, Ksi Lisims LNG would perform scheduled maintenance work that would require a “turnaround workforce” of approximately 75 to 150 additional individuals on-site. Both the operations and periodic turnaround workforce would be housed in on-site accommodations for the duration of their rotations.

The Proponents have identified the following effects that may disproportionately affect distinct human populations:

- Ksi Lisims LNG would bring positive effects to First Nations by advancing self-determination through economic reconciliation;
- The Proponents’ hiring and contracting policies aimed at expanding employment among sub-populations that are underrepresented in the industrial sector;
- Women and lone parents may be less able to procure employment at Ksi Lisims LNG, and therefore may be less able to benefit in the same way as men or two-parent families;
- Population growth in neighbouring communities may increase problematic substance use, crime, violence (including gender-based violence), strain on family relationships, and erosion of community cohesion, which may disproportionately affect First Nations communities, women, children, and youth.
- Increases in cost of living may be specifically challenging for low-income individuals, thereby affecting housing and food security. Lone parent families, 2SLGBTQIA+ communities, children and youth and persons with disabilities are disproportionately represented among this population;
- Increased competition for access to infrastructure and services (including health services) may disproportionately affect residents of Indigenous communities who travel to larger centres for health and medical services, and women requiring specific health services;
- The rotational shiftwork of Ksi Lisims LNG may disproportionately affect Indigenous employees of Ksi Lisims LNG, who may be impeded in practicing cultural and traditional activities;

- Indigenous persons may also be disproportionately affected by changes in abundance and distribution of harvested species, change in access to certain areas in the vicinity of Ksi Lisims LNG, changes in the experience of harvesting; and,
- Individuals engaging in outdoor activities or gathering plants in the vicinity of Ksi Lisims LNG, such as Indigenous persons, would disproportionately experience exposure to air pollutants. The Proponents state that air modelling suggests that health effects would be negligible, but the perceived risk may nevertheless result in a change of harvesting practices.

## 20.5. Proposed Mitigation Measures by the Proponents

In addition to following best management practices, the Proponents identified and committed to the following relevant mitigation measures to enhance potential benefits to underrepresented sub-populations and to manage potential adverse effects on diverse sub-populations:

- Develop and implement a community feedback tool or process to receive and address community suggestions, concerns, and complaints;
- Develop and implement a Social and Economic Effects Management Plan, to include specifications about the following:
  - Monitoring and reporting on skills training, employment and procurement for Ksi Lisims LNG;
  - Monitoring and reporting on the demand for community-level infrastructure and services as a result of the project;
- Providing shuttle service transport to marine ferry locations for workers in local communities. Pick up locations would likely include, but may not be limited to, Terrace and Prince Rupert;
- Develop and implement a Health and Medical Services plan to describe medical and first aid services available on-site and procedures for medical emergencies, with the intent of reducing emergency service requirements.
- Develop and implement a worker code of conduct, including ethics and respectful workplace training;
- Provide cultural awareness training to all personnel and contractors;
- Develop and implement workforce strategies that support the hiring of a British Columbian or Canadian resident construction workforce in the building of those components of Ksi Lisims LNG that will be constructed and/or assembled in Canada;
- Develop and maintain a database of Nisga’a businesses and contractors, as well as other Indigenous, local and regional businesses and contractors. Use the database to inform businesses and contractors of procurement opportunities;
- Develop and implement gender equity and diversity policies that focus on hiring Nisga’a Nation members, local and Indigenous persons, and women;
- Develop and implement procurement and contracting strategies to facilitate economic participation by local, regional, B.C., and Canadian suppliers, contractors, and service providers;
- Work with government agencies, educational institutions, and contractors to implement on-the-job training and apprenticeship programs;
- Encourage high school completion with Indigenous and other community partners by helping to create incentives, supports, and alternate pathways for Indigenous youth and others to complete high school; and,

- Identify potential shortages of workers with specific skill requirements and training; Work with education providers and communities to increase opportunities for Indigenous and local community members to obtain training.

## 20.6. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the disproportionate effects on distinct human populations for Ksi Lisims LNG were identified.

These topics are discussed briefly in the following paragraphs, with additional information available in the following chapters of this Report: [chapter 18.9](#) (marine use), [chapter 18.10](#) (human health), [chapter 18.11](#) (community health and wellness), [chapter 18.12](#) (economy and employment), and [chapter 18.13](#) (infrastructure and services).

### 20.6.1. Disproportionate adverse effects to First Nations populations

A number of technical advisors and members of the public pointed to a variety of pathways by which potential adverse effects of Ksi Lisims LNG could be disproportionately experienced by First Nations and its members. Women and Gender Equality Canada (WAGE), for example, noted the Proponents' recognition that individuals engaging in outdoor activities near to the Ksi Lisims LNG's site would experience a disproportionately higher degree of exposure to contaminants, which WAGE noted would likely be adults from Nisga'a Nation or other neighbouring First Nations. Gitxaala Nation noted that First Nations individuals and communities may disproportionately experience inequity and trauma resulting from a shipping-related accident or malfunction, should such an event occur during Ksi Lisims LNG's operations.

Gitga'at First Nation expressed concern about adverse effects to First Nations' marine use, which they outlined could have far-reaching consequences on First Nations' populations, including implications on social cohesion, ceremonial purposes, food security, health, and cost of living. Gitga'at First Nation further specified that traditional harvested foods can be an important resource in offsetting food costs, which can be two to three times higher in First Nations communities located at a distance from a population centre.

Gitga'at First Nation, the Ministry of Municipal Affairs, and members of the public raised concerns that Indigenous women and girls may experience increased risk of physical and sexual violence as a result of their exposure to members of Ksi Lisims LNG's workforce. Acknowledging that the workforce would be housed in a floatel located adjacent to Ksi Lisims LNG's remote worksite while they are on-rotation, the commenters noted that members of the workforce would be required to transit through various communities in order to access the worksite, and may indeed engage with members of the community while off-rotation.

Potential effects to First Nations populations resulting from potential exposure to inhalants, malfunctions or accidents, marine use, and community health and wellness are discussed with additional detail in the following chapters of this Report: [chapter 18.10](#) (human health), [chapter 19.0](#) (malfunctions and accidents), [chapter 18.9](#) (marine use), and [chapter 18.11](#) (community health and wellness). The EAO has also assessed potential impacts to all participating Indigenous nations, other First Nations engaged in the environmental assessment process for Ksi Lisims LNG, and Métis Nation of British Columbia in [Appendix 5](#) of this Report.

### 20.6.2. Disproportionate adverse effects in neighbouring population centres

The City of Terrace and Kitsumkalum First Nation noted that Terrace's position as the region's hub means that increases in economic activity throughout the region tends to result in Terrace receiving a disproportionate share of demand on the city's already-strained social, emergency, medical, and recreational services. Concurrent with these effects, the City of Terrace has forecasted a significant shortfall in housing supply through, and potentially beyond 2025. These technical

advisors specified that although economic growth in the region may be viewed as a benefit, past large projects in the region have introduced demand that eroded municipal services and drove up costs for supplies and labour. In these cases, although the demand for services, supplies, and labour may have been drawn from throughout the region, the residents of industrial hubs like Terrace and Prince Rupert had to carry the burden of paying increasing costs for sustaining municipal services and increasingly expensive labour and goods.

Gitga'at First Nation noted that the City of Prince Rupert and Gitga'at First Nation's own research have demonstrated that cumulative effects of projects in the Prince Rupert area have resulted in a significant shortfall in housing availability, with a particular deficit in housing for low-income families. Together, these technical advisors cautioned that Ksi Lisims LNG could exacerbate cumulative effects in Terrace and Prince Rupert, placing additional demand on already-strained infrastructure, services (including health and emergency services), housing, and increase the cost of living. Economic hardship resulting from these effects would likely, as noted in the Revised Application, be concentrated among individuals with lower incomes, which disproportionately include Indigenous persons, visible minorities, and women.

In consideration of the concerns raised, the EAO proposes the following Certificate conditions:

- Condition 11 (Community Feedback Process): requiring the Proponents to develop a process to receive and address community concerns and complaints.
- Condition 17 (Socioeconomic Management Plan): requiring the Proponents, in consultation with Northern Health, the Ministry of Municipal Affairs, the City of Prince Rupert, the City of Terrace, the North Coast A Regional District Electoral Area, District Municipality of Port Edward, Nisga'a Nation, Regional District of Kitimat-Stikine and First Nations to develop and implement the plan.
- Condition 14 Health and Medical Services Plan): requiring the Proponents to develop and implement an adaptive Health and Medical Services Plan.
- Condition 15 (Gender and Cultural Safety Plan): requiring the Proponents, in consultation with Northern Health, First Nations and Nisga'a Nation, to develop and implement the safety plan.

### 20.6.3. Disproportionate allocation of positive effects

Gitga'at First Nation noted that adverse social effects of a project are often disproportionately experienced by certain sub-populations, while those same sub-populations tend also to be less likely to experience benefits of the project. These sub-populations include low-income households, people with disabilities, women, children, and Indigenous peoples, including members who live in urban areas and outside of their home communities. Indeed, the Proponents noted in the Revised Application that women and Indigenous persons tend to be underrepresented in occupations that would benefit from Project employment, which in the absence of targeted mitigation would disproportionately allocate the employment and income advancement opportunities to non-Indigenous men. Similarly, older populations may be less likely to gain opportunities for Project employment. In an effort to combat this potential effect, the Proponents developed targeted measures aimed at supporting local and Indigenous businesses, noting that these measures may result in a disproportionate share of contracting and procurement opportunities to be realized by these groups.

In consideration of the concerns raised, and in addition to the conditions noted above, the EAO proposes the following Certificate conditions:

- Include the following requirements in the Condition 17 (Socioeconomic Management Plan) (discussed above):
  - Develop and implement the Socioeconomic Management Plan in consultation with Northern Health, the Ministry of Municipal Affairs, the City of Prince Rupert, the City of Terrace, the North Coast A Regional



District Electoral Area, District Municipality of Port Edward, Nisga’a Nation, Regional District of Kitimat-Stikine and First Nations;

- Detail hiring and training measures that prioritize regional hiring and procurement to reduce the increase in population associated with the Project workforce;
- Identify potential shortages of workers with specific skill requirements and training;
- Detail plans to work with regional employment agencies and economic development organizations to assist in planning for increased demand for Construction and Operation workers; and
- Detail plans to work with regional agencies to increase opportunities for Indigenous and regional community members to obtain training required for Project participation.
- Include the following requirements in Condition 16 (Worker Health and Wellness):
  - Requiring the following trainings are provided to workers and incorporated into workplace policies and culture at the Project:
    - Gender and cultural safety training that address topics such as the risks for Indigenous women and girls to be disproportionately impacted by industrial camps;
    - Violence and sexual harassment/abuse prevention training with mandatory harassment prevention training;
    - Addictions awareness training with access to addiction support services to ensure continuity of care without the risk of permanent employment loss;
    - An anonymous digital reporting systems for worker conduct; and
    - Access to medical and/or mental health professionals and services.

## 20.7. The EAO’s Assessment and Conclusions

The following Valued Components were assessed by the EAO as having potentially disproportionate effects on different populations:

- Infrastructure and services;
- Marine resources;
- Acoustic;
- Air quality;
- Community health and wellness;
- Employment and economy;
- Human health;
- Vegetation and wetlands;
- Marine use; and
- Wildlife and wildlife habitat.

After considering proposed mitigation measures and Certificate conditions (which would become legally binding if a Certificate is issued), the EAO concludes that there are unlikely to be significant adverse effects on distinct human populations. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee, First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan), Condition 17( Socioeconomic

Management Plan), Condition 14 (Health and Medical Services Plan), Condition 11 (Community Feedback Process) Condition 15 (Gender and Cultural Safety Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, where relevant to areas within federal jurisdiction ([Appendix 2](#)).

## 21.0 APPENDIX 9 - SUMMARY OF EFFECTS ON BIOPHYSICAL FACTORS THAT SUPPORT ECOSYSTEM FUNCTION

### 21.1. Background

This chapter summarizes the potential effects Ksi Lisims LNG would have on biophysical factors that support ecosystem function. The result of this analysis provides decision makers with greater insight into the sustainability of Ksi Lisims LNG, and particularly how it may protect the environment and foster a sound economy and promote the well-being of British Columbians and their communities.

Section 25(2)(e) of the Act, requires that effects on biophysical factors that support ecosystem function be considered in every assessment.

Ecosystem function relates to the different physical, chemical, and biological components of an ecosystem (for example, vegetation, water, soil, atmosphere, and biota) and how they operate and interact with each other within ecosystems and across ecosystems. The function of an ecosystem depends upon the long-term integrity of its physical, chemical, and biological elements.

Biophysical factors that support ecosystem function were assessed through the Valued Component framework, and then summarized in a section in the Revised Application that collectively describes how these factors were assessed in the environmental assessment.

#### What are the biophysical factors that support ecosystem function?

Biophysical factors that support ecosystem function can be grouped into the following ten categories: habitats supporting ecosystem function, habitat patches, natural disturbance regime, structural complexity, hydrologic or oceanographic patterns, nutrient cycling, purification services, biotic interactions, population dynamics and genetic diversity.

These biophysical factors can vary in their contribution to ecosystem function and may be affected by potential project impacts at a landscape or watershed level, ecosystem level or ecological community level. Biophysical factors are assessed at the level that coincides with the potential effect.

### 21.2. Potential Project Effects and Proposed Mitigations by the Proponents

#### Pathway of Effects

Ksi Lisims LNG has the potential to affect biophysical factors that support ecosystem function through the following pathways:

- Habitats supporting ecosystem function, specifically old forest, wetland, riparian, intertidal and marine that support species diversity and habitat for species at risk;
- Habitat patches that support wildlife movement and species diversity for songbirds, raptors, bats, amphibians, large and medium carnivores, and furbearing animals;
- Natural disturbance regimes (such as wildfire, flooding, and pests) that maintain some ecosystems, biodiversity, and regeneration;
- Structural complexity which can create unique habitats for vegetation and wildlife;
- Hydrologic patterns which support the transfer of sediment and nutrients to downstream habitats;
- Nutrient cycling which allows nutrients to move from soils to plants and wildlife, and back to soils;

- Purification services from wetlands which can support filtration of chemicals; and
- Biotic interactions which can support species relationships, including those that are symbiotic, predatory, competitive, mutualistic, and parasitic, contributing to species diversity.

Ksi Lisims LNG is not expected to interact with the following pathways:

- Population dynamics;
- Genetic diversity; and
- Oceanographic patterns.

The Proponents assessed the following seven key biophysical valued components to characterize potential effects of the Project on biophysical factors that support ecosystem function: air quality, surface water, groundwater, vegetation and wetlands, wildlife and wildlife habitat, freshwater fish and fish habitat and marine resources.

### Habitats Supporting Ecosystem Function

The Proponents predicted that Ksi Lisims LNG has the potential to affect Valued Component indicators of habitats supporting ecosystem function (e.g., old forest and federally designated ecologically important wetlands, intertidal).

Vegetation clearing of 18.1 ha of old forest and 13.3 ha of wetland will result in a local loss of 4.6 ha of red-listed and 1.1 ha of blue-listed ecological communities. The Project footprint and Transmission Line Assessment Area overlaps with designated critical habitat for marbled murrelet and ecologically important wetlands. Additionally, the Marine Shipping Regional Assessment Area and Open Water Assessment Area also overlaps with ecologically and biologically significant areas and DFO Important Areas for marine fish and mammals, including orcas and baleen whales. These areas likely provide important features that support ecosystem function but are small relative to the extent of the remaining local ecosystems. An increase in edge effects is also predicted to impact additional areas of listed ecological communities through changes in temperature (air and soil), light conditions, soil moisture and nutrients, plant competition (particularly from invasive plants), and pathogens and/or windthrow, which could make local forest and wetland ecosystems more susceptible to change.

Temporary on-site power generation will create air emissions and are predicted to deposit acid and nitrogen to surface water and soils. This could result in acidification and/or eutrophication critical load exceedances in red- and blue-listed ecological communities and may increase susceptibility of local ecosystems to change from future air emissions or climate change. However, the Proponents anticipate an effect of low magnitude and minor consequence and limited to ecological communities within the Project boundary. The Proponents assert that no critical load exceedances are predicted after the Project is connected to the BC Hydro grid. The EAO has proposed Certificate Condition 9 (Construction Environmental Management Plan) that would require the Proponents to implement air quality management that implements industry standard practices through Construction including dust control measures. In addition, the EAO has recommended a pre-construction survey of environmentally sensitive features, the development of mitigation measures for wildlife, wetlands and vegetation including a federal follow-up programs with monitoring, reporting and mitigation.

### Habitat Patches

Habitat patches was selected as a key biophysical factor because potential Project effects on Valued Component indicators (e.g., wildlife movement and species diversity) are predicted. The Proponents assessed potential Project effects on the movement of terrestrial and wetland wildlife and determined effects to be low to moderate and local. Project infrastructure, forest clearing, and roads may create barriers for songbirds, amphibians, and terrestrial mammals. Barriers created by the marine terminal and vessels, as well as night lighting has the potential to affect local shorebird movement and migrations, though the Proponents have not identified the area as a key migration route or ecological corridor for

migrating birds. The Project requires an increased presence of marine traffic transiting through marine fish, mammals and/or bird foraging, spawning, rearing, or migration habitats within the Marine Terminal and Marine Shipping and Regional Assessment Areas. These activities may cause local displacement or avoidance due to noise, light, and transiting vessels. The Proponents' assessment outlined that no population level effects on salmonoids, herring, or eulachon movements to and from the Nass River or habitat patches are expected.

The Project may also result in local fragmentation of forest, wetland and riparian habitats, and potentially affect species sensitive to habitat fragmentation (e.g., western toad, forest songbird community, western screech-owl). The Proponents expect fragmentation will be limited to within the Terrestrial Wildlife Local Assessment Area and expect minimal isolation or fragmentation of freshwater fish habitat, intertidal, or marine ecosystems. The EAO included conditions in the proposed Certificate to mitigate and monitor Project effects on local habitats such as surveys to identify wildlife habitat features, adjust work windows to accommodate for sensitive wildlife periods such as bird nesting and constructing a bridge over wetlands between the floating LNG facility cooling system to protect amphibians and other wildlife species.

### Natural Disturbance Regimes

Natural disturbance regimes were selected as a key biophysical factor because potential Project effects on Valued Component indicators are predicted. The Proponents do not expect the Project to alter natural disturbance regimes in forest ecosystems or wetland functions, hydrology, or slope stability to the extent that it would alter natural disturbance regimes in freshwater or intertidal ecosystems. However, there could be a change in Project effects in the future (e.g., more extreme hydrogeological processes) due to natural disturbance regimes changing because of climate change and more extreme climatic events. The EAO has proposed the development of monitoring and adaptive management plans along with a Construction Environmental Management Plan to address potential changes in Project effects on natural disturbance regimes in the future.

### Structural Complexity

The Proponents predicted that Ksi Lisims LNG has the potential to affect Valued Component indicators of structural complexity (e.g., species health and diversity, ecosystem functions). The Proponents identified the possibility for Project activities to reduce the structural complexity of an ecosystem through numerous potential avenues. The loss of forest, wetland, riparian and intertidal habitat will result in local loss of important habitat features, biodiversity and functions for wildlife. In forests, a reduction in habitat features may decrease local dens, roosts and/or tree cavities for western screech-owl nests, mossy branches for marbled murrelet nests, structures for northern goshawk nests and larger trees that support bald eagle nests. A loss of wetland may result in reduced availability of breeding sites for amphibians and birds, though these wetlands have limited suitability for waterfowl breeding or migration stopover. A loss of riparian habitat could reduce the quality of fish spawning, rearing, migration, and overwintering. Finally, a loss of intertidal areas could result in reduced availability of stopover foraging habitat for shorebirds, though this area has not been identified by the Proponent as an important stopover site.

The loss of local ecosystem communities may result in a local reduction in structural complexity. In terrestrial habitats, a potential edge effect could result in changes in forest conditions which could reduce structural complexity in the adjacent forest ecosystem. In wetlands, potential sedimentation of adjacent wetland habitats during construction could result in a local reduction in structural complexity of the freshwater and intertidal ecosystems. In intertidal and marine habitats, vessel activity could result in reduced structural complexity of the intertidal ecosystem through the introduction of invasive species in saltwater wetlands, or by creating vessel wake or wash. The EAO has recommended mitigation measures for wildlife, vegetation, wetlands, and marine resources including a Construction Environmental Management Plan and federal follow-up programs with monitoring, reporting and mitigation.

## Hydrologic Patterns

Hydrologic patterns were selected as a key biophysical factor because potential Project effects on related Valued Component indicators (e.g., riparian and wetland functions) are predicted. Changes to surface water flow, runoff, and drainage patterns could occur through the pathways of water withdrawals and result in changes to land cover. The Proponents plan to manage water withdrawals such that flow will be maintained to meet environmental needs (i.e. the volume and timing of water flow required for the proper functions of the aquatic ecosystem). Water withdrawal limits, discharge and other water management infrastructure would be required to meet provincial regulations and permitting conditions that are protective of water quality, hydrology, and aquatic life. In addition, the EAO has proposed that Condition 9 (Construction Environmental Management Plan) include a water quality management and erosion and sediment control which will address potential Project impacts on hydrologic patterns. The Proponents do not expect to impact oceanographic patterns.

## Nutrient Cycling and Purification Services

The Proponents predicted that Ksi Lisims LNG has the potential to affect Valued Component indicators of nutrient cycling and purification services (such as vegetation species health and diversity, ecological communities at risk). Increases in acid and nitrogen deposition to waterbodies and soils from Project air emissions are predicted to occur during operation activities. The Proponents identified the potential for the Project to cause acidification and eutrophication in local terrestrial and freshwater ecosystems and affect species diversity, plant growth, health, and composition. This will impact communities at risk, old forest communities containing sensitive lichens and bog ecosystems that are sensitive to eutrophication. The Proponents have predicted some exceedances related to acidification, but expect potential residual effects to fish health, growth, survival, or reproduction to be low. Project emissions are expected by the Proponents to result in localized, short-duration inputs of nutrients into the ecosystem, which they plan to manage to industry standards. In addition, the EAO has proposed that a Construction Environmental Management Plan include a water quality management and sediment and erosion control which will address potential Project impacts on nutrient cycling and purification services.

Effluent will be discharged into marine waters (e.g., stormwater, treated sewage, diluted desalination brine) throughout the life of the Project, which could increase total suspended solids. Construction of infrastructure could result in shoreline erosion and sediment entering the marine environment, which the Proponents predict will occur primarily during large rainfall events and be confined to the assessment area. The Proponents do not expect the Project to alter nutrient cycling on Pearse Island. However, effluent discharge is managed and must comply with applicable federal and provincial regulations and guidelines designed to protect water quality, and discharges associated with the Project will require a Waste Discharge Authorization and will be required to meet permit conditions for effluent quality. Additionally, the EAO has proposed mitigation measures for marine resources including the development of a Construction Environmental Management Plan, which would include erosion and sediment control measures.

## Biotic Interactions

The Proponents expect the Project to have a limited effect on local keystone (e.g. bear, eulachon), foundation (e.g. eelgrass, kelp forests), or cornerstone (e.g. pacific sand lance) species that could alter local ecosystems, but not on the broader ecosystem function. There is also a potential for returning salmon and eulachon to avoid the local area or be temporarily displaced during the construction phase due to underwater noise.

The Proponents have identified the potential for the Project to introduce terrestrial or marine invasive plant species via equipment from the mainland or vessels, which could change the local wetland ecosystem function. To limit the spread of invasive species such that it will not change the ecosystem function, the Proponents will implement an invasive species management plan.

The Project is predicted to potentially shift the predator-prey dynamics locally and seasonally within the Marine Local Assessment Area and Terrestrial Wildlife Local Assessment Area. Night lighting could alter behavioural changes in bats, nocturnal birds, fish, and invertebrates and enhance predator mobility and access to prey. The extent of artificial light exposure will be restricted to the immediate area surrounding the light source. The Proponents do not expect impacts from the artificial light to change broader ecosystem function and no long-term shifts in species interactions are predicted.

Underwater noise may cause temporary displacement or interference with foraging behaviour of marine mammals. The effects are expected to occur intermittently and within the Marine Terminal Regional Assessment Area and Marine Shipping Regional Assessment Area. In addition, the EAO has recommended mitigation measures for wildlife, vegetation, and marine resources including a Construction Environmental Management Plan and federal follow-up programs with monitoring, reporting and mitigation.

### Proposed Mitigation Measures

Mitigation measures proposed to avoid or reduce effects on individual Valued Components (that is (air quality ([chapter 18.2](#)), surface water ([chapter 18.4](#)), groundwater ([chapter 18.3](#)), vegetation and wetlands ([chapter 18.8](#)), wildlife and wildlife habitat ([chapter 18.7](#)), freshwater fish and fish habitat ([chapter 18.6](#)) and marine resources ([chapter 18.5](#))) would also manage biophysical factors that support ecosystem functions. See these chapters for a complete list of mitigation measures. Select relevant mitigation measures are described below.

- Project Design Mitigation Measures
  - Conduct progressive reclamation of temporarily disturbed areas, using plant species of interest to Indigenous peoples, identified in consultation with Indigenous groups, to establish self-sustaining vegetation;
  - Prevent and mitigate accidents and malfunctions causing adverse environmental effects by designing Project infrastructure to meet seismic design criteria, implementing fire and spill prevention measures; and refueling vehicles and equipment only in designated areas to prevent fuel spills and ground contamination;
  - Designing all crossings of fish-bearing watercourses in a manner that avoids harm to fish and fish habitat and in compliance with the Fisheries Act; and,
  - Control lighting required for the Project including the direction, timing, intensity and glare of light fixtures, to mitigate adverse effects on migratory birds, while meeting operational health and safety requirements.
- Valued Component Mitigation Measures
  - For air quality, reduce the quantity of vented or flared gas and the duration of venting or flaring events to the minimum required for emergency or maintenance purposes;
  - For surface water, manage stormwater runoff so that discharges meet total suspended solids levels do not cause the receiving environment to exceed B.C.'s Water Quality Guidelines for the Protection of Aquatic Life for turbidity and total suspended solids levels for both short-term and long-term exposures. Manage acid generation and metal leaching along the transmission line corridor and develop and implement measures to prevent the contamination of the receiving environment by acid-generating, metal-leaching, or potentially acid-generating materials;
  - For vegetation and wetlands, consult with Indigenous groups and authorities to implement measures to prevent the spread of invasive plant species. Conduct vegetation clearing required for the Project outside of the migratory bird nesting periods as identified in Environment and Climate Change Canada's General nesting periods for migratory birds, unless not technically feasible;

- For wildlife and wildlife habitat, develop, in consultation with Indigenous groups and relevant authorities (including Environment and Climate Change Canada), and implement, mitigation measures for marbled murrelet in the Marine Terminal and Transmission Line Corridor. Carry out the Project in a manner that protects migratory birds and avoids injuring, killing or harassing migratory birds or destroying, taking or disturbing their eggs, or damaging, destroying, removing or disturbing their nests, while taking into account Environment and Climate Change Canada’s Guidelines to avoid harm to migratory birds. Use avoidance buffers around identified wildlife habitat features to limit impacts to wildlife;
- For freshwater fish and fish habitat, Mitigate effects to freshwater fish and fish habitat including by limiting water withdrawals in fish bearing streams, isolating instream construction activities in fish bearing streams from adjacent flowing water, salvaging and relocating fish prior to in water construction activities requiring isolation and dewatering of fish habitat and implementing water intake structures in fish bearing streams in a manner that prevents entrainment and impingement of fish. Maintain erosion and sedimentation control measures during all phases of the Project to prevent release of sediments to the receiving environment; and
- For marine resources, operate water intake structures in the marine environment in a manner that prevents entrainment and impingement of fish and that is consistent with the Fisheries Act. The fish exclusion zone during impact pile installation shall be the area that is effectively enclosed by the sound attenuation device. The peak underwater sound pressure level shall not exceed 207 dB re: 1 µPa outside of the sound attenuation device. Implement measures to mitigate adverse federal effects caused by underwater noise emitted from construction. Consider approaches to reduce generation and transmission of underwater noise caused by operation of marine infrastructure including the floating LNG facility.

### Cumulative Effects

Residual effects of Ksi Lisims LNG are expected to contribute to cumulative effects on key biophysical factors that support ecosystem function. Potential residual cumulative effects are described in more detail in the cumulative effects assessment for each biophysical valued component (air quality ([chapter 18.2](#)), surface water ([chapter 18.4](#)), groundwater ([chapter 18.3](#)), vegetation and wetlands ([chapter 18.8](#)), wildlife and wildlife habitat ([chapter 18.7](#)), freshwater fish and fish habitat ([chapter 18.6](#)) and marine resources ([chapter 18.5](#)).

### Positive Effects and Enhancement Measures

The Proponents did not identify any positive effects of the Project or enhancement measures on biophysical factors that support ecosystem function.

## 21.3. Key Issues Raised

No issues were raised with the Proponent’s assessment of potential effects specifically to ecosystem functions.

## 21.4. The EAO’s Assessment and Conclusions

This section presents the EAO’s conclusions on the potential positive and negative effects from Ksi Lisims LNG on biophysical factors that support ecosystem function.

### Proposed Provincial Conditions and Federal Mitigation Measures

Provincial conditions and recommended Mitigation Measures under the IAA are proposed related to the following valued components:

- Air Quality (see [chapter 18.2](#));
- Surface Water (see [chapter 18.4](#));



- Groundwater (see [chapter 18.3](#));
- Vegetation and Wetlands (see [chapter 18.8](#));
- Wildlife and Wildlife Habitat (see [chapter 18.7](#));
- Freshwater Fish and Fish Habitat (see [chapter 18.6](#)); and,
- Marine Resources ([chapter 18.5](#)).

No additional conditions or Mitigation Measures are proposed specific to biophysical factors that support ecosystem functions.

### Residual Effects

After considering the proposed provincial conditions and federal Mitigation Measures, the EAO concludes the predicted effects on ecosystem function, as shown in Table 60 below.

Table 61: Effects on Ecosystem Functions

Ecosystem Function	Assessment Rating	Rationale
Habitats Supporting Ecosystem Function	Low magnitude, localized and permanent	Loss of habitat would be localized and is not predicted to have a regional effect. The effects of acid and nitrogen deposition of habitat is predicted to be low.
Habitat Patches	Medium magnitude, localized and permanent	The effects on the movement of terrestrial and wetland wildlife are predicted to be moderate locally and low regionally. Disturbance to connectivity from shipping is predicted to be temporary during the transit of vessels.  No isolation or fragmentation of freshwater, intertidal or marine ecosystems is anticipated.
Natural Disturbance Regimes	Low magnitude, localized and permanent	The Project is not expected to alter natural disturbance regimes. However, there could be a change in Project effects in the future if natural disturbance regimes change due to global warming and more extreme climatic events.
Structural Complexity	Low magnitude, localized and permanent	The loss of forest, wetlands, riparian habitat, and intertidal areas will result in local loss of important habitat features, biodiversity and functions for wildlife which may cause a reduction in the structural complexity of these ecosystems.
Hydrologic Patterns	Low magnitude, localized and permanent	Changes to freshwater patterns would be localized and is not expected to have a regional effect. Water withdrawals will be managed such that flow will be maintained to meet environmental needs. The Proponents do not expect to impact oceanographic patterns.
Nutrient Cycling and Purification Services	Low magnitude, localized and permanent	Project emissions will result in localized, short-duration inputs of nutrients into the ecosystem that will be managed to industry standards.
Biotic Interactions	Low magnitude, localized and permanent	The Project is predicted to have a low effect on species that could alter ecosystems, be limited to the local areas, and not affect the broader ecosystem function.

Ecosystem Function	Assessment Rating	Rationale
		A potential for the introduction of terrestrial or marine invasive plant species has been identified but will be mitigated through invasive species management.

### Conclusion

After considering the information provided by the Proponents in the Application, the views of the Technical Advisory Committee and the public, the proposed the proposed Mitigation Measures identified in the provincial Table of Conditions including Condition 9 (Construction Environmental Management Plan); and recommended Key Mitigation Measures and Follow-up Programs under the IAA, the EAO concludes that there would be a low magnitude of effects on biophysical factors that support ecosystem function. The EAO is satisfied that effects on these factors would be appropriately mitigated and minimized to the extent possible for the Project.

## 22.0 APPENDIX 10 - EFFECTS ON CURRENT AND FUTURE GENERATIONS

### 22.1. Background

Section 25(2)(f) of the Act requires that effects on current and future generations be considered in every assessment. This means that both positive and negative project effects on current and future generations must be considered for environmental, economic, social, cultural and health values and in relation to the Indigenous Interests that may interact with the Project. Subparagraph 22(1)(a)(iii) of the IAA specifies that the assessment of a designated project must take into account the result of any interaction between changes to the environment or to health, social or economic conditions. The extent to which the likely effects of Ksi Lisims LNG contribute to sustainability, defined as “the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations,” is a factor to be considered as per paragraph 22(1)(h) of the IAA and is discussed in more detail in [Appendix 15](#).

This information allows decision makers to understand whether the current and future natural environment, people and communities would be better or worse off because of Ksi Lisims LNG. The result of this analysis provides decision makers with greater insight into the sustainability of Ksi Lisims LNG, particularly how it may protect the environment and foster a sound economy and well-being of British Columbians and their communities.

#### Relevant Initiatives and Strategies

The following federal, provincial, regional, and First Nation initiatives and strategies are relevant to sustainable development and Ksi Lisims LNG:

#### What is considered a current and future generation?

25 years is generally considered representative of a single generation however the Act (2018) does not assign a specific numerical value to the term. Generally, effects on current generations would be felt within the next 25 years, while effects on future generations would be felt 25 years and beyond.

#### Clean BC

The goals of CleanBC that are relevant to Ksi Lisims LNG include:

- Reducing GHG emissions by 40 percent below 2007 levels and reaching net zero by 2050.
- Aim to eliminate industrial methane emissions by 2035.
- CleanBC is inclusive of the Climate Preparedness and Adaptation Strategy.
- Significantly increasing industrial electrification in the province, with Ksi Lisims LNG being powered by electricity from BC Hydro and aims to be one of the lowest carbon intensity LNG facilities in world.

#### Stronger BC

The Stronger BC initiative includes Climate Action which aims to invest and partner with Indigenous communities on clean energy solutions, more suitable land use, protecting people and communities from climate-related disasters, clean transportation, protecting old growth forest, reducing effects of climate change, keeping our waters clean and protecting industry, helping communities reduce disaster risk, and building more low-carbon materials. B.C. is also taking action to build a stronger economy by helping B.C. businesses hire and grow and providing jobs and training and opportunities for trade work.

**First Nation Climate Change Initiative (FNCI)**

A major policy initiative of FNCI is the promotion of net zero LNG as a transition step to the low carbon economy of the future while supporting “economic self-determination and restoration of traditional territories” (FNCI 2022). The Project’s objectives align with many of the objectives of the FNCI.

**BC First Nations Climate Strategy and Action Plan**

The goals of this action plan include (BC Assembly of First Nations 2022):

- Ensuring First Nations’ Title, Rights, and Treaty Rights in B.C. are recognized and affirmed in climate planning and response.
- Ensuring First Nations in B.C. are empowered and prepared with the capacity and tools needed to effectively lead the response to the climate crisis both now and in the future.
- Ensuring the health, stability, and resiliency of the land, waters, and environment for generations to come.
- Ensuring First Nations in B.C. are effectively responding to the climate emergency and current and projected climate impacts by working to reduce GHG emissions and developing their own self-determined initiatives grounded in community-specific priorities.

**Nisga’a Land Use Plan (LUP)**

The NLG developed the *Land Use Plan for Nisga’a Lands* in 2002. The Nisga’a Land Use Plan is guided by four principles:

- Adherence to the principle of the “common bowl;”
- Sustainable use of resources on Nisga’a Lands for the benefit of Nisga’a citizens;
- Protection of the environment from ecological degradation; and
- Equitable access to Nisga’a Lands and resources for Nisga’a citizens.

**Nisga’a Treaty**

The Nisga’a Treaty has been in effect as of May 11, 2000, and establishes decision-making authority for the NLG, facilitating economic development opportunities for the NLG.

**Prince Rupert Strategic Plan 2024**

The City of Prince Rupert will prioritize its actions to improve its fiscal health.

***Canadian Net-Zero Emissions Accountability Act***

This act is to require the setting of national targets for the reduction of greenhouse gas emissions based on the best scientific information available and to promote transparency, accountability and immediate and ambitious action in relation to achieving those targets, in support of achieving net-zero emissions in Canada by 2050 and Canada’s international commitments in respect of mitigating climate change.

***Greenhouse Gas Industrial Reporting and Control Act***

For each reporting period, in accordance with the regulations, the operator of a reporting operation must ensure that the reports required by the regulations respecting the following are submitted to the director:

- The amount of GHG emissions, determined in accordance with the regulations is attributable to the reporting operation for the purposes of this section for the reporting period

***Climate Change Accountability Act***

The following targets are established for the purpose of reducing B.C. GHG emissions:

- by 2030 and for each subsequent calendar year, B.C. GHG emissions will be at least 40 percent less than the level of those emissions in 2007;
- by 2040 and for each subsequent calendar year, B.C. GHG emissions will be at least 60 percent less than the level of those emissions in 2007; and
- by 2050 and for each subsequent calendar year, B.C. GHG emissions will be at least 80 percent less than the level of those emissions in 2007.

***Carbon Tax Act***

An act to mitigate climate change through the pan-Canadian application of pricing mechanisms to a broad set of GHG emission sources and to make consequential amendments to other acts

***Energy Resources and Activities Act***

The purpose of the regulator is to regulate energy resource activities in a manner that protects public safety and the environment, supports reconciliation with Indigenous peoples and the transition to low-carbon energy, conserves energy resources and fosters a sound economy and social well-being

Additionally, the management of GHG emissions is subject to federal and provincial requirements and is further described in [Appendix 12](#) (greenhouse gas emissions).

## 22.2. Potential Project Effects and Proposed Mitigations

This section provides an overview of positive and negative effects and mitigation and enhancement measures to both reduce negative effects and distribute positive effects across generations.

The Proponents provided a summary of effects on current and future generations in [section 22](#) of the Revised Application, with the overarching goal of serving four purposes that are foundational and relevant to current and future generations of potentially affected First Nations and all Canadians:

- Create economic self-determination for the Nisga’a Nation and improve the quality of life for Nisga’a citizens;
- Create direct and indirect economic benefits for other First Nations, B.C., Alberta, and Canada;
- Enable the export of clean and reliable Canadian natural gas to markets outside North America;
- Provide lower carbon-intensive energy source to meet growing global energy demands and support lower global greenhouse gas emissions.

### Pathways of Effects

Ksi Lisims LNG has the potential to affect current and future generations through the following pathways:

- Project-related population growth has the potential to increase demand on infrastructure and services (e.g. accommodations, traffic, health services) and may pose negative effects on community safety, substance use, and communicable diseases;
- Project-related marine activities, including vessel traffic, construction and operations of the LNG facility, have the potential to negatively affect First Nations, recreational and commercial marine fish and aquaculture harvesting, recreational and tourism marine use as well as aesthetic conditions;

- Project physical activities and marine use have the potential to negatively affect First Nations interests, including changes to sense of place, cultural identity, effects on sacred places and heritage sites, access and travel, self-determination, economic development, as well as health and wellness;
- Project activities have the potential to negatively affect changes to biophysical conditions, such as vegetation and wetlands, water (surface and ground), wildlife habitat, freshwater fish, and marine resources, at the Site which have the potential to contribute to biodiversity loss, therefore indirectly and directly affecting current and future generations;
- GHG emissions have the potential to contribute to climate change, which can have a direct and indirect effect on current and future generations;
- Project-related employment opportunities and economic activity may have a positive and negative effect on regional businesses, local employment and income status, educational attainment, cost of living, and contributions to government revenue; and
- The project has the potential to positively affect self-determination and economic reconciliation, which may contribute to improving overall health and well-being for Nisga'a citizens.

### Adverse Effects

Given that the project is scheduled for a minimum of 30 years, effects are anticipated to be multigenerational and given that Ksi Lisims LNG may be only partially reversible or irreversible upon Project completion, future generations may continue to be affected once Ksi Lisims LNG is no longer operational.

The Proponents have concluded that in the Revised Application that based on the findings from the assessment of biophysical valued components, the negative residual effects on current and future generations are predicted to be low to medium in magnitude and largely localized to the Site and Local Assessment Areas of applicable Valued Components. Construction of marine infrastructure will result in direct loss and alteration of fish habitat within the Site and has been assessed as irreversible; however, ecological consequences of construction activities are not likely to affect the long-term persistence of any marine fish or invertebrate populations and it is anticipated that offsetting of habitat may be required, see [chapter 18.5](#) (marine resources).

The Proponents further state that changes in abundance of plant species of interest, change in wetlands, and change in abundance or condition of ecological communities of interest due to vegetation clearing, construction of temporary and permanent marine-based infrastructure, and operational emissions are predicted to be partially reversible to irreversible following decommissioning, see [chapter 18.8](#) (vegetation and wetlands).

Change in habitat, change in movement, and change in mortality risk due to vegetation clearing, Site preparation during construction, and sensory disturbance during all phases of the Project will result in direct habitat loss or alteration of wildlife habitat throughout the lifespan of the Project and are predicted to be partially reversible to irreversible, see [chapter 18.7](#) (wildlife and wildlife habitat).

The Proponents have concluded that for community health and wellness, transient workforces, who typically earn higher incomes offered by industrial projects, have the potential to increase substance use, including alcohol, in the nearby communities, which can have a long-term effect on the health and wellness of the community members who live there during all phases of the Project and well into the future. Additionally, community safety including crime and gender-based violence particularly against women and Indigenous women, have the potential to occur and the magnitude has been assessed at moderate. Communicable disease has been assessed at having a medium magnitude of effect on the community. Mental health may also be negatively and positively affected for those who are successful in procuring employment and are required to work on a rotational schedule, an effect that has been assessed as medium in

magnitude. The geographical area extends beyond the Project footprint, will occur as multiple irregular events throughout the duration of the Project and, depending on the individual circumstances, the risk ranges from low-to-high and may be partially irreversible. For further details see [chapter 18.11](#) (community health and wellness) of the Assessment Report.

The Proponents have considered the long-term effects of employment and the economy in relation to Ksi Lisims LNG as moderate in magnitude regarding the negative effects on regional business and the economy. For instance, the higher wages associated with an industrial Project can increase competition for labour and provide upward pressure on wages that can lead to businesses increasing the price of consumer goods to cover higher operating expenses, contributing to an increased cost of living, that will have a lasting effect on the regional economy. The increased cost of living was assessed by the Proponents as low to medium in magnitude as over time these negative effects will eventually decrease, however there will be an impact to future generations as the Project's lifespan is estimated at over 30 years. For further details, see [Chapter 18.12](#) (employment and economy) of the Assessment Report.

The Proponents have concluded that Ksi Lisims LNG may result in adverse residual effects, either directly or indirectly, that extend through all phases of the Project. However, the Proponents assert that with the implementation of mitigation and enhancement measures, and through adherence to federal and provincial regulations, Ksi Lisims LNG is anticipated to have both positive and negative effects on current and future generations by contributing economically to Nisga'a Nation, neighbouring First Nations, and local communities. The Proponents insist that Ksi Lisims LNG aligns with Indigenous, regional, provincial and federal initiatives and strategies and, as an Indigenous-led project, Ksi Lisims LNG will bring economic and social benefits to these communities.

The EAO assessed the potential adverse effects of the increase demands on infrastructure and services related to current and future generations in [Chapter 18.13](#) (Infrastructure and Services) of the Assessment Report.

#### First Nations Considerations

The Proponents assessed the direct effects of Ksi Lisims LNG on Indigenous peoples in relation to current and future generations, specifically with a focus on the positive effects for the Nisga'a Nation. The Proponents have generally discussed these effects as well as stated direct Indigenous peoples' effects throughout other sections of the Revised Application, where appropriate. At a high level, Ksi Lisims LNG has the potential to have effects on First Nations ability and access to practice traditional harvesting, knowledge transfer, and cultural and spiritual connection to their lands and resources.

Further to this, each of the individual First Nation chapters of this Report will speak more directly to the effects on their communities, including considerations of effects from applicable Valued Components on current and future generations.

The Proponents will continue to adapt Ksi Lisims LNG activities to meet the changing needs of the communities and environment.

#### Positive Effects

In the Revised Application, the Proponents provided a summary of the positive effects associated with Ksi Lisims LNG.

The Proponents have indicated that LNG serves as a cost-effective fuel that supports energy security in global markets and can support the transition away from more carbon intensive forms of energy, such as coal. Current and future generations will use and depend on this form of energy.

Ksi Lisims LNG is anticipated to realize positive effects through direct, indirect, and induced employment and labour income, see [Chapter 18.12](#) (employment and economy). Additionally, Ksi Lisims LNG can contribute to local, regional, provincial, and federal GDP and government revenues that stem from Project demand and expenditures on labour, goods and services, which can increase the capacity for investment in local infrastructure and services such as recreation, health, and social services, which will benefit residents, see [Chapter 18.13](#) (infrastructure and services).

Project-related increased employment is expected to have positive effects on unemployment rates, increase income levels for individuals (and families) who secure employment with Ksi Lisims LNG and will provide valuable employment experience that can be leveraged by workers to secure employment with other projects/employers following completion of Ksi Lisims LNG related work, see [Chapter 18.12](#) (employment and economy). Ksi Lisims LNG also serves to diversify the economic base, which will increase regional resiliency.

Nisga’a Nation may realize employment and economic benefits, which contribute to economic reconciliation and self-determination. The Proponents consider the earned revenues and increased capacities and capabilities realized by businesses that respond to Ksi Lisims LNG’s opportunities will likely prove beneficial to better position them to competitively respond to future opportunities. Ksi Lisims LNG will also pay property tax to Nisga’a Nation, which can increase the capacity for investment in local infrastructure and services such as recreation, health and social services, which will benefit residents. For further details, see [Chapter 18.12](#) (employment and economy).

The Proponents are committed to working directly with First Nations to identify opportunities to realize potential benefits from Ksi Lisims LNG that can be used to both offset potential negative effects and create lasting positive effects for First Nations, surrounding communities, and the environment.

The Revised Application, [Section 7.13](#), describes the clear trend between increased income and employment status and health outcomes. Through employment and income, regional health status has the potential to improve over time, as well as household food insecurity. Ksi Lisims LNG related mitigation measures have the potential to provide its workforce with access to health programs and services, accommodations, and food that workers may not have had previous to employment. Ksi Lisims LNG may improve access to local infrastructure and services through development of new regional infrastructure incidental to Ksi Lisims LNG (e.g. new third-party natural gas transmission pipeline and new third-party electrical transmission line connected to renewable electricity), see [Chapter 18.13](#) (infrastructure and services).

**Proposed Mitigation Measures**

The Proponents have proposed mitigation and enhancement measures that will be developed and implemented during the projects lifespan to reduce the negative effects on local communities and the environment and are summarized in Table 62:

*Table 62: Proposed Mitigation Measures by Valued Component*

Value Component	Proposed Mitigation
Employment and Economy	<ul style="list-style-type: none"> <li>• Develop and implement workforce strategies to use a B.C. or Canadian resident construction workforce in the building of those components of the Project.</li> <li>• Develop and maintain a database of Nisga’a businesses and contractors as well as other First Nation, local, and regional businesses, and contractors; and                             <ul style="list-style-type: none"> <li>○ Use the database to inform businesses and contractors of procurement opportunities.</li> </ul> </li> <li>• Work with government agencies, educational institutions and contractors to implement on-the-job training and apprenticeship programs.</li> <li>• Encourage high school completion among First Nation and other local residents.</li> <li>• Identify potential shortages of workers with specific skill requirements and training and work with local and regional training and education facilities and communities to increase opportunities for Indigenous and local community members to obtain training.</li> </ul>



Value Component	Proposed Mitigation
	<ul style="list-style-type: none"> <li>• Develop and implement gender equity and diversity policies that focuses on hiring Nisga’a Nation members, local and Indigenous persons, and women to increase Project employment among underrepresented populations.</li> <li>• Develop and implement procurement and contracting strategies to facilitate economic participation by local, regional, B.C., and Canadian suppliers, contractors, and service providers.</li> </ul>
Community Health and Wellness	<ul style="list-style-type: none"> <li>• Implement an employee drug and alcohol policy.</li> <li>• Develop and implement a Health and Medical Services Plan based on Northern Health’s Health and Medical Services Best Management Plan Guide, which will include: <ul style="list-style-type: none"> <li>○ Injury prevention measures;</li> <li>○ Disease and infection management measures;</li> <li>○ A workplace health promotion program;</li> <li>○ An employee and family assistance program;</li> <li>○ Description of medical and first aid services for personnel at Site, including first aid/medical staff and a medical clinic; and</li> <li>○ Procedures for medical emergencies requiring evacuation.</li> </ul> </li> <li>• Develop and implement a discrimination, bullying, and harassment in the workplace policy with relevant training.</li> <li>• Develop and implement a social and economic effects management plan, which includes: <ul style="list-style-type: none"> <li>○ Monitoring and reporting on skills training, employment, and procurement for the Project;</li> <li>○ Monitoring and reporting on demand on community-level infrastructure and services as a result of the Project; and</li> <li>○ Measures to address effects on infrastructure and services (e.g. housing workers on a floatel (hotel converted from a cruise ship) during construction and on-Site during operations, planning worker transportation to Site, and security services measures).</li> </ul> </li> <li>• Develop and implement a health, safety, security and environment framework that will outline health and safety training requirements for personnel, medical emergency response and security procedures for all Project phases; and <ul style="list-style-type: none"> <li>○ Ensure all workers are aware of WorkSafeBC’s Regulations and Guidelines for Oil and Gas Industry- Construction (Pipelines, Facilities, Roads WorkSafeBC 2015).</li> </ul> </li> </ul>
Air Quality and GHG Emissions	<ul style="list-style-type: none"> <li>• The Proponents will be working closely with B.C.’s Climate Action Secretariat, First Nations, the Ministry of Energy, Mines, and Low Carbon Innovation, and other government agencies to ensure alignment with provincial GHG emission requirements and federal GHG emissions reduction goals, including those set out in the CleanBC and the Roadmap to 2030, in a manner consistent with similar facilities; and <ul style="list-style-type: none"> <li>○ Coordination with stakeholders provides the greatest opportunity for the Proponents to align with Canada’s net-zero goal.</li> </ul> </li> <li>• The Proponents will purchase carbon offsets sufficient to offset direct and acquired energy emissions equal to what is expected at full grid power; and</li> </ul>

Value Component	Proposed Mitigation
	<ul style="list-style-type: none"> <li>○ The Proponents will consider carbon offsets that are approved by the B.C. Government for use the Net-zero New Industry policy when it is finalized.</li> <li>● Implement industry standard practices for inspection and maintenance, including regular maintenance of machinery and equipment and completing annual testing on power turbines, thermal oxidizers, and heaters to confirm emission levels.</li> </ul>
First Nation Considerations	<ul style="list-style-type: none"> <li>● Working with First Nations to explore opportunities to further mitigate negative effects to First Nation’s interests and enhance Project benefits</li> <li>● Continuing to work with First Nations to develop a shared understanding of how the Project may affect their First Nation interests.</li> <li>● Continuing to engage with First Nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns.</li> <li>● Through ongoing engagement (e.g. throughout the life of the Project) and development of the Indigenous Engagement and Collaboration Plan, the Proponents aim to maintain a positive long-term relationship with the First Nations.</li> <li>● Promoting safe working conditions and provide employment and training benefits for First Nation women and create positions for local First Nation community members.</li> </ul>

### 22.3. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of potential effects on current and future generations for Ksi Lisims LNG were identified:

- Greenhouse Gas Emissions;
- Effects from increased shipping;
- Concern for training and employment; and
- Benefits to First Nations.

#### 22.3.1. Greenhouse Gas Emissions

Some members of the public expressed concern that the approval of Ksi Lisims LNG would contribute GHG emissions that may negatively impact both current and future generations. The public commented strongly that new and future LNG projects should be halted, with the need to look closer at clean power projects (e.g. solar/wind) as a more equitable direction that will have positive effects on both current and future generations.

The Proponents stated that Ksi Lisims LNG will be the lowest GHG-emission LNG facility in the world and has committed to being net-zero. Although the Project will release GHG emissions, it has a proposed plan to be net-zero by 2030, well ahead of both federal targets and most other industrial facilities. The GHG emissions from Ksi Lisims LNG were considered in relation to the federal 2030 Emission Reduction Plan targets. Under this plan, Canada must reduce its emissions by 40 to 45 percent from 2005 levels by 2030. The current emissions target for 2030 is 443,000,000 t CO<sub>2</sub>e, representing a 40% reduction from the 2050 baseline. If construction activities continue into 2030, GHG emissions would account for 0.003% of the target under the Base Case and 0.04% under the Alternative Case, inclusive of Project commissioning. If operations begin in 2030, GHG emissions from the Project would represent 0.008% of the target under the Base Case and 0.4% under

Alternative Case, taking into account offset credits. Project operations (Base Case net emissions before offsets are considered) will annually emit 0.66%, 0.99% and 1.98% of B.C.'s 2030, 2040, and 2050 emission reduction targets, respectively.

The Proponents outline that the world energy system continues to depend on fossil fuels, including natural gas. Numerous demand forecasts and nearly all credible energy and climate scenarios point to an important role for natural gas in the decades to come. The Proponents assert Ksi Lisims LNG will be one of the lowest GHG-emission LNG facilities in the world. Furthermore, the Proponents state that Ksi Lisims LNG can facilitate some of the lowest life-cycle LNG cargos globally resulting in 10-15 million tonnes per year less than from comparable LNG facilities on the US Gulf Coast. Further details on GHG emissions and the extent to which Ksi Lisims LNG contributes to B.C. and Canada's ability to meet its commitments in respect of climate change are provided in [Appendix 12](#) (greenhouse gas emissions) of the Assessment Report.

### 22.3.2. Effects from Increased Shipping

Multiple First Nations (Kitsumkalum First Nation, Gitxaala First Nation, Gitga'at First Nation and Metlakatla First Nation) raised the concern with the possible project impacts on traditional harvesting, intergenerational knowledge transfer and access to resources and/or traditional and ceremonial practices that will likely suffer and/or be extinguished for future generations due to the increased shipping traffic in the projects area and the overall impact of Ksi Lisims LNG. The Proponents further stated in the Revised Application that members of First Nations may not recover from reduced levels of marine harvesting that can persist for more than one generation due to the potential for reduced knowledge transmission.

Impacts from increased shipping which include potential effects to marine life, the ability to harvest traditional foods from ocean environments and possible vessel strikes to marine mammals (e.g. whales and/or orcas) were concerns raised by the DFO, First Nations, and through public comments during the review of the Application.

The Proponents acknowledge and understand that the marine and terrestrial harvesting experience may be reduced. [Appendix 5](#) of the Revised Application assesses the First Nations interests and concerns related to the Project, including mitigation measures. The concerns raised by the DFO, and the mitigations proposed by the Proponents can be found in [chapter 18.9](#) (marine use) and [chapter 18.5](#) (marine resources) of the Assessment Report.

The Proponents insist, supported by qualified professionals, that they have undertaken comprehensive baseline and assessment studies to understand the potential effects of Ksi Lisims LNG on increased shipping traffic and marine ecosystems as it relates to cultural practices of current and future generations. These studies were designed to inform the development of robust measures aimed to effectively mitigate negative effects during construction, operation, and decommissioning phases of Ksi Lisims LNG. Furthermore, the Proponents aim to uphold their commitments to develop and operate a world class LNG facility in a responsible and transparent manner. This includes development and implementation of sound First Nation and public communication and engagement, environmental protection, and health and safety policies and procedures during all phases of Ksi Lisims LNG.

The Proponents remains committed to ongoing discussions related to loss of access for harvesting and other cultural use purposes. For further details on the specific items stated by individual First Nations, refer to their chapters within the Assessment Report. For further details see [chapter 18.9](#) (marine use) and [chapter 18.5](#) (marine resources) of this Report.

### 22.3.3. Concern for Training and Employment

Multiple First Nations, the Technical Advisory Committee (Indigenous Services Canada, Employment and Social Development Canada, and Women and Gender Equality Canada) and information received during public engagement stated concerns with the Social and Economic Effects Management Plan and the long-term training, education and

recruitment plans that should be included for the region. The Proponents responded to the concern by referencing to employment and economic opportunities, which will include appropriate on the job training, recruitment, and apprenticeship opportunities. The Proponents identified mitigation related to training, employment and recruitment including Mitigations listed in [Appendix A](#) of the Revised Application.

Further refinement of mitigation measures to detail, for example, timing, methods, and monitoring, where needed, will be completed during post-environmental assessment decision and pre-construction planning (e.g. during development of the management plans and during monitoring and follow-up planning) when details on construction planning are being refined.

The Proponents continues to seek input from First Nations regarding mitigation and welcomes specific comments/recommendations. Additionally, Benefit Agreement Negotiations are underway to support affected First Nations in the region. For further details on Training and Employment, see [Chapter 18.12](#) (employment and economy) of the Assessment Report.

### Benefits to First Nations

Gitxaala Nation stated to the Proponents in the Revised Application that the effects to current and future generations section discussed aggregated interests and concerns of the various First Nations and finds that there is a low to medium magnitude of residual effects on First Nation interests in the assessment boundaries for Valued Components. Gitxaala Nation stated that this is weighted against the project benefits for an overall conclusion that the project will bring social and economic benefits. Gitxaala Nation requested more details and discussion to ensure alignment of this conclusion with benefits accruing to all First Nations, as at this stage, the benefits accruing is unknown.

The Proponents confirmed that ongoing engagement with First Nations would continue through the entire lifespan of the project, to ensure that mitigation measures are negotiated and put in place to support the financial benefits to First Nation community members who are wanting to gain employment. There is a commitment to continue to negotiate benefit agreements with First Nations who have requested this and ensure that there is an ongoing discussion of how the Proponents can explore opportunities to further mitigate negative effects to First Nation's interests and enhance project benefits. The Proponents are committed to enticing local community members to obtain employment throughout the lifespan of the project and will continue to provide opportunities for training for those who do express this interest. For further details, see [Chapter 18.12](#) (employment and economy) of the Assessment Report.

## 22.4. The EAO's Analysis and Conclusions

This section presents the EAO's conclusions on the potential positive and negative effects from Ksi Lisims LNG on current and future generations. Ksi Lisims LNG will affect current and future generations by impacting marine and land users as shipping traffic increases in the area. Ksi Lisims LNG may also have irreversible effects on Valued Components or compromise ecosystem integrity and impacts of these components by various groups now and into the future. First Nation interests will be affected by way of increased marine shipping traffic and its impacts on harvesters and marine users. Ksi Lisims LNG, through project-related expenditures on labour, goods and services, may have both positive and negative effects on human and community-wellness in the area, which will impact current and future generations both positively and negatively Ksi Lisims LNG will both have positive and negative effects to current and future generations in relation to the increase in employment opportunities and increase in wages associated with an industrial project of this scale. However, there is a high likelihood that future generations will be negatively affected by the long-term increase to the cost of living (goods and services and housing costs/rental rates, access to childcare and increased demand on an already stretched health care system).

The positive effects to current and future generations, and specifically the NLG, can lead to economic stability in the region.

### 22.4.1. Proposed Provincial Conditions and Federal Mitigation Measures

Based on mitigations proposed in the Revised Application, issues raised during Application Review, the EAO's effects assessment, the EAO notes the following conditions are relevant to effects on current and future generations:

- Condition 9 (Construction Environmental Management Plan) which would include:
  - Waste management measures (e.g. hazardous and construction waste, recyclables and wildlife attractants);
  - Wildlife management measures (e.g. measures that address time windows, habitat features, breeding sites, bald eagle nests, monitoring and compliance);
  - Measures to manage underwater noise; and
  - Marine safety and emergency response measures.
- Condition 14 (Health and Medical Services Plan) developed in consultation with Northern Health, which would include:
  - Medical and first aid services for employees on Site, including certified first-aid staff, first-aid stations and medical room(s) with beds;
  - Injury prevention and management measures and policies;
  - Disease and infection management measures and policies;
  - Workplace health promotion program; and
  - Following all Provincial Health Guidelines, such as the British Columbia Guidelines for Industrial Camps Regulation.
- Condition 17 (Socioeconomic Management Plan) which would include:
  - Measures to address effects on infrastructure and services (e.g. housing workers on a floatel during construction and on-Site operations, planning worker transportation to Site and security services measures);
  - Measures to establish equitable employment and economic opportunities (e.g. on-the-job training programs and apprenticeship opportunities; gender equity and diversity policies that focus on hiring Nisga'a Nation members, local and Indigenous persons, as well as women; and contracting strategies to facilitate economic participation by Indigenous, local, regional, B.C. and Canadian suppliers, contractors, and service providers); and
  - Measures to address effects on marine use (e.g. establishment of a safety zone around the Project's marine components).
- Condition 15 (Gender and Cultural Safety Plan) which would include the following and must be implemented throughout construction, operation and decommissioning:
  - A gender-based violence prevention program, consisting of a bullying and harassment policy, workplace harassment and violence prevention training, a worker code of conduct, gender and cultural safety training, and violence and sexual harassment or abuse prevention training; and
  - A gender-based violence response program which would include a confidential reporting system, procedures for how the Holders will respond to the complaints made to the reporting system, a comprehensive process to address and prevent retaliation against individuals who raise complaints, concerns, or disclose information regarding workplace misconduct, how the Holders will ensure Workers are informed and aware

of how the reporting system will work, and Quarterly reporting that summarizes aggregated data on the number and types of complaints.

In addition, the EAO has recommended the following relevant Key Mitigation Measures to IAAC to address effects on current and future generations:

- Implement any offsetting plan related to harmful alteration, disruption, or destruction of fish habitat, and death of fish;
- Implement progressive reclamation of temporarily disturbed areas, using plant species of interest to Indigenous Peoples;
- Develop and implement mitigation measures for marbled murrelet;
- Develop a health and medical services plan to mitigate impacts on local health services used by Indigenous peoples;
- Implement a training and employment plan to increase employment opportunities for Indigenous Peoples; and
- Implement measure to promote safe, respectful and inclusive conduct in the workplace and community.

#### 22.4.2. Conclusions

After considering proposed mitigation measures, the EAO concludes that Ksi Lisims LNG would generally have positive effects on local employment and the economy associated with the development of Ksi Lisims LNG for future generations. The potential adverse effects on marine ecosystems and access to traditional foods harvesting or traditional ceremonial practices is considered moderate, with the Proponents willingness to continually negotiate compensation agreements with affected First Nations as an adequate mitigation measure. Mitigation and conditions set out by the EAO will provide for acceptable levels of impact to the Valued Components and as such, the EAO concludes that it is unlikely that Ksi Lisims LNG will have negative effects on current and future generations.

## 23.0 APPENDIX 11 – CONSISTENCY WITH LAND USE PLANS

### 23.1. Consistency with Land Use Plans

Under the B.C. *Land Act* (1996), a Land Use Objectives Regulation was established in 2010 that sets the legal direction for forestry activities under the *Forest and Range Practices Act* (2002) and contains objectives and maps for biodiversity, wildlife trees, old growth forest, critical habitat for fish, community areas of special concern, lakes, riparian areas, mature birch retention, grasslands, recreational values (scenic areas, recreation trails), and high-value wildlife habitat. Land use planning sets the strategic direction which guides sustainable resource stewardship and management of provincial public land and waters that meets economic, environmental, social, and cultural objectives. In other words, land use planning sets high-level direction and helps define 'what' can occur 'where' on the land base.

Ksi Lisims LNG falls within the bounds of 12 existing land use plans:

- [A Land Use Plan for Nisga'a Lands](#) (NLG 2002);
- [Pacific North Coast Integrated Management Area Plan](#) (PNCIMAP 2017);
- [Marine Plan Partnership for the North Pacific Coast](#) (MaPP 2011);
- [Canada – British Columbia Marine Protected Area Network Strategy](#) (2014);
- [North Coast Land and Resource Management Plan](#) (2005); and
- Seven First Nation Marine Plans.

[The Land Use Plan for Nisga'a Lands](#) (NLG 2002) sets out principles for uses of Nisga'a Lands. The Nisga'a Land Use Plan does not apply to Category A Lands, as defined in the Nisga'a Treaty, where Ksi Lisims LNG would be located. However, the principles within the plan guide the Nisga'a Nation in land use decisions about all lands owned by the Nisga'a Nation. The Proponents sought and received approval from [the Nisga'a Nation](#) on the location of Ksi Lisims LNG.

The Pacific North Coast Integrated Management Area is one of five priority areas identified by the federal government. The [Pacific North Coast Integrated Management Area Plan](#) (PNCIMAP 2017) provides a planning structure involving federal, provincial, and First Nation entities for conserving and managing human activities along the Pacific North Coast. The Project is located within the Pacific North Coast Integrated Management Area but is not within the identified marine protected areas or proposed future sites identified as areas of interest. The Project aligns with the Pacific North Coast Integrated Management Area's Ecosystem-Based Management goals of monitoring and adaptive management and integrated economic opportunities.

The [Marine Plan Partnership for the North Pacific Coast](#) aims to provide recommendations to achieve ecosystem health, social and cultural well-being, and economic development. The [Marine Plan Partnership for the North Pacific Coast](#) has identified three types of zones: general management zones, protection management zones, and special management zones. The general management zone allocates spatial areas for a wide variety of uses and activities using the ecosystem-based management framework. The protection management zones include areas for conservation, and the special management zones are areas of sustainable marine uses and activities. Ksi Lisims LNG is located in the general management zone.

The [Canada – British Columbia Marine Protected Area Network Strategy](#) (2014) aims to create a lasting legacy of marine protected area networks that protect communities and enhance traditional management methods. Federal and provincial agencies collaborated to develop this strategy to achieve shared marine protection and conservation objectives. Three network zones have been organized for implementation, with the establishment of category 1 zones targeted for 2025,

category 2 zones targeted for 2030, and no current timeline for category 3 zones. The waters around Pearse Island are part of a category 3 area.

The [North Coast Land and Resource Management Plan](#) (2005) provides direction for managing old growth forests, wildlife trees and other values important for sustaining biological diversity in the Skeena region. The plan includes recommendations for land use designations and general management direction for crown land. Some of the resources and values that the Land and Resource Management Plan provides direction for are cultural heritage resources, black/Kermode and grizzly bears, aquatic and riparian ecosystems, ungulates, marbled murrelets, northern goshawk, mineral and energy resources, and visual management. Since Ksi Lisims LNG is on privately owned land, the Proponents do not need to follow the plan's directions but should use it as a guideline.

The Proponents considered seven First Nation marine plans in the shipping route's specification and the development of mitigation measures. These plans include Lax Kw'alaams Marine Resource Government and Management Plan, Metlakatla Draft Marine Use Plan, Nisga'a Marine Use Plan, Kitsumkalum Marine Use Plan, Kitselas First Nation Marine Use Plan, Gitxaala Marine Use Plan, Gitga'at Marine Use Plan, and Haida Gwaii Marine Plan. The Proponents considered each of the First Nations' marine use plans in the development of the Alternatives Assessment, including the development of mitigation and enhancement measures for the Ksi Lisims LNG and for the purpose of informing Impact Benefit Agreements established between the Proponents and First Nations.

### 23.2. Key issues raised

Over the course of the environmental assessment no comments were received from the Technical Advisory Committee or public raising concerns about the proposed project being inconsistent with applicable Land Use Plans. However, there are aspects of land use planning and concerns that were raised and discussed in other chapters of this report including marine use (see [Chapter 18.9](#)), community health and wellness (see [Chapter 18.11](#)), and infrastructure and services (see [Chapter 18.13](#)) Valued Components.

### 23.3. The EAO's Assessment and Conclusions

The EAO has considered the potential for Ksi Lisims LNG to affect the objectives of the [Land Use Plan for Nisga'a Lands](#) (NLG 2002), [Pacific North Coast Integrated Management Area Plan](#) (PNCIMAP 2017), [Marine Plan Partnership for the North Pacific Coast](#) (MaPP 2011), [Canada – British Columbia Marine Protected Area Network Strategy](#) (2014), [North Coast Land and Resource Management Plan](#) (2005) and the seven First Nation Marine Plans. Ksi Lisims LNG is not expected to have an adverse effect on the overall objectives of these plans as currently ratified.



## 24.0 APPENDIX 12 - GREENHOUSE GAS EMISSIONS

### 24.1. Background

This chapter provides information and an analysis of the direct effects of the greenhouse gas (GHG) emissions from Ksi Lisims LNG as predicted in the Revised Application and the ability for Government of Canada and B.C. to meet their legislated emission reduction targets. Conclusions on the extent to which the effects of Ksi Lisims LNG contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change are provided in [Appendix 15](#): Requirements of the IAA. As required for designated projects under the IAA, the Proponents prepared their Revised Application to provide the information required by Environment and Climate Change Canada's (ECCC) Strategic Assessment of Climate Change, including a credible net-zero emissions plan describing how Ksi Lisims LNG would achieve net-zero emissions by the year 2050. ECCC has provided its assessment of Ksi Lisims LNG GHG information in its GHG Analysis.

Section 25 of the Act states that every assessment must consider greenhouse gas emissions, including the potential effects on the Province of B.C. being able to meet its targets under the [Climate Change Accountability Act](#). Ksi Lisims LNG must also provide a credible plan for Ksi Lisims LNG to achieve net-zero greenhouse gas emissions by 2030, as per the [Minister's letter regarding GHG standards](#) and the introduction of the [Net-Zero New Industry Policy](#). In addition to provincial and federal requirements, GHG emissions were identified as a topic to be assessed for Ksi Lisims LNG due to interest from First Nations, the public and other stakeholders.

#### 24.1.1. Regulatory Context

GHG emissions are subject to provincial and federal requirements and guidelines.

The provincial requirements include:

- *Greenhouse Gas Industrial Reporting and Control Act* (establishes a GHG emission intensity limit of 0.16 tonnes (t) of carbon dioxide equivalents (CO<sub>2</sub>e) per tonne of LNG produced and the GHG emission reporting requirements);
- *Climate Change Accountability Act* (previously titled the *Greenhouse Gas Reduction Targets Act*) requires the Province to reduce GHG emissions 40 percent below 2007 by 2030, 60 percent by 2040, and 80 percent by 2050. The Minister sets sector targets under the *Climate Change Accountability Act* and has set an oil and gas sector target required to reduce GHG emissions 33 percent to 38 percent below 2007 levels by 2030);
- CleanBC Roadmap to 2030 (climate plan to reach the emissions of the Paris Agreement by 2030 and continue to net-zero by 2050).
- New Energy Action Framework builds on the actions outlined in the CleanBC Roadmap for 2030 requires all proposed LNG require all proposed LNG facilities in or entering the EA process to pass an emissions test with a credible plan to be net zero by 2030. A regulatory emissions cap for the oil and gas industry will also be put in place to ensure the Province meets its 2030 emissions-reduction target for the sector.
- [The Minister's letter to the EAO's Chief Executive Assessment Officer](#), sets out the Province's approach to delivering the CleanBC Roadmap to 2030 commitment and the New Energy Action Framework commitments for net-zero new industry.
- Flaring and Venting Reduction Guideline (BCER regulatory requirements and guidance for flaring, incinerating, and venting at natural gas well sites, facilities and pipelines);
- First Nations Climate Initiative (sets out policy goals in support of climate change mitigation, alleviation of poverty and transition to low carbon economy);

- *Carbon Tax Act* (Ksi Lisims LNG will be required to follow the carbon tax rate (currently \$80/tonne CO<sub>2</sub>e)); and

The federal GHG emission requirements applicable to Ksi Lisims LNG include:

- Greenhouse Gas Reporting Program (facilities that emit more than 10 kilotonnes (kt) CO<sub>2</sub>e annually must report their emissions to ECCC);
- Government of Canada’s 2030 Emissions Reduction Plan (requiring 40-45 percent emissions reductions below 2005 levels by 2030); and
- *Canadian Net Zero Emissions Accountability Act* (requires national five-year emissions targets to reach net-zero by 2050).

#### 24.1.2. Assessment Boundaries

GHG emissions spatial boundaries are not defined because GHGs and climate change are, by nature, both regional and global. The temporal boundaries of the assessment are the period over which the GHG emissions of Ksi Lisims LNG were predicted.

The temporal boundaries of the assessment are:

- Construction (approximately 3-4 years);
- Operation (minimum of 30 years following Construction); and,
- Decommissioning (approximately 12 months following the end of Operation).

### 24.2. Potential Project Effects and Proposed Mitigations

#### 24.2.1. Existing Conditions

The national and provincial GHG emissions from all reportable activities in Canada and B.C. for 2022 were estimated to be 708,000,000 t CO<sub>2</sub>e and 64,300,000 t CO<sub>2</sub>e, respectively. The 2022 National Inventory Report estimate also determined that in Canada and B.C. the oil and gas sector produce 217,000,000 t CO<sub>2</sub>e (approximately 30 percent of the total) and 15,200,000 t CO<sub>2</sub>e (approximately 23.6 percent of the total), respectively.

#### 24.2.2. Potential Project Effects

The Revised Application considered the activities that would generate direct and indirect emissions during Construction and Operations phases, as well as upstream GHG emissions. Potential emissions from Decommissioning were not calculated by the Proponents as they are expected to be less than those resulting from construction, and, therefore, can be characterized based on the construction emissions information for the purposes of the assessment.

Two scenarios were considered by the Proponents when calculating GHG emissions for Ksi Lisims LNG:

- a Base Case for when the electricity from the transmission line is in use at the start of the Operations phase; and
- an Alternative Case for generating electricity from temporary natural gas-fired power barges (power barges) if the connection to the BC Hydro grid is not complete at the start of the Operations phase. The Alternative Case assessed GHG emissions for a period of up to five years, but the Proponents expect that connection would take place in 2032. Based on the EAO’s current understanding, this would mean that Ksi Lisims LNG would generate electricity through temporary power barges for approximately five years during the Operations phase, from 2028 to 2032.

### 24.2.2.1. Construction Phase

The Proponents expect direct emissions during the Construction phase from off-road and on-road construction equipment and trucks, as well as from marine sources, such as tugboats (Table 62). Portable diesel generators will be used to provide electricity during construction. Explosive combustion during blasting and concrete plant heating will also commence.

Table 63: Construction Phase Emission Sources Over Construction Period

Source	Base Case Annual CO <sub>2</sub> e (tonnes/year)	Alternative Case Annual CO <sub>2</sub> e (tonnes/year)
Off-road non-marine construction equipment (e.g., excavator and grader)	10,042	10,042
Off-road marine construction equipment (e.g., safety rescue boat)	62	62
On-road construction vehicles and equipment	67	67
Blasting	52	52
Fuel combustion for the concrete plant	43	43
Land clearing activities	8,788	8,788
Marine Shipping	1,080	1,080
Transmission Line	681	681
Land Clearing from Transmission Line	34,693	34,693
Commissioning	3,370 (BC Hydro)	156,602 (Temporary power barges)
<b>Total (excluding land use change)</b>	<b>15,397</b>	<b>168,629</b>
<b>Total (including land use change)</b>	<b>58,878</b>	<b>212,110</b>

GHG emissions during the Construction phase will also be associated with the construction of the transmission line within the Transmission Line Assessment Area. These emissions will be from combustion of diesel in off-road equipment. The Proponents predicted that approximately 681 t CO<sub>2</sub>e may be released per year during the two-year construction period of the transmission line. The estimate of the land-clearing emissions associated with the transmission line construction is 34,693 t CO<sub>2</sub>e per year. The Proponents did not calculate the GHG emissions from the construction of the marine portion of the transmission line; however, the Proponents estimate that those would be negligible in comparison to the GHG emissions from the construction of the terrestrial portion of the transmission line. The Proponents did not include these emissions in the calculation of total Project construction emissions. However, the EAO is of the view emissions associated with the transmission line should be included as it is a part of the Project.

The Proponents also estimated approximately 3,370 t CO<sub>2</sub>e of acquired emissions from the transmission line under the Base Case or approximately 156,602 t CO<sub>2</sub>e of direct emissions from temporary power barges under the Alternative Case over the eight months of commissioning.

The annual GHG emissions from these construction activities are estimated to range from 15,397 t CO<sub>2</sub>e under the Base Case to 168,629 t CO<sub>2</sub>e under the Alternative Case excluding land use change, and 58,878 t CO<sub>2</sub>e under the Base Case to 212,110 t CO<sub>2</sub>e of emissions under the Alternative Case including land use change.

#### 24.2.2.2. Operation Phase

During the Operations phase, direct emissions include terrestrial and marine sources (Table 63). Terrestrial sources would arise from the thermal oxidizers, heat medium-fired heaters and flares, as well as temporary power barges under the Alternative Case. The Proponents estimated that the emissions from these terrestrial sources would approximately be 187,575 t CO<sub>2</sub>e per year under the Base Case and 1,831,576 tCO<sub>2</sub>e per year under the Alternative Case.

In terms of marine sources, direct GHG emissions associated with LNG carriers are predicted by the Proponents to be approximately 30,182 t CO<sub>2</sub>e per year, and the direct GHG emissions associated with the escort and harbour tugboats are predicted to be approximately 4,364 t CO<sub>2</sub>e per year. Additional GHG emissions associated with the marine transport of material and personnel during the Operations phase are predicted to be approximately 1,871 t CO<sub>2</sub>e per year. The Proponents estimated that the emissions from natural gas liquid carriers and associated tugboats would represent less than 1% of Ksi Lisims LNG's direct emissions and therefore did not include these emissions in the calculation.

Total direct GHG emissions from terrestrial and marine sources during the Operations phase are predicted by the Proponents to be approximately 223,990 t CO<sub>2</sub>e per year under the Base Case and 1,867,992 t CO<sub>2</sub>e per year under the Alternative Case.

Table 64: Total Direct and Indirect GHG Emissions from Ksi Lisims LNG during Operations phase per year<sup>52</sup>

Source	Base Case Annual CO <sub>2</sub> e (tonnes/year)	Alternative Case Annual CO <sub>2</sub> e (tonnes/year)
Heat Medium Fired Heaters	68,648	68,648
Thermal Oxidizers	118,226	118,226
Flaring	700	700
LNG Carriers	30,182	30,182
Escort tugboats	4,363	4,363
Marine material and personnel movements	1,871	1,871
Energy source	28,645 <sup>53</sup> (BC Hydro)	1,644,002 (Temporary power barges)

<sup>52</sup> Totals may not add up due to rounding.

<sup>53</sup> When electricity from the BC Hydro electrical grid is used, annual average GHG emissions from acquired energy use is approximately 28,645 t CO<sub>2</sub>e per year from the period of 2027 to 2057. Commissioning emissions are not included in the annual average.

Source	Base Case Annual CO <sub>2</sub> e (tonnes/year)	Alternative Case Annual CO <sub>2</sub> e (tonnes/year)
Total direct emissions	223,990	1,867,992
Total direct and indirect emissions	252,635	1,867,992

Indirect emissions, or acquired energy emissions, will result from the production of electricity required during the Operations phase, of which all will be acquired from the electrical grid under the Base Case. These emissions are predicted to be approximately 28,645 t CO<sub>2</sub>e per year.

#### 24.2.2.3. Decommissioning Phase

The Proponents indicated that details on the sources of GHG during the Decommissioning phase are not currently available. However, the Proponents expect that the direct GHG emissions during Decommissioning would be the same or lower than the construction emissions as technologies are expected to be less carbon-intensive in the future. The Proponents provided a conservative estimate of the Decommissioning phase emissions of 45,381 t CO<sub>2</sub>e (based on construction emissions and excluding land-use change and commissioning).

#### 24.2.3. Impacts of Ksi Lisims LNG on provincial and federal emission reduction efforts

The Proponents expect that Ksi Lisims LNG would have one of the lowest GHG emissions intensity of any LNG facility in the world, once BC Hydro grid connection occurs during the Operations Phase. The Proponents estimated the project would have a maximum emission intensity of 0.021 t CO<sub>2</sub>e per tonne of LNG produced under the Base Case, including marine emissions and 0.156 t CO<sub>2</sub>e per tonne of LNG produced under the Alternative Case, including marine emissions. Both estimates would result in GHG emission intensities less than 0.16 CO<sub>2</sub>e per tonne of LNG produced required by the *Greenhouse Gas Industrial Reporting and Control Act*. [Additional information on this topic has been provided by ECCC in its GHG analysis report.]

The predicted direct and indirect GHG emissions from Ksi Lisims LNG during operations compared to provincial and federal oil and gas sector and total emissions are provided in Table 64 below, with these predictions being inclusive of emissions from project-related marine shipping.

Table 65: Comparison of GHG Emissions from Ksi Lisims LNG during Operations to Provincial and Federal Emissions

Inventory	Annual GHG Emissions from inventory (t CO <sub>2</sub> e/yr)	Base case project total annual emissions as a Relative Percentage	Alternative case Project total annual emissions as a Relative Percentage
<b>Comparison of Total Provincial and Federal Emissions from the Oil and Gas Sectors in 2022 to Ksi Lisims LNG</b>			
British Columbia (2022)	15,200,000	1.66%	12.29%
Canada (2022)	217,000,000	0.12%	0.86%
<b>Comparison of Total Provincial and Federal Emissions in 2022 to Ksi Lisims LNG</b>			
British Columbia (2022)	64,300,000	0.39%	2.91%

Inventory	Annual GHG Emissions from inventory (t CO <sub>2</sub> e/yr)	Base case project total annual emissions as a Relative Percentage	Alternative case Project total annual emissions as a Relative Percentage
Canada (2022)	708,000,000	0.04%	0.26%

Under the *Climate Change Accountability Act*, the Province has committed to reducing total provincial GHG emissions to 40 percent below 2007 levels by 2030, 60 percent by 2040, and 80 percent by 2050. The [Provincial Inventory of Greenhouse Gas Emissions \(Provincial Inventory\)](#), which reports province-wide greenhouse gas emissions and removals, and is published every year, is used as the baseline to determine what Ksi Lisims LNG will contribute to B.C.'s emissions levels. The baseline determining a project's contribution for 2030, 2040, and 2050 GHG emissions total will fluctuate based on new data that is provided to update the inventory each year. Based on Provincial Inventory, which covers all emissions included in B.C.'s legislated economy-wide and sectoral emissions reduction targets, under the Base Case, Ksi Lisims LNG's operations will emit 0.66 percent, 0.99 percent and 1.98 percent of B.C.'s annual emissions if the 2030, 2040, and 2050 emission reduction targets, respectively, are met, before offset credits are considered. Under the Alternative Case, Ksi Lisims LNG's direct operations will emit 4.88 percent of B.C.'s 2030 emission reduction target without considering offsets. Comparison is not made to the 2040 and 2050 targets as the Project is expected to be connected to the BC Hydro electrical grid and operate under the Base Case by then. Based on the 2021 Provincial Inventory of Greenhouse Gas Emissions (the most up-to-date published data at the time of writing), the Base Case would increase the level of emissions reductions currently required to meet the 2030 target by 1%; under the Alternative Case, the emissions reductions required elsewhere in the economy to meet the 2030 target increases to 7.9%.

The Proponents of Ksi Lisims LNG had assessed as part of the Base Case, that the Operations emissions for the Project would be 0.59 percent, 0.84 percent and 1.68 percent of the Government of B.C.'s 2030, 2040, and 2050 emission reduction targets and will annually emit 2.7 percent to 3.0 percent of the B.C. Government's 2030 sectoral reduction target for the oil and gas sector. Further, as part of the Alternative Case, the Proponents assessed that Ksi Lisims LNG's direct operations will emit 3.14 percent of B.C.'s 2030 emission reduction target without considering offsets and for the oil and gas sector emissions of 15.1 percent.

Further, the GHG emissions from Ksi Lisims LNG were considered in relation to the federal 2030 Emission Reduction Plan targets. Under this plan, Canada must reduce its emissions by 40 to 45 percent from 2005 levels by 2030. The current emissions target for 2030 is 443,000,000 t CO<sub>2</sub>e, representing a 40 percent reduction from the 2050 baseline. If construction activities continue into 2030, GHG emissions from Ksi Lisims LNG would account for 0.003 percent of the target under the Base Case and 0.04 percent under the Alternative Case, inclusive of Project commissioning. If operations begin in 2030, GHG emissions from the Project would represent 0.008 percent of the target under the Base Case and 0.4 percent under Alternative Case, taking into account offset credits. Further analysis on the extent to which the effects of Ksi Lisims LNG contribute to Canada's ability to meet its commitments in respect of climate change are provided in [Appendix 15](#).

#### 24.2.4. Strategic Assessment of Climate Change

Ksi Lisims LNG provided information in their Revised Application, [Appendix 8B - Strategic Assessment of Climate Change Technical Report](#) in order to meet the requirements of the Strategic Assessment of Climate Change. This included information on carbon sinks, upstream GHG emissions, best available technology and best environmental practices determination, a credible net-zero emissions plan, a climate resilience assessment and an assessment of uncertainty in regard to the quantitative and qualitative information.

Ksi Lisims LNG would result in vegetation and wetland clearing that can release currently sequestered carbon and lead to a loss of future carbon storage capacity. The Proponents determined Ksi Lisims LNG's carbon sink impact by estimating the existing natural flux within the Project footprint and conservatively assuming that, post-Project, the natural flux is zero. The natural flux in a forest is the annual carbon accumulation rate that exists due to the growth of trees. For a wetland, the natural flux is the annual carbon accumulation rate due to the decomposition and storage of biomass. The Proponents did not expect the clearing of forest land to result in a loss of carbon sink, but the clearing of wetland could result in a loss of 218 t of carbon (which is equivalent to 800 t CO<sub>2</sub>e released if the carbon was burned). As part of the Revised Application, the Proponents included the transmission line in the carbon sink impact, which increased the total carbon sink impact for Ksi Lisims LNG. This results in total of approximately 431 tonnes of carbon that may not be removed from the atmosphere due to the Project, which is approximately 1,581 t CO<sub>2</sub>e.

Upstream greenhouse gas (GHG) emissions are those that occur from the production, processing, and transmission of the natural gas prior to use by the Project but are outside the scope of the Project. A screening assessment for upstream emissions indicated that the Project's upstream GHG emissions are potentially over 500,000 t CO<sub>2</sub>e. Using the upstream GHG methodology presented in the Strategic Assessment of Climate Change and the associated draft Technical Guide Related to the Strategic Assessment of Climate Change (the draft Technical Guide, ECCC 2021), the Proponents estimated the annual upstream emissions to be 4,141,000 t CO<sub>2</sub>e during the first year of operation in 2028, then decreasing gradually to 3,245,000 t CO<sub>2</sub>e in 2035 and for the remainder of the project lifetime. The Proponents concluded that these upstream emissions are potentially incremental<sup>54</sup> to existing natural gas production, processing, and transmission GHG emissions in Canada, but are not considered incremental on a North American and broader global export scale. Additional information on this topic has been provided by ECCC in its GHG analysis report.

#### 24.2.5. Proposed Mitigation Measures by the Proponents

The Proponents list of mitigation measures for GHG emissions were selected based on provincial and federal regulations and policies, management practices and guidelines, and relevant peer-reviewed literature. Mitigation was selected to address Project interactions that affect GHG emissions during all Project phases. A mitigation and enhancement measures summary can be found in Table 8.7-1 and in [Appendix 8B](#) of the Revised Application.

- The Proponents will work closely with B.C.'s Climate Action Secretariat, First Nations and other government agencies to ensure alignment with provincial and federal GHG emission requirements, including those set out in the CleanBC and the Roadmap to 2030, in a manner consistent with like facilities.
- The Proponents will purchase carbon offsets sufficient to offset direct and acquired energy emissions equal to what is expected at full grid power. The Proponents will offset emissions through the compliance options that are approved by the B.C. Government for use under the Net-zero New Industry policy when it is finalized.
- Develop and implement equipment and machinery maintenance and inspection manuals based on manufacturer recommendations. Emissions testing on power turbines, thermal oxidizers, and heaters to confirm emission levels will be carried out.

The Proponents have committed to Ksi Lisims LNG being net-zero and are committed to mitigation technology and practices that become more technically and economically feasible and socially acceptable to minimize direct and indirect emissions. As outlined in the Government of Canada's *Technical Guide Related to the Strategic Assessment of Climate Change* (ECCC 2021), as part of the net-zero plan, the Proponents must include proposed emission reductions at intervals up to 2050 that must be aligned with the scheduled of mitigation measures that will be implemented. The following

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<sup>54</sup> Incremental means that the increase in upstream production and resulting emissions would only occur if the Project is built.

section outlines a number of proposed additional mitigation measures that align with the best available techniques/best environmental practices (BAT/BEP) performed for Ksi Lisims LNG and which will or have the potential to result in a positive impact on future direct and indirect emissions and the Project's overall net-zero plan.

- Leak Detection and Repair Program: The Proponents will implement a leak detection and repair program to reduce fugitive GHG emissions during operations.
- Heat Recovery: The concept of process waste heat recovery for two heat exchangers has been incorporated into the project design which could recover approximately 22 megawatts per FLNG of heat which would have to otherwise be provided by additional fired heater load or electrical heat exchangers.
- Potential new Federal and Provincial Policy to direct the Proponents to reduce emissions including other offset credits.
- CO<sub>2</sub> capture, transport, and possible utilization or storage at the Project was determined to not be feasible at Project commissioning due to technical and economic feasibility.

### 24.3. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the greenhouse gas emissions for Ksi Lisims LNG were identified.

#### 24.3.1. Upstream and Downstream Emissions

Members of the public requested consideration of upstream and downstream emissions. The Proponents noted that the Strategic Assessment of Climate Change includes an evaluation of GHG emissions associated with the upstream activities and have been considered in accordance with the Draft Technical Guide Related to the Strategic Assessment of Climate Change guidance and in accordance with the prescribed methods and data provided by the Government of Canada and Environment and Climate Change Canada. Information regarding upstream emission can be reviewed in the Revised Application, [8B – Strategic Assessment of Climate Change Technical Data Report](#).

The EAO notes that downstream emissions (i.e., those from end-use combustion) are not a required scope of the assessment under the Act or the IAA. This is consistent with most carbon accounting for industrial facilities.

#### 24.3.2. BC Hydro Transmission Line and B.C.'s Net Zero by 2030

Metlakatla First Nation, Lax Kw'alaams Band, Gitga'at First Nation, and Kitselas First Nation brought up concerns regarding when the Ksi Lisims LNG project will connect to the BC Hydro grid. These First Nations outlined that the Proponents' interim solution to create power by burning natural gas or other products is not acceptable because it is not clean and would add to the GHG emissions. Given uncertainty regarding the likelihood and timing of the Project's connection to the BC Hydro grid, the commenters stated that this raised questions regarding when targets for reduced GHG emissions will be met. The Proponents indicated that they would mitigate in alignment with the Province's finalized Net Zero for New Industry policy. The Proponents stated that if they cannot offset all emissions, they have suggested working with First Nations in the development of an offset Project to further mitigate. The EAO understands from the Proponents Revised Application that an electricity supply agreement with BC Hydro will be one of the requirements for reaching a positive final investment decision and commencing construction of the Project.

Despite this, the EAO recognizes the differences between the two proposed scenarios (Base Case and Alternative Case) and their respective impact on the Province's emissions reduction efforts. There remains uncertainty with BC Hydro's ability to provide the required power to electrify Ksi Lisims LNG within the timelines required for the Project. Despite the



Proponents taking steps within its control to minimize emissions and electrify the Project, should BC Hydro be unable to provide sufficient electricity to power the Project during Operations, the resulting emissions profile would make achieving B.C.'s legislated 2030 emissions target difficult. The duration that the natural-gas fired electricity emissions would persist (via the temporary power barges) creates an additional unknown that could further jeopardize the achievement of subsequent emissions targets.

The Net-Zero New Industry policy requires the Proponents have a credible plan to achieve net-zero emissions by 2030. As indicated by the Climate Action Secretariat, the term "net-zero" means that emissions are minimized as far as possible, and any remaining emissions are balanced by retiring an equal number of offset units. The EAO in consultation with the Climate Action Secretariat, is of the view that the Proponents plan to be net zero by 2030 can be considered credible, under the Base Case scenario, to the extent that the Project is electrified by clean grid electricity at start of the operations phase. Under the Alternative Case, the plan does not demonstrate net zero, as this scenario would generate an additional 1.8 Mt CO<sub>2</sub>e of emissions, annually. The EAO notes that the Proponents have not committed to offsetting the additional emissions that would arise from the Alternative Case to achieve net-zero emissions.

The EAO is of the view that there is uncertainty on the Proponents meeting the Province's goal of becoming net zero due to uncertainty on purchasing offsets and timing of connection to the BC Hydro grid. The EAO has proposed two conditions to mitigate potential effects and the uncertainty should the Proponents be unable to meet offsetting targets and/or completion of the transmission line, including Condition 12 (Greenhouse Gas Emissions and Net-Zero Plan) and Condition 19 (Project Electrification).

### 24.3.3. Transmission Line and Carbon sinks absorption

Lax Kw'alaams Band and Metlakatla First Nation brought up that the carbon sinks assessment does not consider existing forest that will be cleared for the transmission line. The First Nations see this as a serious omission that results in an underestimation of the project's climate change impacts. Supplemental information on the transmission line and carbon sinks was provided to the EAO as part of the Revised Application. Prior to the transmission line not being included as part of the Proponents assessment, it was predicted that 218 t of carbon would not be absorbed from the atmosphere whereas when the transmission line was included, this amount increases to 431 t carbon becoming unable to be absorbed from the atmosphere. The supplemental transmission line information provided information to address this concern, and the transmission line and updated carbon sink calculations are now included as part of the Ksi Lisims LNG assessment.

## 24.4. The EAO's Assessment and Conclusions

### 24.4.1. Residual Effects

After considering all relevant proposed mitigation measures, the Revised Application, issues raised during the Application Review, the EAO's effects assessment and the information contained in the Joint Permitting / Regulatory Coordination Plan, the EAO concludes that Ksi Lisims LNG would have residual adverse effects due to the Project's GHG emissions. The Proponents provided its net-zero plan as part of the Revised Application which was reviewed by the Technical Advisory Committee and members of the public during the Application Review phase. The EAO proposes Certificate Condition 12 (Greenhouse Gas Emissions Net-Zero Plan) that would require the Proponents implementation, along with providing updates to the plan every five years, in consultation with additional parties, including First Nations and the Climate Action Secretariat. This plan includes an estimation of GHG emissions, consideration of provincial emission reduction targets and schedules, analysis of BAT/BEP, and an analysis to minimize GHG emissions and an explanation for technologies and measures to be and not to be implemented. This plan would work in tandem with legislation regarding GHGs, including:

- The Greenhouse Gas Industrial Reporting and Control Act, which establishes a GHG intensity limit for LNG production,

- The Climate Change Accountability Act, which sets GHG emission reduction requirements for the oil and gas sector and the CleanBC Roadmap to 2030,
- The New Energy Action Framework, which sets out a series of actions for B.C. to meet the 2030 emissions reduction target and for LNG facilities to provide a credible plan to achieve net-zero GHG emissions [by 2030](#), as well as
- The additional relevant provincial and federal regulatory requirements referenced in [Section 3.4](#) of the Assessment Report.

#### 24.4.2. Cumulative Effects Assessment

GHG emissions are of concern at any magnitude because of their long term accumulation in the atmosphere and global extent. The Intergovernmental Panel on Climate Change (IPCC) has produced several scenarios projecting potential global GHG emissions trajectories and the potential effects associated with these emissions levels. As GHGs are inherently cumulative, the EAO did not require the Revised Application for Ksi Lisims LNG to include a cumulative effects assessment for GHG emissions and the EAO did not conduct a cumulative effects assessment for the same reasons. Further, the IAAC considers GHG emissions to be inherently cumulative in the context of their potential effects related to global climate change. Consequently, cumulative effects are considered within the analysis of climate change impacts and therefore a separate cumulative effects assessment is not described here.

#### 24.4.3. Conclusions

Recognizing that electrification of Ksi Lisims LNG will be a key aspect of the Proponents reaching a positive final investment decision on the Project, the requirements for the Proponents to adhere to the Net-Zero New Industry policy, the implementation of a net-zero plan, and the assumption that BC Hydro would be able to provide sufficient power to the Project the EAO is satisfied that should the Base Case scenario be achieved, Ksi Lisims LNG would not have significant adverse effects on GHG emissions. This conclusion considers the information and analysis presented in this chapter; the views of the Technical Advisory Committee (including the information provided in ECCC's GHG Analysis), First Nations, and the Proponents; as well as the proposed conditions identified in the provincial Table of Conditions including, Condition 12 (Greenhouse Gas Emission and Net-Zero Plan) and Condition 19 (Project Electrification); and recommended Key Mitigation Measures under the IAA where relevant to areas of federal jurisdiction ([Appendix 2](#)). However, despite this, there remains uncertainty around the timing of electrification, in which case the Alternative Case scenario may occur. In this situation, this would result in increased facility emissions and impact the Province's ability to meet its emissions targets, should the Proponents not offset these additional emissions. Should the Alternative Case occur, the EAO is of the view this would result in potentially significant adverse effects on GHG emissions.

## 25.0 APPENDIX 13 - ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT

The technical and economical alternative means to carrying out a project must be assessed in every environmental assessment and is consistent with paragraph 22(1)(e) of the IAA. This includes assessing the best available technologies and the potential effects, risks, and uncertainties of each alternative. [Section 1.8](#) of the Revised Application summarized the alternatives and options assessed by the Proponents.

The Proponents identified the technically and economically feasible alternative means and assessed their potential effects. The Proponents evaluated alternatives based on economic feasibility with respect to expected capital cost. The alternatives were then evaluated using the following criteria before the preferred alternatives were selected and brought forward into Ksi Lisims LNG’s design: (see [Table 1.9–12](#) of the Revised Application for the Proponent’s “Overview of Alternative Mean Currently Selected for Ksi Lisims LNG, Including Potential Advantages/Benefits and Risks/Costs):

- Technical and economic feasibility:
  - Use of best available technology, where appropriate;
  - Technical requirements including uncertainties;
  - Capital costs;
- Environmental, social, cultural, health and Indigenous considerations;
  - Limiting environmental effects including those associated with GHGs and other air emissions, water use and other potential biophysical effects (e.g., terrestrial or marine footprint);
  - Potential effects to species at risk under the *Species at Risk Act*;
  - Potential social, cultural and health effects;
  - The rights or interests of First Nations;
  - Feedback received during consultation and engagement with the public, stakeholders, First Nations and local government; and,
- Changes to the health, social, cultural, or economic conditions that may result in disproportionate effects, based on Gender-Based Analysis Plus.

The alternative means of undertaking Ksi Lisims LNG for primary project components, as evaluated by the Proponents, are described in Table 65.

Table 66: Summary of the Proponents’ Alternative Means of Undertaking for Ksi Lisims LNG

Project Components and Activities	Alternatives Evaluated	Selected Alternative and Rationale
Project site Access and Transportation to Project site	<ul style="list-style-type: none"> <li>• Transport of goods and personnel to the site via road and marine vessel.</li> <li>• Shipping routes for LNG and natural gas liquids via Route A, Route B or Route C.</li> </ul>	The primary route from Terrace for transporting goods and personnel is anticipated to be via Highway 113/ Nisga’a Highway to Gingolx and marine vessel from Gingolx to the site. The Proponents identified that this route is considered the safest and most economical due to the shorter and more protected marine transport. A shorter route should also result in a decreased potential for wildlife interactions, lower GHG emissions, reduced exposure to inclement weather and fewer potential interactions with marine use, particularly fishing activities - a key concern identified by First Nations.

Project Components and Activities	Alternatives Evaluated	Selected Alternative and Rationale
		<p>The Proponents' assessment indicated that personnel from Prince Rupert may either be transported to Terrace to join the preferred route to the site via Gingolx or travel directly from Prince Rupert/Port Edward to the site by marine vessel. Goods originating in Prince Rupert/Port Edward will likely be transported to the site via barge or small marine vessel. The Proponents would select the transport option based on the origin and number of personnel, origin and nature of goods, frequency of travel and weather conditions.</p> <p>The Proponents' assessment concluded that Route A (Dixon Entrance to Triple Islands pilot boarding station, through Brown Passage, to Chatham Sound, Main Passage, Portland Inlet and Portland Canal) is considered the safest shipping route option. Route A is preferred for piloted carriers between the marine terminal and international waters due to safety and existing navigational aids. Route B is a viable alternative if required under certain conditions. Indigenous knowledge identified the Lax Kwaxl/Dundas and Melville Islands Conservancy as an area of food, social and ceremonial significance, and noted increasing numbers of vessels transiting through Chatham Sound.</p>
<p>Project site Layout</p>	<p>Floating versus a land-based LNG facility.</p> <p>Construction of dedicated LNG carrier berths (independent of the FLNGs) or use of ship to ship mooring at the floating FLNG facility.</p>	<p>The Proponents identified a FLNG to be the preferred option because of the following:</p> <ul style="list-style-type: none"> <li>• The FLNG barge would be built at an off-site manufacturing facility, reducing demands on local infrastructure and services, labour and housing;</li> <li>• FLNG construction in off-site shipyards would be more efficient, with established quality control procedures and construction conditions;</li> <li>• Reduced terrestrial footprint at the site may reduce the associated impacts on the environment and Indigenous interests and facilitate remediation;</li> <li>• Lower expected construction cost due to smaller construction footprint;</li> <li>• A FLNG would enable reuse at a different site or to salvage components and metal during decommissioning; and</li> <li>• A land-based facility would require the LNG storage and liquefaction components to be built at the site, requiring a significantly larger construction workforce and the associated onshore accommodations, larger warehouses, increased water demands and wastewater discharge. A land-based facility would also require a larger terrestrial footprint resulting in increased impacts to vegetation, wetlands, wildlife and archaeological and cultural sites and construction costs.</li> </ul> <p>The Proponents concluded that the FLNGs would be moored nearby at separate berths, rather than using dedicated berths with marine infrastructure to moor and load LNG carriers. A ship-to-ship mooring design implies reduced potential environmental effects of a smaller onshore and marine footprint, smaller</p>

Project Components and Activities	Alternatives Evaluated	Selected Alternative and Rationale
		<p>construction workforce requirements and lower construction costs. Dedicated berths would require considerable additional onshore and marine footprint resulting in potential for greater effects on the environmental, social and Indigenous interests and higher construction costs.</p>
Project site Energy Sources	<p>Potential use of electrical generation from temporary power barges using either once-through seawater cooling, evaporative cooling, or air-cooling systems.</p>	<p>The Proponents identified that as the base case, Ksi Lisims LNG would use a renewable energy source connection to the BC Hydro electrical grid. However, should a connection not be available at the start of operations, temporary on-site power generation would be required. The three temporary alternatives considered by the Proponents are dependent on the cooling system designed for the temporary power barges. A final decision on whether temporary electric power generation will depend on studies completed by BC Hydro related to the timing of the permanent electrical power supply. The risks/costs of the selected alternative means are proportional to:</p> <ul style="list-style-type: none"> <li>• The largest parasitic power requirements result in the highest generation requirement;</li> <li>• The largest terrestrial footprint due to cooling infrastructure; and</li> <li>• The highest GHG emissions during temporary power barge operation due to parasitic loads.</li> </ul>
Transmission Line	<p>Aerial, subsea, and terrestrial options for construction of the transmission line between Ksi Lisims LNG and Nisga’a Lands (as defined under the Nisga’a Treaty).</p>	<p>The Proponents identified several potential routes with three scenarios for the portion of the line between Nisga’a Lands and the site, with scenarios for aerial crossings, terrestrial installation and subsea installation. They determined all three scenarios to be technically and economically feasible and none result in irreversible potential effects. Although the aerial scenario offers lower capital costs than subsea for ocean crossing, the Proponents eliminated an aerial marine crossing due to the location and technical constraints.</p> <p>The route selected will likely require all or a portion of the line to be subsea, according to the following considerations:</p> <ul style="list-style-type: none"> <li>• The terrestrial scenario offers lower capital costs than subsea for ocean crossing and has the potential for biophysical effects on wildlife habitat and vegetation changes; and</li> <li>• The subsea option offers the least aesthetic effects and will also have temporary effects for marine users during construction.</li> </ul> <p>The primary concern of First Nations is a subsea transmission line interacting with fishing practices and the potential cumulative effects of a subsea transmission line, subsea pipeline and shipping activity.</p>
Water Supply	<p>Water sourced from local surface water, groundwater (well), rainwater or desalination of seawater,</p>	<p>The Proponents proposed that during construction, water would be sourced from local surface water and supplemented with water delivered to the site by barge. An early water supply would require installing additional infrastructure (pumps, piping, roads, power). Risks include periods where water is unavailable</p>

Project Components and Activities	Alternatives Evaluated	Selected Alternative and Rationale
	<p>during construction and operation.</p>	<p>due to low flow and the potential for extraction from fish-bearing watercourses. The Proponents would be required to meet environmental flow needs to reduce potential harm to fish.</p> <p>The Proponents identified that during operation, desalinated seawater would be the primary water source, supplemented by collected rainwater, according to the following considerations:</p> <ul style="list-style-type: none"> <li>• Desalination plants are a well-established technology and, therefore technologically and economically feasible. Potential environmental effects can be addressed by meeting B.C. and federal water quality guidelines at the edge of the initial dilution zone, designing the seawater intake structure based on guidance by Fisheries and Oceans Canada, and locating the outfall in a well-flushed, tidally influenced, and dynamic environment with diffuser(s) to disperse effluent upwards to reduce effects on benthic habitats;</li> <li>• Desalination requires capital investment, and the water intake could result in the impingement or entrainment of fish; and,</li> <li>• Rainwater will be captured and used to supplement (and reduce the load on) the desalination plant.</li> </ul> <p>The Proponents eliminated groundwater as a viable water supply option based on the need for extensive exploration to determine availability and the predicted low potential for locating a sufficient water supply.</p> <p>Indigenous engagement identified concerns with carrying forward too many water supply options into the effects assessment and the potential effects on the local aquatic environment by withdrawing water from the local watershed and discharging wastewater to the marine environment. The use of surface water will be limited to construction; wastewater discharge will comply with provincial and federal water quality guidelines.</p>
<p>Waste and Wastewater Management</p>	<ul style="list-style-type: none"> <li>• Management of solid and hazardous wastes during Construction and Operations; no alternative means are evaluated.</li> <li>• Options for management of non-process sanitary wastewater include gravity sewers, force mains and septic tanks.</li> <li>• Stormwater design.</li> </ul>	<p>The Proponents identified that management of solid and hazardous wastes during Construction and Operations is the only means of waste management considered for Ksi Lisims LNG.</p> <p>Given the site limitations, the Proponents proposed to use a force main system of small lift stations with sewage grinder pumps to convey wastewater to the on-site treatment unit. This option is technically better suited to the site terrain and geology, but more costly to operate. Force main systems may contaminate surface water if leaks develop and are not contained.</p> <p>The Proponents determined the on-site treatment unit would treat waste to meet applicable provincial and federal regulations and be discharged, under permit, into the marine environment of Portland Canal. The proposed location for discharge is between the personnel dock and the materials offloading facility, and adjacent to the location of the wastewater treatment plant. This area is</p>

Project Components and Activities	Alternatives Evaluated	Selected Alternative and Rationale
		<p>characterized by deep waters and strong currents that will facilitate rapid mixing of the treated water into the marine environment.</p> <p>The Proponents designed the FLNG facility to manage stormwater using an oily water drain system that collects rainwater, wash water, firewater, and other fluids from skids and equipment with the potential for oil, grease, or similarly contaminated spills. Collected water that meets water quality guidelines would be discharged directly to Portland Canal. Water that does not meet water quality guidelines will be gravity drained to a common oily water tank for treatment in an oily water separation package. Treated water will be discharged to Portland Canal once in compliance with regulatory requirements. No feasible alternatives to the FLNG stormwater management are available for consideration.</p> <p>The Proponents determined that Ksi Lisims LNG’s on-land components would have a stormwater management system that includes oil water separators and discharges stormwater when in compliance with regulatory requirements. The Proponents would develop and implement site-specific stormwater management measures during front-end engineering design. Stormwater management design is the industry standard; therefore, alternatives have not been considered. Considerations will be based primarily on the final grading design and plan.</p>
<p>Construction Alternatives</p>	<ul style="list-style-type: none"> <li>• Crew accommodations options at Project site include onshore construction camp or on floating vessels ('floatel').</li> <li>• Construction of free-span bridges or culverts over watercourses and drainages within the Project site.</li> <li>• Preliminary options for cut, fill and overburden planning.</li> <li>• Schedule options.</li> </ul>	<p>The Proponents identified that floating camps can be floated to the site and modified to accommodate workforce needs, resulting in limited terrestrial disturbance. Floating camps have the lowest capital costs, as they are self-contained and may be towed away and reused. Accommodation on site may avoid the introduction of a large temporary construction workforce in nearby communities and the associated social impacts.</p> <p>Onshore construction camps would require a prepared terrestrial footprint to be occupied during construction. Such camps are expensive to construct and operate at remote sites. While some portions of the construction camp may be removed and reused, the affected terrestrial footprint would require remediation and restoration. The Proponents deemed the siting of the construction crew accommodation on the mainland infeasible due to logistical, economic and safety reasons.</p> <p>Proposed crossings would be short and installed in accordance with applicable guidance documents. The Proponents would complete the final design during front-end engineering design.</p> <p>Overburden cleared from the footprint and unusable as backfill would be transported and placed in a prepared overburden storage area, for use during Decommissioning.</p> <p>Timing considerations would impact the schedule, including regulatory, environmental, commercial and financial constraints.</p>

## 25.1. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the alternative means of carrying out the project for Ksi Lisims LNG were identified.

### 25.1.1. Terrestrial Crossings

Kitsumkalum First Nation raised the potential for a new 287 kilovolt transmission line across Nisga'a lands and through Kitsumkalum territory to open additional access to recreational users, compounding effects due to Ksi Lisims LNG, Prince Rupert Gas Transmission and hydro-electric projects in their territory. Kitsumkalum First Nation considers that a new powerline would not have been proposed within the region without Ksi Lisims LNG, therefore the cumulative impacts caused should be assessed. Kitsumkalum First Nation considers that the Transmission Line Assessment Area should include the entire transmission line, not just a portion. Kitsumkalum First Nation disagrees with the approach in the final Application Information Requirements and the Application regarding the ownership and scoping of the Transmission Line Assessment Area, and that it should include the entire transmission line, not just the portion.

The Proponents responded with a supplemental assessment (Appendix F: Transmission Line Supplemental) that concluded that although no changes to the characterization of residual effects were identified for the applicable Valued Components, they understand that the First Nations may also experience loss or alteration of access to preferred harvesting areas or sacred places and heritage sites, alteration of necessary conditions, change in the quality and quantity of culturally important species and country foods, alteration of management principles and their ability to make decisions regarding land and marine use, and alteration of community practices tied to identity, community cohesion and cultural transference opportunities within areas of their traditional territories/areas of interest.

A summary of mitigation measures to avoid or limit adverse residual effects of the transmission line construction on Indigenous Interests, and the associated environmental resources and social and economic conditions that support the exercise of Indigenous rights are described in section F.7.1 (Table F-5 - Assessment of Potential Effects to Valued Components in [Appendix F](#) of the Revised Application). The Proponents concluded that potential adverse residual effects on Indigenous Interests from Ksi Lisims LNG, including the transmission line, could act cumulatively with similar effects from other past, present, and likely projects or activities in the region. Cumulative effects on Indigenous Interests could result through the same pathways identified in Sections [11.0](#) to [19.0](#), of the Revised Application. The Proponents consider that legislation, best practices, and guidelines applicable to limiting cumulative effects within the region, and commitments to specific mitigation measures for the transmission line will be tailored to suit environmental concerns associated with the route selected and equipment to be used based on the final design.

The EAO is of the view that the proposed transmission line was assessed as part of the cumulative effects assessment for the Project as well as an assessment of the potential effects of a portion of the transmission line within the scope of the Ksi Lisims LNG environmental assessment was provided in the Proponents Revised Application. Further information on this concern, including Kitsumkalum's views can be found in [Chapter 17.5](#) (Kitsumkalum Assessment)

## 25.2. The EAO's Assessment and Conclusions

The EAO concludes that the Proponents have adequately assessed alternative means for Ksi Lisims LNG and the components of Ksi Lisims LNG's design.



## 26.0 APPENDIX 14 - POTENTIAL CHANGES TO THE PROJECT CAUSED BY THE ENVIRONMENT

### 26.1. Background

Paragraph 22(1)(j) of the *Impact Assessment Act* specifies that the assessment of a designated project must take into account any change to the project that may be caused by the environment. Environmental conditions such as extreme weather, seismic and oceanographic events could have adverse effects on Ksi Lisims LNG. Considering these potential events in an assessment provides a thorough understanding of effects and ensures the project is prepared to respond to potential impacts. The Revised Application assessed the likelihood of the potential changes to Ksi Lisims LNG that may be caused by the environment, and their consequences on relevant Valued Components. The following environmental events and processes have the potential to impact Ksi Lisims LNG and result in changes or effects to the Valued Components assessed in the Revised Application:

- Climate change and extreme weather;
- Seismic events and tsunamis; and,
- Forest fires.

The EAO notes that while the Revised Application assesses the effects of climate change and extreme weather in separate sections, they are combined in this report as they are expected to produce similar effects.

### 26.2. Potential Effects and Proposed Mitigations

The potential changes to Ksi Lisims LNG caused by the environment are described in [Section 10](#) of the Revised Application and are summarized here. For each environmental effect, the Proponents reviewed the existing conditions and assessed the potential effects for the life of the project until Ksi Lisims LNG begins decommissioning and reclamation. The Proponents used a risk assessment metric to determine the degree to which an environmental factor would impact Valued Components by plotting the intersection of the likelihood of the event against the severity of the event's consequences. For the environmental effects and processes noted above, the Proponents assessed the following effects:

#### 26.2.1. Climate change and extreme weather

##### Potential Project Effect

Warming caused by climate change alters global weather patterns and causes increases in extreme temperatures, weather events and storms, as well as increasingly severe droughts and forest fires. The Proponents reported that the climate change scenarios most likely to interact with Ksi Lisims LNG are rising sea levels, increase in extreme weather events, as well as changes in temperature and precipitation. The Proponents reported that the facility is unlikely to experience infrastructural impacts due to increasing temperatures as LNG facilities are able withstand extreme temperatures, as demonstrated by similar facilities in regions with more extreme temperatures than in northern B.C. However, extreme weather such as high winds and waves and heavy precipitation present potential risks of structural damage to facilities, localized flooding, and an increase in regular maintenance requirements. Repair works for damaged infrastructure have the potential to cause short-term damage to marine or terrestrial areas, while de-icing of roads and infrastructure may cause salt and brine run-off.

Severe storms have the potential to impact emergency response, if for example, helicopters are unable to fly in extreme winds. Extreme weather also presents a potential impact to Valued Components through spills and fires, as well as loss of containment of LNG. These interactions are assessed in [Appendix 9](#) (biophysical factors that support ecosystem functions) of this report.

While interactions between climate change and Ksi Lisims LNG are expected to occur, the Proponents predicted the overall risk to Ksi Lisims LNG would be low and considers the likelihood of impacts to the Project that adversely affect Valued Components very unlikely.

### Proposed Mitigations

The Proponents proposed the following mitigations to improve emergency response and reduce the impact of effects related to climate change and extreme weather:

- Ksi Lisims LNG’s floating facilities would be built in a manner that allows adjustment to changing water levels, whether due to sea level rise or storms;
- Develop and implement emergency management and response including fire prevention and protection measures. Appropriate fire response equipment and personnel trained to use it will be maintained at the site;
- Develop and implement an emergency response program in accordance with the requirements of the Emergency Management Regulation and section 8 of the Liquefied Natural Gas Facility Regulation under the [Energy Resource Activities Act](#) and CSA Z246.2 (Emergency preparedness and response for petroleum and natural gas industry systems);
- B.C. Coastal Pilots aboard LNG carriers and NGL vessels will assess potential issues (e.g., inclement weather) and adjust speed to change arrival time at the site, if required;
- Design terrestrial infrastructure that is vulnerable to damage or critical to operation so that it is located at elevations above that expected for high water levels, severe weather, and storm surge to limit the potential for inundation;
- Develop and implement inclement weather response measures including ice melt or gravel to provide traction;
- A marine operations vessel will be available at the facility during operations to provide security and emergency response; and
- Establish muster points on high ground to maintain the safety of personnel during a storm surge, seismic event and/or tsunami.

The Revised Application reports that these mitigations applied in conjunction with on-site storm management systems are expected to reduce the impact of climate change and extreme weather on Ksi Lisims LNG infrastructure and sufficiently mitigate adverse effects.

### 26.2.2. Seismic Events and Tsunamis

#### Potential Project Effect

The Proponents assessed the risk of seismic events and tsunamis on Ksi Lisims LNG in the Revised Application and reported that due to Ksi Lisims LNG’s location near the Queen Charlotte – Fairweather fault system, one of the most seismically active faults in Canada, it determined that there would be a medium to high seismic hazard in the vicinity. Between 1985 and 2022, over 600 earthquakes under magnitude 6.0 were recorded within a 200 km radius of the proposed Ksi Lisims LNG site. The Proponents considered the effects of earthquakes that may occur within 200 km of Ksi Lisims LNG and determined that the most likely effects with the potential to impact Ksi Lisims LNG infrastructure are shaking and vibrations, as well as landslides which may cause large waves. Earthquakes also may cause tsunamis, which could cause local flooding, shoreline erosion, risks to worker safety, loss of containment of LNG and possible fire, and damage to infrastructure and project vessels.

The EAO notes that although no earthquakes over magnitude 6.0 have been recorded within a 200 km radius of the site, in the past 100 years some earthquakes associated with the Queen Charlotte – Fairweather system have occurred on the north coast of B.C. and southeast Alaska which measured in excess of magnitude 6.0. Two of these occurred on the Queen Charlotte Fault, which is approximately 25 km from the west coast of Haida Gwaii and roughly parallels the islands' coast. The 1949 Queen Charlotte Islands earthquake, which occurred no more than 300 km from Pearse Island, was an 8.1 magnitude earthquake that shattered windows and caused buildings to sway in Prince Rupert. In 2012, a 7.8 magnitude earthquake also occurred on this fault, approximately 135 km southeast from the 1949 event, and caused minor shaking in Prince Rupert. These two earthquakes are, respectively, the largest and second largest earthquakes recorded by seismometers to have occurred in Canada.

### Proposed Mitigations

The Revised Application determined that the effects of tsunamis would be similar to those caused by climate change and extreme weather impacts (such as flooding and high water) and therefore proposed applying the same mitigation measures which would also reduce the effects of tsunamis on Ksi Lisims LNG. The Proponents suggested that by considering tsunami impacts and incorporating mitigation strategies into the project design, the consequence of a tsunami event on Ksi Lisims LNG would be minor. The Proponents proposed that any additional recommendations from a preliminary Ksi Lisims LNG-specific tsunami study, once completed, would be incorporated into the final project design. A preliminary Flood Hazard Assessment was provided to the EAO in January 2024, and the Proponents have committed to providing the results of ongoing investigations into landslide-generated tsunamis to Natural Resources Canada once this report is completed. The Proponents estimate this will be after the submission of the final Revised Application. The Revised Application reported that onshore facilities would be designed to withstand extreme wind and wave events and FLNG facilities would be designed to withstand the most likely, low magnitude earthquake events. The Proponents predicted that the likelihood of a high magnitude earthquake occurring and causing potential effects to Ksi Lisims LNG is low, but the seismic design would comply with provincial and federal codes, standards, and regulations such as the National Building Code of Canada 2020 and the 2024 B.C. Building Code. The Proponents would also apply the same mitigation measures noted above for extreme weather events, such as establishing muster points on high ground for evacuation during a high-water event. The Revised Application also proposed the use of emergency generators to support essential systems if an earthquake caused an outage to the BC Hydro power grid.

### 26.2.3. Forest fires

#### Potential Project Effect

The Revised Application reported that in the Northwest Fire Centre, which encompasses the region around Ksi Lisims LNG, Prince Rupert and Smithers, an average of 90 wildfires have occurred each year over a ten-year period, representing seven percent of annual wildfires in B.C. in a region and encompassing an area covering 25 percent of the province. No wildfires of note have been recorded in coastal areas of northern B.C between 2012 and 2021.

A forest fire on Pearse Island, the proposed location for the land-based components of Ksi Lisims LNG, could potentially disrupt project activities during the Construction, Operations or Closure phases or interrupt the power supply causing an emergency shutdown if a fire were to damage the transmission line. The Revised Application assessed the potential for forest fires to interact with Ksi Lisims LNG and determined that while an interaction is possible, Ksi Lisims LNG would be surrounded by a ten-metre buffer cleared of vegetation, reducing the risk of fire reaching the project and causing damage to project infrastructure. The Proponents determined that forest fires present an overall low risk to Ksi Lisims LNG, however in the event of a forest fire occurring on Pearse Island, Ksi Lisims LNG may implement mitigation measures to protect infrastructure. The Proponents did not include the trigger for the implementation of mitigation measures but shared that mitigations would follow the emergency response program the Proponents will develop in alignment with the requirements of the Emergency Management Regulation and section 8 of the Pipeline and Liquefied Natural Gas Facility

Regulation. The emergency response program will be determined through the regulatory process as required by BCER permits. The effects of a fire and mitigation within the Ksi Lisims LNG footprint and proposed mitigation measures are addressed in [Section 9](#) of the Revised Application.

### Proposed Mitigations

The Revised Application determined that forest fires present a low risk to Ksi Lisims LNG, but that mitigation measures could include development and implementation of emergency response programs and fire prevention and protection measures and equipment. A forest fire could cause damage to the transmission line, causing a loss of power and an emergency shutdown. The effects of an emergency shutdown are assessed in [section 9](#) of the Revised Application. If power is interrupted, Ksi Lisims LNG would have backup emergency diesel generators to support essential systems, however they would not support normal operation. The mitigation measures implemented in the event of a forest fire on Pearse Island have the potential to cause adverse effects on Valued Components. The Proponents also proposed potentially cutting a firebreak into the forest surrounding the Ksi Lisims LNG footprint, as a response measure, if a forest fire were to occur on Pearse Island. However, the Proponents noted that cutting a firebreak has the potential to cause minor effects to the vegetation and wetlands Valued Components, and minor to moderate effects on wildlife and wildlife habitat, and freshwater fish and fish habitat.

## 26.3. Key Issues Raised

Based on a review of the Revised Application and with feedback from the Technical Advisory Committee, participating Indigenous nations, and the public, the following key issues related to the assessment of the potential changes to the Project caused by the environment for Ksi Lisims LNG were identified.

### Seismic design considerations related to ground shaking

Natural Resources Canada raised concerns about what was considered in terms of seismic effects when developing the Revised Application and the project design. The Proponents assessed the potential effects of seismic events on Ksi Lisims LNG based on the history of earthquakes within 200 km of the site; however, Natural Resources Canada noted that large magnitude, remote earthquakes could cause ground shaking effects at the site, and that the effects of these events should be assessed and understood. Natural Resources Canada advised that ground shaking information, such as type of shaking, strength and frequency, and the potential effects at the Ksi Lisims LNG site is important to inform engineering design and the predict the potential for liquefaction, slumping and landslides at or near the site.

Natural Resources Canada also advised that the Revised Application should describe what seismic events and impacts were considered when developing the project design and front-end engineering design.

In the Issues Tracking Table and at a February 15, 2024, meeting the Proponents discussed the issue with Natural Resources Canada. The Proponents responded that the Revised Application Information Requirements (AIR) for the Revised Application did not require the Proponents to provide seismic design considerations and that it considered the historical data and range of 200 km to be a reasonable range for the assessment. However, the Proponents noted that it would consider Natural Resources Canada's recommendations when considering additional seismic studies and committed to providing Natural Resources Canada with the results of a preliminary geohazard report and preliminary flood hazard report once they were completed after the final submission of the Revised Application.

The EAO considered the comments made by Natural Resources Canada and the Proponents' response and is satisfied that Natural Resources Canada's concerns will be effectively addressed through the development of management plans and by the Proponent's commitment to providing Natural Resources Canada with the preliminary geohazard and flood hazard reports.

### Project-specific tsunami studies and consideration of landslide generated tsunamis

Natural Resources Canada raised comments about the Ksi Lisims LNG's tsunami modelling results, which were based on the modelling done for another project on the Portland Canal. Natural Resources Canada advised the Proponents to develop a tsunami model that is specific to the Ksi Lisims LNG site and takes into account tsunami-induced currents, offshore earthquake sources, and local landslide sources, in addition to inundation and vertical wave height. Natural Resources Canada also reported that the mouth of the nearby Nass Bay, located approximately 27 km from the Ksi Lisims LNG site, demonstrated potential for submarine landslides and recommended that a potential Nass Delta landslide event scenario be included in the Ksi Lisims LNG-specific tsunami modelling.

The Proponents responded that it had completed a flood hazard report, which it provided to the EAO in January 2024, and were using a completed preliminary tsunami hazard assessment to inform project engineering design. The Proponents also noted that it was considering additional studies related to tsunami risk and landslide generated tsunamis and committed to proving Natural Resources Canada with the results of this study once completed after submission of the final Revised Application.

The EAO considered the comments made by Natural Resources Canada and the Proponents' response and is satisfied that Natural Resources Canada's concerns will be effectively addressed through the completion of the planned tsunami studies and by the Proponent's commitment to providing Natural Resources Canada with the results of those studies.

## 26.4. The EAO's Assessment and Conclusions

To address key issues related to the effects of the environment, the EAO has proposed the following conditions related to effects of the environment on Ksi Lisims LNG to the Ministers if a Certificate is issued:

- Condition 9 (Construction Environmental Management Plan) including emergency response procedures.

After considering the proposed mitigation measures and Certificate conditions proposed (which would become legally binding in the event that a Certificate is issued), the EAO concludes the effects of the environment would likely pose a low risk to Ksi Lisims LNG during construction and operations due to the engineering design of Ksi Lisims LNG to withstand the types of extreme weather events predicted in the region, and the low likelihood of severe seismic events occurring nearby during the life of the project.

## 27.0 APPENDIX 15 - FEDERAL REQUIREMENTS

### 27.1. Overview

When both an environmental assessment under the *Environment Assessment Act* and impact assessment under the *Impact Assessment Act* (IAA) are required, the *Impact Assessment Cooperation Agreement between Canada and British Columbia* sets out the administrative processes required from both the EAO and IAAC to ensure an efficient and effective assessment process, including the use of substitution. Under substitution, there is a single review process (the provincial environmental assessment), designed to meet both provincial and federal legislative requirements, thereby enabling two decisions (provincial and federal). This section describes and summarizes federal requirements, including how the effects to be addressed under the IAA, have been considered and assessed by the EAO. This Report will be submitted to the federal Minister of Environment and Climate Change to inform their decision-making, fulfilling the requirements of both the federal IAA, the *Environment Assessment Act*, and the conditions for substitution outlined in the *Notice of Substitution Approval under the IAA*.

An impact assessment under the IAA must: consider the factors set out under subsection 22(1) of the IAA; take into account adverse effects within federal jurisdiction and direct or incidental adverse effects (“adverse federal effects”) as defined in section 2 of the IAA; and determine whether adverse federal effects are likely to be to some extent significant, and if so to what extent. A number of these adverse federal effects are also documented elsewhere in this Report where they are related to a Valued Component. These are summarized in Table 66. Consideration of the factors set out in subsection 22(1) of the IAA that the EAO has documented elsewhere in this Report are summarized in Table 67. The [Minister’s Notice of Substitution Approval under the IAA](#) stipulates additional conditions for the substituted assessment of Ksi Lisims LNG. A summary of where the assessment of these additional conditions can be found within this Report is provided in Table 68, including:

- A non-negligible adverse change to the environment that would occur on federal lands, to the marine environment that is caused by pollution and that would occur outside Canada, and to boundary waters, international waters, or interprovincial waters that is caused by pollution<sup>55</sup>;
- A non-negligible adverse impact on cultural heritage and current use of lands and resources for traditional purposes resulting from any change to the environment<sup>56</sup>;
- A non-negligible adverse change occurring in Canada to the health, social or economic conditions of the Indigenous Peoples of Canada<sup>57</sup>;
- A non-negligible adverse effect of a federal work or undertaking, as defined in subsection 3(1) of the *Canadian Environmental Protection Act, 1999*;
- The extent to which the designated project contributes to sustainability<sup>58</sup>; The extent to which the effects of the project hinder or contribute to Canada’s ability to meet its environmental obligations and commitments in respect of climate change<sup>59</sup>; and

<sup>55</sup> As required under paragraph (b), (c), and (d), respectively, of the definition of adverse effects within federal jurisdiction in section 2 of the IAA.

<sup>56</sup> As required under subparagraph (e)(i) and (e)(ii) of the definition of adverse effects within federal jurisdiction in section 2 of the IAA, respectively.

<sup>57</sup> As required under paragraph (f) of the definition of adverse effects within federal jurisdiction in section 2 of the IAA.

<sup>58</sup> As required under paragraph 22(1)(h) of the IAA.

<sup>59</sup> As required under paragraph 22(1)(i) of the IAA.

- The extent to which the substituted assessment supports Canada meeting its duty to consult and obligations in respect of the *Nisga'a Final Agreement* (Nisga'a Treaty).

To meet the requirements of the IAA, the Assessment Report must characterize effects under federal jurisdiction, by specifying whether adverse federal effects, including cumulative effects, are likely to be to some extent significant and if so to what extent. The EAO carried out the assessment of effects in federal jurisdiction in accordance with its Effects Assessment Policy. As described in the Policy, residual effects are those effects remaining after the implementation of all mitigation measures, including offsetting measures and, therefore are the expected consequences of the reviewable project for the selected Valued Component or Indigenous Interests. The assessment described in this Appendix includes characterization of adverse residual effects in federal jurisdiction considering the application of Key Mitigation Measures, which are those that are important for addressing potentially significant adverse effects in federal jurisdiction. The EAO therefore recommends that IAAC consider the Key Mitigation Measures in the development of its potential federal conditions, should Ksi Lisims LNG be approved to proceed. The characterization of significance applies only to residual adverse non-negligible federal effects and is completed using similar factors and criteria as used elsewhere in this report for each effect being assessed (e.g., magnitude, geographical extent, timing, frequency, duration, reversibility and uncertainty, and social and ecological contexts), as well as standards, guidelines, descriptors or objectives, where they exist.

It is important to note that while the frameworks and language used for expressing conclusions around significance are different between the federal and provincial environmental assessment regimes, the conclusions are informed by a common body of scientific information and consideration of Indigenous Knowledge.

Where, as a result of Ksi Lisims LNG, effects to a valued component were negligible, an extent of significance determination was not required. Criteria for characterizing extent of significance of non-negligible adverse federal effects are set out below and take into account the application of mitigation measures, as described above:

- **Not Significant:** Effects are sufficiently small that they do not individually or cumulatively have a significant effect on a valued component, and generate no or few impacts in social or ecological contexts.
- **Low:** Effects are significant but are low in magnitude, of short duration, infrequent, small in spatial extent, reversible or readily avoided, and to generate few or minor impacts in social or ecological contexts. Mitigation measures will allow baseline conditions to remain largely unchanged.
- **Moderate:** Effects are significant and are moderate in magnitude, of moderate duration, occasionally frequent, possibly/partially reversible, and to generate a moderate level of impacts in social or ecological contexts. Mitigation measures may not fully eliminate, reduce, control or offset effects but should enable affected communities to maintain economic and social well-being, and should prevent the diminishment or loss of key components of the environment and its ecological functioning.
- **High:** Effects are significant and are high in magnitude, permanent/long term, frequent, irreversible, and over a large spatial extent or within an area of exclusive/preferred Indigenous use or of ecological/environmental sensitivity. High levels of impacts in social or ecological contexts are expected. There is a high degree of uncertainty of the effectiveness of mitigation measures, or mitigation measures are unable to fully address effects such that valued components are diminished or lost.

Significance determinations for adverse federal effects are summarized below in Table 66, based on the EAO's assessment of residual effects presented in [Appendix 6](#) and the additional analysis conducted in this Appendix. The factors outlined in subsection 22(1) of the IAA, for which significance characterization is not explicitly required, are provided in Table 67.

The assessment of malfunctions and accidents ([Appendix 7](#)) concluded that the events listed below have a possible likelihood of resulting in an adverse effect on some valued components and a risk rating for some valued components of moderate or higher. A possible likelihood means the event may happen during the life of Ksi Lisims LNG (i.e., once in 1,000 years). Events with a possible likelihood of occurrence and a risk rating of moderate or higher were carried forward in consideration of the precautionary approach applied throughout the assessment (listed below), bearing in mind that assessment findings are conservative. Effects from these events are considered within the characterizations described throughout this Appendix. In particular for Indigenous Peoples, the EAO acknowledges the consequence of a potential malfunction or accident matters, and therefore effects from these events on Indigenous Peoples are therefore considered in [Section 27.5](#).

- Terrestrial and marine spills of a hazardous material (excluding LNG spills);
- Loss of containment of LNG or a hazardous material from the floating LNG facilities (air quality, marine resources, and greenhouse gases);
- Emergency LNG production unit shutdown including flaring; and,
- Project-related transportation incidents (roadway and marine).

Events with a low-risk rating do not require any preventative or mitigation action and effects from these events were not considered likely and not carried forward for consideration in Table 66.

Under the IAA, the assessment must also include a characterization of significance for direct or incidental adverse effects. Ksi Lisims LNG is not expected to result in any adverse effects that are directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out of Ksi Lisims LNG (defined as "direct or incidental adverse effects" in section 2 of the IAA) that have not already been considered within the evaluation of effects in federal jurisdiction. As such, Table 67 does not include a characterization of significance for any direct or incidental adverse effects from Ksi Lisims LNG.



Table 67: Location in the EAO’s Assessment Report of the Assessment of Adverse Effects within Federal Jurisdiction, as defined in Section 2 of the IAA and Significance Determination

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
<b>Adverse Effects within Federal Jurisdiction (as defined in section 2 of the IAA)</b>			
(a) a non-negligible adverse change to the following components of the environment that are within the legislative authority of Parliament:			
(i) fish and fish habitat, as defined in subsection 2(1) of the <i>Fisheries Act</i>	<p><b>Marine Resources, Appendix 6, <a href="#">chapter 18.5</a></b></p> <p>The residual effects assessment of Ksi Lisims LNG on marine resources included change in water and sediment quality, change in habitat, change in behaviour caused by sensory disturbance, and change in injury or mortality risk, which may directly or indirectly affect fish and fish habitat. The residual effects are medium in magnitude, generally continuous throughout the life of Ksi Lisims LNG, and of moderate duration. The residual effects are limited in geographic extent (Local Assessment Area), with change in behaviour caused by sensory disturbance having a regional extent. The residual effects are reversible in nature, except for change in habitat, which is irreversible. The residual effects have a moderate uncertainty, except for change in water and sediment quality, which has a moderate to high uncertainty. This elevated level of uncertainty is attributable to the uncertainty with the effluent dispersion model, which showed there is potential for effluent to be acutely toxic to aquatic life (mysid shrimp) at the point of discharge; an activity that would be in contravention of the <i>Fisheries Act</i>. The EAO notes that the Proponents will continue to refine the model to support the permit requirements for a waste discharge authorization from BCER. The residual effect for change in injury or mortality risk is medium in magnitude with a moderate level of uncertainty because the predicted underwater noise levels are expected to exceed the threshold for fish injury and mortality within 10 m of the pile installation location and DFO noted there are uncertainties with the effectiveness of proposed mitigation measures. DFO also expressed concerns with the potential for marine shipping to impact at-risk marine mammals (including Northern Resident Killer Whale, listed as Threatened) through underwater noise and vessel strikes. Given</p>	Low to moderate	Low to moderate

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	<p>the medium magnitude of residual effects, the moderate to high level of uncertainty, the importance of marine resources to participating Indigenous nations, the potential that mitigation measures may not fully eliminate or reduce impacts to fish and fish habitat, and the uncertainty around residual effects to marine mammals from marine shipping, there are non-negligible effects to fish and fish habitat that are, to some extent, significant.</p> <p>There would be low to moderate risks of cumulative residual effects for change in water and sediment quality, change in habitat, change in behavior caused by sensory disturbance, and change in injury or mortality risk when Ksi Lisims LNG is considered in context with other existing and reasonably foreseeable future projects.</p> <p>A spill of hazardous materials (non-LNG) in the marine environment and loss of containment of LNG or hazardous material from the floating LNG facilities may have a moderate consequence on marine resources. Project-related transportation incidents that result in a spill of marine diesel or bunker fuel in the marine environment may have a major consequence on marine resources depending on the number of individuals affected. These events can indirectly impact fish through change in water and sediment quality and change in habitat, or directly impact fish through change in injury or mortality risk. <b>Freshwater Fish and Fish Habitat, Appendix 6, <a href="#">chapter 18.6</a></b></p> <p>The residual effects assessment of Ksi Lisims LNG on freshwater fish and fish habitat included changes in phytoplankton density, changes in fish habitat, and changes in fish health, growth, survival, or reproduction. The residual effects are low to medium in magnitude, generally limited in geographic extent (Local Assessment Area and transmission line assessment area), reversible in nature, and have a low uncertainty.</p> <p>The potential for cumulative effects considered changes in phytoplankton density, changes in fish habitat, and changes in fish health, growth, survival, or reproduction</p>		

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	<p>when Ksi Lisims LNG is considered in context with other existing and reasonably foreseeable projects. Cumulative residual effects are expected to be low in magnitude, limited in geographic extent (Local Assessment Area and acidification and eutrophication study area), reversible in nature, and continuous during operations.</p> <p>A spill of hazardous materials (non-LNG) in the terrestrial environment may have a moderate consequence on freshwater fish and fish habitat and project-related transportation incidents on roadways may have a minor consequence on freshwater fish and fish habitat.</p> <p><b>Surface Water, Appendix 6, <a href="#">chapter 18.4</a></b></p> <p>The residual effects assessment of Ksi Lisims LNG on surface water included changes to surface water quality and changes to surface water quantity, which may indirectly affect fish and fish habitat. The residual effects are low in magnitude, limited in geographic extent (limited to the Local Assessment Area and transmission line assessment area), reversible in nature, and have a low uncertainty.</p> <p>There are potential cumulative effects related to acidification and eutrophication, which are expected to be limited in geographic extent (Local Assessment Area and acidification and eutrophication study area), reversible in nature, and continuous during operations.</p> <p>A spill of hazardous materials (non-LNG) in the terrestrial environment may have a moderate consequence on surface water and project-related transportation incidents on roadways may have a minor consequence on surface water, which can indirectly affect freshwater fish and fish habitat.</p>		

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	<p>The EAO has proposed Key Mitigation Measures to reduce impacts to fish and fish habitat (<a href="#">Appendix 2</a>). Based on the proposed Key Mitigation Measures and the residual effects to fish and fish habitat noted above, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are significant to a low to moderate extent.</p>		
<p>(ii) aquatic species, as defined in subsection 2(1) of the <i>Species at Risk Act</i></p>	<p>See above rationale for (i) fish and fish habitat</p> <p>The residual effects for marine plants were assessed as change in habitat in the Marine Resources valued component (Appendix 6, <a href="#">chapter 18.5</a>). The residual effects were considered medium in magnitude, limited in geographic extent (Local Assessment Area), irreversible in nature, and have a moderate uncertainty.</p> <p>There would be a low risk of cumulative residual effects for change in habitat.</p> <p>The EAO has proposed Key Mitigation Measures to reduce impacts to fish and fish habitat (<a href="#">Appendix 2</a>), including implementing any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish in consultation with Indigenous groups and Fisheries and Oceans Canada. Based on the proposed Key Mitigation Measures and the residual effects to marine plants as a result of change in habitat, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are not significant.</p>	<p>Not significant</p>	<p>Not significant</p>
<p>(iii) migratory birds, as defined in subsection 2(1) of the <i>Migratory Birds Convention Act, 1994</i></p>	<p><b>Wildlife and Wildlife Habitat, Appendix 6, <a href="#">chapter 18.7</a></b></p> <p>The residual effects assessment of Ksi Lisims LNG on wildlife and wildlife habitat included direct and indirect loss of wildlife habitat, change to wildlife movement patterns, and increased mortality risk for migratory birds. The residual effects are low in magnitude, limited in geographic extent (Local Assessment Area), reversible in nature, and have a low uncertainty, primarily because of direct and indirect loss of wildlife habitat. Direct loss of habitat is expected to occur mainly during construction and be limited to the footprint area. Although indirect loss of habitat</p>	<p>Not significant</p>	<p>Not significant</p>

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	<p>due to increased noise, lighting, and marine vessel movements and vibration is moderate in duration with a continuous frequency, the sustainability of regional populations is not expected to be adversely affected.</p> <p>There would be minimal increase in direct and indirect loss of habitat, barriers to movement, and mortality risk for migratory birds when Ksi Lisims LNG is considered in context with other existing and reasonably foreseeable projects.</p> <p>A spill of hazardous materials (non-LNG) in the terrestrial environment and emergency LNG production unit shutdown including flaring may have a minor consequence on wildlife and wildlife habitat, including migratory birds. Project-related transportation incidents on roadways and in the marine environment may have a moderate consequence on wildlife and wildlife habitat, including migratory birds. These events may result in direct loss of wildlife habitat and increased mortality risk for migratory birds.</p> <p>The EAO has proposed Key Mitigation Measures to reduce effects to migratory birds (<a href="#">Appendix 2</a>). Based on the proposed Key Mitigation Measures and the residual effects to migratory birds noted above, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are not significant.</p>		
(b) a non-negligible adverse change to the environment that would occur on federal lands	<p>As discussed in <a href="#">Section 27.2</a> of this Appendix, adverse residual effects within federal jurisdiction on federal lands are not significant. Residual effects characterizations for air quality, acoustic, surface water, wildlife and wildlife habitat, and marine resources were generally low to medium in magnitude, reversible to partially reversible, and had a low to moderate level of uncertainty. While there may be some residual effects to wildlife (e.g., shorebirds, marine birds) and marine resources (e.g., fish and marine mammals) in the territorial sea of</p>	Not significant	Not significant

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	Canada, the sustainability of regional populations is not expected to be adversely affected by vessel movements.		
(e) with respect to the Indigenous peoples of Canada, a non-negligible adverse impact—occurring in Canada and resulting from any change to the environment—on:			
(i) physical and cultural heritage	<p><b>Physical heritage – Archaeological and Heritage Resources, Appendix 6, <a href="#">Chapter 18.14</a></b></p> <p>See below rationale for (iii) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance</p> <p><b>Cultural heritage –Appendix 15, <a href="#">Section 27.5.2</a></b></p> <p>As discussed in <a href="#">Section 27.5.2</a> of this appendix, residual effects on cultural heritage included disrupted or restricted access to sacred and culturally important sites and landscape features and sensory disturbances that were low in magnitude, but considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of Ksi Lisims LNG will extend beyond a generation and potentially impact the transmission of knowledge between generations. The EAO has proposed Key Mitigation Measures to reduce impacts cultural heritage (<a href="#">Appendix 2</a>). Based on the proposed Key Mitigation Measures and the residual effects to changes to cultural heritage, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are not significant.</p>	Not significant	Not significant
(ii) the current use of lands and resources for traditional purposes	As discussed in <a href="#">Section 27.5.1</a> of this appendix, residual effects to quality and quantity of marine, freshwater and terrestrial resources, access to preferred harvesting locations, and sensory disturbances range from low to medium in magnitude, occur over the long-term, range from reversible to partially reversible, and have a low to moderate uncertainty. The EAO has proposed Key Mitigation	Low	Low

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
	Measures to reduce impacts to the current use of lands and resources for traditional purposes ( <a href="#">Appendix 2</a> ). Based on the proposed Key Mitigation Measures and the residual effects to the current use of lands and resources for traditional purposes, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are significant to a low extent.		
(iii) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	<b>Archaeological and Heritage Resources, Appendix 6, <a href="#">Chapter 18.14</a></b> The EAO concluded there were no residual effects on archaeological and heritage resources, taking into account the proposed mitigation measures, and there are no existing and reasonably foreseeable projects and activities that have the potential to act cumulatively with Ksi Lisims LNG.	Not significant	Not significant
(f) a non-negligible adverse change occurring in Canada to the health, social or economic conditions of the Indigenous peoples of Canada	As discussed in <a href="#">Section 27.6</a> of this appendix, residual effects to Indigenous Peoples health (air quality and acoustic), marine use, employment and economy, infrastructure and services, and community health and wellness range from low to medium in magnitude and reversible to irreversible. The EAO has proposed Key Mitigation Measures to reduce impacts to health, social and economic conditions ( <a href="#">Appendix 2</a> ). Based on the proposed Key Mitigation Measures and the residual effects to health, social or economic conditions, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are significant to a low extent.	Low	Low
In the case of a physical activity or a designated project that is carried out on federal lands or is a federal work or undertaking, as defined in subsection 3(1) of the <i>Canadian Environmental</i>	As discussed in <a href="#">Section 27.8</a> of this Appendix, residual adverse effects for greenhouse gas (GHG) emissions from marine shipping is low in magnitude and has low uncertainty. Ksi Lisims LNG-specific magnitude is a key determinant of the extent of significance of Ksi Lisims LNG’s effects. Emissions from shipping activities would account for a small percentage of Canada’s total marine GHG emissions and are expected to generate few or minor impacts. In 2050, marine shipping emissions	Not significant	Not applicable

Federal Requirement	Rationale and Report Location	Significance Determination for Adverse Federal Effects under the IAA	Significance Determination for Cumulative Effects under the IAA
<p><i>Protection Act, 1999</i>, this definition also includes the non-negligible adverse effects of that activity or project</p>	<p>will be added to the offset total in alignment with the Strategic Assessment of Climate Change (SACC) requirement for Ksi Lisims LNG to be net-zero. The Proponents’ net-zero plan will allow the baseline conditions of global GHGs to remain largely unchanged after 2050.</p> <p>GHGs are inherently cumulative in the context of their potential effects related to climate change. Consequently, a separate cumulative effects assessment for the GHG emissions from project-related marine shipping activities has not been conducted.</p>		



Table 68: Location in the EAO's Assessment Report of the Assessment of Effects Required under the IAA [Subsection 22(1)]

Federal Requirement	Report Location
22 (1) The EAO will take into account the following factors in the substituted impact assessment for Ksi Lisims LNG:	
(a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including	
(i) the effects of malfunctions or accidents that may occur in connection with the designated project	Risk of Malfunctions and Accidents, <a href="#">Appendix 7</a>
(ii) any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out	Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14
(iii) the result of any interaction between those effects	Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14
(b) Mitigation measures that are technically and economically feasible and that would mitigate any adverse effects of the designated project	Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14
(c) the impact that the designated project may have on any Indigenous group and any adverse impact that the designated project may have on the rights of the Indigenous peoples of Canada recognized and affirmed by Section 35 of the <i>Constitution Act, 1982</i>	Detailed First Nations Assessments, <a href="#">Appendix 5</a>
(d) the purpose of and need for the designated project	<a href="#">Section 2.3</a> of the Report
(e) alternative means of carrying out the designated project that are technically and economically feasible, including through the use of best available technologies, and the effects of those means	Alternative Means of Carrying out the Project, <a href="#">Appendix 13</a>
(f) any alternatives to the designated project that are technically and economically feasible and are directly related to the designated project	<a href="#">Section 2.4</a> of the Report
(g) Indigenous Knowledge provided with respect to the designated project	Detailed First Nations Assessments, <a href="#">Appendix 5</a> Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14 Federal Requirements, <a href="#">Appendix 15, Section 27.7</a>
(h) the extent to which the designated project contributes to sustainability	Federal Requirements, <a href="#">Appendix 15, Section 27.9</a> Detailed First Nations Assessments, <a href="#">Appendix 5</a> Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14 Risk of Malfunctions and Accidents, <a href="#">Appendix 7</a> Disproportionate effects, <a href="#">Appendix 8</a> Biophysical Factors that Support Ecosystem Function, <a href="#">Appendix 9</a>

Federal Requirement	Report Location
	Effects on Current and Future Generations, <a href="#">Appendix 10</a> Interaction Between Effects, <a href="#">Section 7.0 of the Assessment Report</a>
(i) the extent to which the effects of the designated project hinder or contribute to the Government of Canada’s ability to meet its environmental obligations and its commitments in respect of climate change	Federal Requirements, <a href="#">Appendix 15, Section 27.10</a> Greenhouse Gases, <a href="#">Appendix 12</a>
(j) any change to the designated project that may be caused by the environment	Potential Changes to the Project Caused by the Environment, <a href="#">Appendix 14</a>
(k) the requirements of the Follow-up Program in respect of the designated project	Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14 The EAO’s Key Mitigation Measures and Follow-Up Programs under the IAA, <a href="#">Appendix 2</a>
(l) considerations related to Indigenous cultures raised with respect to the designated project	Detailed First Nations Assessments, <a href="#">Appendix 5</a> Federal Requirements, <a href="#">Appendix 15, Section 27.5</a>
(m) community knowledge provided with respect to the designated project	<a href="#">Section 5.2</a> of the Report Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14
(n) comments received from the public	<a href="#">Section 5.3</a> of the Report Within each valued component Section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14
(o) comments from a jurisdiction that are received in the course of consultations conducted under section 21 of the IAA <sup>60</sup>	Detailed First Nations Assessments, <a href="#">Appendix 5</a> Within each valued component section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14 Risk of Malfunctions and Accidents, <a href="#">Appendix 7</a> Disproportionate Effects, <a href="#">Appendix 8</a> Effects on Biophysical Factors that Support Ecosystem Function, <a href="#">Appendix 9</a> Effects on Current and Future Generations, <a href="#">Appendix 10</a> Land Use Plans, <a href="#">Appendix 11</a> Greenhouse Gas Emissions, <a href="#">Appendix 12</a> Alternative Means of Carrying out the Project, <a href="#">Appendix 13</a> Potential Changes to the Project Caused by the Environment, <a href="#">Appendix 14</a>

<sup>60</sup> Includes federal authorities, government of a province, Indigenous governing bodies, and government of a foreign state, among others, as defined in section 2 of the IAA.

Federal Requirement	Report Location
(p) any relevant assessment referred to in section 92, 93 or 95 of the IAA	Section 95 of the IAA (Strategic Assessments) is applicable for Ksi Lisims LNG: Strategic Assessment of Climate Change Greenhouse Gases, <a href="#">Appendix 12</a> Federal Requirements, <a href="#">Appendix 15, Section 27.10.2</a>
(q) any assessment of the effects of the designated project that is conducted by or on behalf of an Indigenous governing body and that is provided with respect to the designated project	Detailed First Nations Assessments, <a href="#">Appendix 5</a>
(r) any study or plan that is conducted or prepared by a jurisdiction—or an Indigenous governing body not referred to in paragraph (f) or (g) of the definition jurisdiction in Section 2—that is in respect of a region related to the designated project and that has been provided with respect to the project	Not applicable
(s) the intersection of sex and gender with other identity factors	Employment and Economy, Appendix 6, <a href="#">Chapter 18.12</a> Infrastructure and Services, Appendix 6, <a href="#">Chapter 18.13</a> Community Health and Wellness, Appendix 6, <a href="#">Chapter 18.11</a> Disproportionate Effects on Distinct Human Populations and Gender Based Analysis Plus, <a href="#">Appendix 8</a>
(t) any other matter relevant to the impact assessment that the Impact Assessment Agency of Canada (IAAC) requires to be taken into account	IAAC did not identify any matters relevant to the assessment that were not identified in the <a href="#">Application Information Requirements</a> and addressed in the Revised Application.

Table 69: Location in the EAO's Assessment Report of the Assessment of Additional Requirements Outlined in the Minister's Notice of Substitution Approval under the IAA

Condition of Substitution	Report Location
The designated project to be assessed is the construction, operation, and decommissioning of a floating natural gas liquefaction facility and marine terminal and any incidental physical activities	Project Overview, <a href="#">section 2.2</a> of the Report
B.C. will gather necessary information to inform IAAC's assessment of the potential effects of the Project on the Nisga'a Nation's treaty rights, as Canada is required to do under the <i>Nisga'a Final Agreement</i> , and to allow Canada to make a determination of whether it has met its obligations under Chapter 10 of the <i>Nisga'a Final Agreement</i>	Detailed First Nations Assessments, <a href="#">Appendix 5, Section 5.1</a>
B.C. will include an assessment of the potential effects of marine shipping activities (including supporting marine traffic) and the transmission line associated with the Project, including potential effects of malfunctions or accidents and any potential cumulative effects, the extent of significance of those effects, suggested Key Mitigation Measures and requirements of any follow-up program that may be warranted	Within each valued component section: <a href="#">Appendix 6</a> , Sections 6.1 to 6.14 Risk of Malfunctions and Accidents, <a href="#">Appendix 7</a>
Consideration of federal policy measures and commitments outlined in the Federal Government's Strengthened Climate Plan	Greenhouse Gases, <a href="#">Appendix 12</a> Federal Requirements, <a href="#">Appendix 15, Section 27.10.2</a>

Condition of Substitution	Report Location
Consideration of commitments to be outlined in Canada's 2030 Emissions Reduction Plan as required under the <i>Canadian Net-Zero Emissions Accountability Act</i> , including consideration of a cap on emissions and best in class guidance to be established for the oil and gas sector, in the impact assessment	Greenhouse Gases, <a href="#">Appendix 12</a> Federal Requirements, <a href="#">Appendix 15, Section 27.10.2</a>

## 27.2. Federal Lands

Ksi Lisims LNG is located at Wil Milit on the northern end of Pearse Island and does not occur on federal lands. Ksi Lisims LNG is located on Category A Land owned in fee simple by the Nisga'a Nation. There are no direct physical impacts such as vegetation clearing, grading, and other physical activities that would occur on federal lands.

Federal lands that may be impacted by Ksi Lisims LNG, however, include:

- federal Crown lands (e.g., federal subdivisions or federal rural lands) near the project footprint and along the marine shipping route;
- Indigenous reserve lands near the project footprint and along the marine shipping route; and
- the territorial sea of Canada (extending 12 nautical miles offshore) along the open water marine shipping route.

There are no federal lands within or adjacent to the Site and the nearest federal land is a parcel of Crown land approximately 12 km from the Site on the north end of the Mylor Peninsula (Parcel Identifier Number (PID) 10556729). The nearest Indigenous reserve lands are more than 25 km away. However, valued components with geographic extents that overlap with federal lands are air quality, acoustic, surface water, wildlife and wildlife habitat, and marine resources. The geographic extents and potential effects to federal lands for each of these valued components are summarized below.

- **Air quality:** increased concentrations of ambient air pollutants may occur on federal lands as the air quality facility local and Regional Assessment Areas overlap with federal Crown lands; the local and Regional Assessment Areas for marine shipping overlap with federal Crown lands and Indigenous reserve lands; and the open water assessment area overlaps with territorial sea of Canada.
- **Acoustic:** increased noise levels causing nuisance, annoyance, and sleep disturbance to people may occur on federal lands as the acoustic local and Regional Assessment Areas overlap with federal Crown lands and the open water assessment area overlaps with territorial sea of Canada.
- **Surface water:** change in the chemical and physical composition of surface water may occur on federal lands as reflected in the acidification and eutrophication study area, which overlaps with federal Crown lands.
- **Wildlife and wildlife habitat:** changes in wildlife habitat, movement, and mortality risk may occur on federal lands as reflected in the marine wildlife open water assessment, which overlaps with territorial sea of Canada.
- **Marine resources:** change in behaviour caused by sensory disturbances or change in injury or mortality risk from marine vessels may occur on federal lands as the marine terminal Regional Assessment Area overlaps with federal Crown lands and the marine resources open water assessment area overlaps with Indigenous reserve lands and territorial sea of Canada.

Below (Tables 69 to 73) are the EAO's conclusions regarding the potential residual adverse effects to federal lands for each valued component.

Table 70: Air Quality Project Residual Adverse Effects Extending onto Federal Lands

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
Increased concentrations	Construction and Decommissioning	<b>Direction and Magnitude:</b> adverse and low <b>Extent:</b> local/Regional Assessment Area <b>Duration:</b> short-term	<b>Federal Crown lands within 30 km of Project Footprint</b> PID – 10556729

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
of ambient air pollutants		<p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> multiple irregular event</p> <p><b>Affected Populations:</b> disproportionately distributed, people who access federal Crown lands in the local/Regional Assessment Area and people who are sensitive to exposure to air contaminants may experience greater impacts</p> <p><b>Likelihood:</b> low</p> <p><b>Consequence:</b> minor, based on low magnitude and local/Regional Assessment Area extent</p> <p><b>Risk:</b> low, based on low likelihood and minor consequence</p> <p><b>Uncertainty:</b> low, there are some data limitations (e.g., approximation of baseline air concentrations in the local/Regional Assessment Area using baseline from monitoring stations outside of the assessment areas), but conservative assumptions were applied to reduce the uncertainty with predicted adverse residual effects</p>	
	Operations (including Marine Shipping)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> local/Regional Assessment Area, open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> continuous</p> <p><b>Affected Populations:</b> disproportionately distributed, people who access federal Crown lands, Indigenous reserve lands in the local/Regional Assessment Area, or the open water assessment area and people who are sensitive to exposure to air contaminants may experience greater impacts</p> <p><b>Likelihood:</b> low</p> <p><b>Consequence:</b> minor, based on medium magnitude and local/Regional Assessment Area extent</p> <p><b>Risk:</b> low, based on minor consequence and low likelihood of occurrence</p> <p><b>Uncertainty:</b> low, there are some data limitations (e.g., approximation of baseline air concentrations in the local/Regional Assessment Area using baseline from monitoring stations outside of the assessment areas), but</p>	<p><b>Federal Crown lands within 30 km of Project Footprint</b> PID – 10556729</p> <p><b>Federal Crown lands within Marine Shipping local/Regional Assessment Area</b> Federal Crown lands listed in Section 24.0, Table 24.1-1 of the Revised Application except: PID – 2486150 PID – 23260467 PID – 12454885</p> <p><b>Indigenous Reserve within Marine Shipping local/Regional Assessment Area</b> Birnie Island 18</p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
		conservative assumptions were applied to reduce the uncertainty with predicted adverse residual effects	Finlayson Island 19 Lax Kw'alaams 1 Burnt Cliff Islands 20 Tymgowzan 12 Ksadagamks 43 Tsimpsean 2a Rushton Island 90 S1/2 Tsimpsean 2 Tugwell Island 21 Metlakatla Village Lax Kw'alaams Village  Territorial sea of Canada

Table 71: Acoustic Project Residual Adverse Effects Extending onto Federal Lands

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
Increased noise levels causing nuisance, annoyance, and sleep disturbance to people	Facility and Transmission Line – Construction	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> Regional Assessment Area</p> <p><b>Duration:</b> short-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> continuous</p> <p><b>Affected Populations:</b> disproportionately distributed, people who access areas within the Regional Assessment Area closer to the noise sources may experience greater impacts</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on low magnitude and Regional Assessment Area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> low</p>	<p><b>Federal Crown lands within Local Assessment Area</b></p> PID - 10556729 PID - 8541671 PID - 30599130 PID - 10910506 PID - 12690104 PID - 17574145 PID - 23205482 PID - 11022060 PID - 12940364 PID - 11582766 PID - 23150009 PID - 11818107 PID - 12689815

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
			PID - 6807135 PID - 12645061 PID - 16626036 PID - 12645052 PID - 8989486 PID - 16316606 PID - 5289921 PID - 5289939 PID - 5047943 PID - 5047978 PID - 15329917 PID - 15329925 PID - 15329968 PID - 15330028 PID - 15329976  <b>Federal Crown lands within Regional Assessment Area <sup>1</sup></b>  <b>Indigenous Reserve within Regional Assessment Area</b> Birnie Island 18 Finlayson Island 19 S1/2 Tsimpsean 2
	Facility and Shipping – Operations	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> Local Assessment Area, Regional Assessment Area, and open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> continuous</p> <p><b>Affected Populations:</b> disproportionately distributed, people who access areas within the local, regional or open water assessment area closer to the noise sources may experience greater impacts</p>	<p><b>Federal Crown lands within Local Assessment Area</b></p> PID - 10556729 PID - 8541671 PID - 30599130 PID - 10910506 PID - 12690104 PID - 17574145 PID - 23205482



Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
		<p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and Regional Assessment Area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> low</p>	<p>PID - 11022060</p> <p>PID - 12940364</p> <p>PID - 11582766</p> <p>PID - 23150009</p> <p>PID - 11818107</p> <p>PID - 12689815</p> <p>PID - 6807135</p> <p>PID - 12645061</p> <p>PID - 16626036</p> <p>PID - 12645052</p> <p>PID - 8989486</p> <p>PID - 16316606</p> <p>PID - 5289921</p> <p>PID - 5289939</p> <p>PID - 5047943</p> <p>PID - 5047978</p> <p>PID - 15329917</p> <p>PID - 15329925</p> <p>PID - 15329968</p> <p>PID - 15330028</p> <p>PID - 15329976</p> <p><b>Federal Crown lands within Regional Assessment Area <sup>1</sup></b></p> <p><b>Indigenous Reserve within Regional Assessment Area</b></p> <p>Birnie Island 18</p> <p>Finlayson Island 19</p> <p>S1/2 Tsimpsean 2</p> <p>Territorial sea of Canada</p>

1. Federal Crown lands within Regional Assessment Area: PID – 12009709, PID – 29577721, PID – 29577675, PID – 14772205, PID – 14772329, PID – 14772311, PID – 14772302, PID – 14772299, PID – 14772281, PID – 14772272, PID – 14772264, PID – 14772248, PID – 14772221, PID – 14714353, PID – 14714345, PID – 5048010, PID – 5048265, PID – 5048168, PID – 5289815, PID – 5295441, PID – 5047790, PID – 5047811, PID – 5047765, PID – 15738019, PID – 15650316, PID – 5295521, PID – 5289785, PID – 15737993, PID – 9081674, PID – 9081623, PID – 9081585, PID – 15737985, PID – 9081526, PID – 15738027. PID – 5295653, PID – 5047889, PID – 5047901, PID – 5047722, PID – 5047846, PID – 14967570, PID – 5048044, PID – 5048117, PID – 5290015, PID – 5289882, PID – 5048087, PID – 5047927, PID – 5047714, PID – 5289904, PID – 5296048, PID – 5296111, PID – 5289955, PID – 5047919, PID – 5296005, PID – 26934833, PID – 5064961, PID – 5289980, PID – 26934825.

Table 72: Surface Water Project Residual Adverse Effects Extending onto Federal Lands

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
Change in the chemical and physical composition of surface water	Facility –Operations	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> acidification and eutrophication study area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> continuous</p> <p><b>Affected Populations:</b> not applicable</p> <p><b>Likelihood:</b> low</p> <p><b>Consequence:</b> minor, based on low magnitude and acidification and eutrophication study area extent</p> <p><b>Risk:</b> low, based on low likelihood and minor consequence</p> <p><b>Uncertainty:</b> low</p>	<p><b>Federal Crown lands within Acidification and Eutrophication Study Area</b></p> <p>PID - 10556729</p>

Table 73: Wildlife and Wildlife Habitat Project Residual Adverse Effects Extending onto Federal Lands

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
Change in habitat (direct and indirect loss)	Shipping – Operations – Shorebirds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (migration, nesting)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
		<p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on low magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based on moderate confidence in effectiveness of mitigation measures</p>	<p>Territorial sea of Canada</p>
	Shipping – Operations – Marine Birds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> medium-term, including sensitive periods (migration, breeding, wintering)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> medium</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on medium likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based on moderate confidence in effectiveness of mitigation measures</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>
Change in movement	Shipping – Operations – Marbled Murrelet (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (nesting, fledging)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> low</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
	Shipping – Operations – Shorebirds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (migration)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on low magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>
	Shipping – Construction – Marine Birds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (post-fledging)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> medium</p> <p><b>Consequence:</b> moderate, based on low to moderate magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on medium likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based on a range of responses to disturbances by marine birds, lack of information on effects to marine birds due to changes in movement, and uncertainty related to effectiveness of mitigation measures</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>
	Shipping – Operations – Marine Birds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (migration, breeding, post-fledging, wintering)</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
		<p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> medium</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on medium likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based on a range of responses to disturbances by marine birds, lack of information on effects to marine birds due to changes in movement, and uncertainty related to effectiveness of mitigation measures</p>	<p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>
Increased mortality risk	Shipping – Operations – Shorebirds and Marine Birds (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> long-term, including sensitive periods (nesting, migration)</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on wildlife</p> <p><b>Likelihood:</b> medium</p> <p><b>Consequence:</b> low, based on low magnitude and open water assessment area extent</p> <p><b>Risk:</b> low, based on medium likelihood and low consequence</p> <p><b>Uncertainty:</b> low</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Territorial sea of Canada</p>

Table 74: Marine Resources Project Residual Adverse Effects Extending onto Federal Lands

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
Change in behaviour caused by	Marine Terminal – Construction – Fish (salmonids, non-salmonid marine fish, eulachon) and	<p><b>Direction and Magnitude:</b> adverse and medium (fish); adverse and low (invertebrates)</p> <p><b>Extent:</b> marine terminal Regional Assessment Area</p>	<p><b>Federal Crown lands within Marine Terminal Regional Assessment Area</b></p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
sensory disturbances	Invertebrates (Marine Terminal Regional Assessment Area)	<p><b>Duration:</b> short-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and Regional Assessment Area extent (fish); minor, based on low magnitude and Regional Assessment Area extent (invertebrates)</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence (fish); low, based on high likelihood and minor consequence (invertebrates)</p> <p><b>Uncertainty:</b> moderate, based on lack of knowledge on fish response to underwater noise</p>	PID - 10556729
	Marine Terminal – Construction – Marine Mammals (baleen whales, toothed whales, seals, sea lions) (Marine Terminal Regional Assessment Area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> marine terminal Regional Assessment Area</p> <p><b>Duration:</b> short-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and Regional Assessment Area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate</p>	<p><b>Federal Crown lands within Marine Terminal Regional Assessment Area</b></p> <p>PID - 10556729</p>
	Shipping and Marine Terminal – Operations – Fish (salmonids, non-salmonid marine fish, eulachon) and Invertebrates (Marine Terminal Regional Assessment Area, open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> marine terminal Regional Assessment Area, open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p>	<p><b>Federal Crown lands within Marine Terminal Regional Assessment Area</b></p> <p>PID - 10556729</p> <p><b>Indigenous Reserve within open water assessment area</b></p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
		<p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on low magnitude and Regional Assessment Area and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based on lack of knowledge on fish response to underwater noise</p>	<p>Far West Point 34</p> <p>Dundas Islands 32b</p> <p>Prince Leboo Island 32</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Squaderee 91</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Yatze 13</p> <p>Territorial sea of Canada (open water assessment area only)</p>
	<p>Shipping and Marine Terminal – Operations – Marine Mammals (baleen whales, toothed whales, seals, sea lions, sea otters) (Marine Terminal Regional Assessment Area, open water assessment area)</p>	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> marine terminal, open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> continuous for noise from FLNGs at the marine terminal; multiple irregular events for marine shipping</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and Regional Assessment Area and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate, based variability of marine mammal response to underwater noise</p>	<p><b>Federal Crown lands within Marine Terminal Regional Assessment Area</b></p> <p>PID - 10556729</p> <p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Dundas Islands 32b</p> <p>Prince Leboo Island 32</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Squaderee 91</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Yatze 13</p> <p>Territorial sea of Canada (open water assessment area only)</p>

Potential Effect	Project Phase and Component	Residual Adverse Effects	Affected Federal Lands
	Shipping – Operations – Sea Turtles (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and low</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p> <p><b>Likelihood:</b> high</p> <p><b>Consequence:</b> moderate, based on low magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on high likelihood and moderate consequence</p> <p><b>Uncertainty:</b> low</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Dundas Islands 32b</p> <p>Prince Leboo Island 32</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Squaderee 91</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Yatze 13</p> <p>Territorial sea of Canada (open water assessment area only)</p>
Change in injury or mortality risk from vessel strikes	Shipping – Operations – Marine Mammals (baleen whales, toothed whales) and Sea Turtles (open water assessment area)	<p><b>Direction and Magnitude:</b> adverse and medium</p> <p><b>Extent:</b> open water assessment area</p> <p><b>Duration:</b> medium-term</p> <p><b>Reversibility:</b> partially reversible</p> <p><b>Frequency:</b> multiple irregular events</p> <p><b>Affected Populations:</b> disproportionately distributed for human populations who depend on marine resources</p> <p><b>Likelihood:</b> medium</p> <p><b>Consequence:</b> moderate, based on moderate magnitude and open water assessment area extent</p> <p><b>Risk:</b> moderate, based on medium likelihood and moderate consequence</p> <p><b>Uncertainty:</b> moderate</p>	<p><b>Indigenous Reserve within open water assessment area</b></p> <p>Far West Point 34</p> <p>Dundas Islands 32b</p> <p>Prince Leboo Island 32</p> <p>Avery Island 92</p> <p>Rushton Island 90</p> <p>Squaderee 91</p> <p>Cohoe Point 20</p> <p>Yasitkun 21</p> <p>Yatze 13</p> <p>Territorial sea of Canada (open water assessment area only)</p>

With the implementation of the proposed mitigation measures, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction on air quality, acoustic, surface water, wildlife and wildlife habitat,



and marine resources that would occur on federal lands are not significant. Residual effects characterizations for these valued components were generally low to medium in magnitude, reversible to partially reversible, and had a low to moderate level of uncertainty. The EAO concluded a low to moderate extent of significance for fish and fish habitat ([Section 27.1](#)) primarily due to a medium magnitude and elevated uncertainties with the effluent and underwater noise modelling. However, the interaction between federal lands and marine resources is anticipated to result in a change in behaviour caused by sensory disturbances or a change in injury or mortality risk from marine vessels in the territorial sea of Canada. These potential effects are a subset of what was considered in the conclusion for fish and fish habitat and are not related to effluent discharge or underwater noise during construction. Further, the EAO proposed a follow-up program to IAAC to monitor effects from underwater noise on marine fish and marine mammals and proposed a Key Mitigation measure to require vessels to navigate safely in the presence of marine mammals by reducing vessel speed, making adjustments to direction, or both, to maintain distance from marine mammals and minimize the risk of collision with marine mammals ([Appendix 2](#)).

While there may be some residual effects to wildlife (e.g., shorebirds, marine birds) and marine resources (e.g., fish and marine mammals) in the territorial sea of Canada, the sustainability of regional populations is not expected to be adversely affected by vessel movements. The federal lands identified are also not population centres that would be significantly impacted by air and noise. Exceedances of the air quality guideline from the facility were predicted for sulfur dioxide and nitrogen dioxide at the Ksi Lisims LNG facility's fence line<sup>61</sup>, but concentrations are expected to dissipate rapidly beyond the fence line. The EAO is, therefore, of the view that adverse residual effects on federal lands are not significant.

### 27.3. Pollution to the Marine Environment Outside Canada

Ksi Lisims LNG is approximately 2 kilometres east of the Canada-USA border. The following valued components have geographical extents that extend to the Alaska shoreline, and therefore cross the international border between Canada-USA: wildlife and wildlife habitat marine terminal Regional Assessment Area for marine birds and marine resources marine terminal Regional Assessment Area. Malfunctions and accidents associated with Ksi Lisims LNG also have the potential to cause pollution to the marine environment outside Canada.

The wildlife and wildlife habitat valued component evaluated Ksi Lisims LNG's potential effects on the following:

- change in habitat and movement resulting from vegetation clearing and site preparation, sensory disturbance, presence of infrastructure, and vessel traffic;
- change in movement resulting from the presence of infrastructure and vessel traffic; and
- change in mortality risk resulting from vegetation clearing and site preparation activities, collisions with project infrastructure and vessels, and waste management.

These effects are not caused by marine pollution; therefore, there is no interaction between wildlife and wildlife habitat and changes to the marine environment that would occur outside Canada. Adverse effects to wildlife and wildlife habitat outside of Canada as a result of marine pollution are not anticipated.

The marine resources valued component evaluated Ksi Lisims LNG's potential effects on the following:

- change in water and sediment quality;
- change in habitat (including plants and algae);

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<sup>61</sup> The project fence line is where public access is restricted.

- change in behaviour; and
- change in injury or mortality risk.

Ksi Lisims LNG activities or physical works have the potential to affect water and sediment quality through increased total suspended solids (e.g., from site preparation and clearing), disturbance of historic or naturally occurring contaminants, and effluent discharge. These activities may lead to marine pollution outside of Canada based on the geographic extent of the Regional Assessment Area for marine resources for the marine terminal. However, residual adverse effects were not identified for change in water and sediment quality within the Regional Assessment Area for marine resources for the marine terminal. Therefore, adverse effects to marine resources as a result of changes in water and sediment quality in the marine terminal Regional Assessment Area are not anticipated.

The other three potential effects on marine resources (i.e., change in habitat, change in behaviour, and change in injury or mortality risk) are not caused by marine pollution. Therefore, there is no interaction between marine resources and changes to the marine environment caused by pollution that would occur outside Canada and adverse effects to marine resources as a result of change in habitat, change in behaviour, and change in injury or mortality risk are not anticipated.

Four malfunctions and accidents scenarios have a possible likelihood of resulting in an adverse effect on some valued components ([Section 27.1](#)). However, none of these scenarios are expected to cause marine pollution outside of Canada. Releases to the marine environment at or near Ksi Lisims LNG are expected to remain within the project footprint (i.e., the marine footprint as defined in the Revised Application). Release of product from vessels during shipping and transportation of materials or personnel has a rare likelihood of resulting in adverse effects on valued components and was therefore not carried forward for consideration in this Appendix. See [Appendix 7](#) for an assessment of malfunctions and accidents for Ksi Lisims LNG.

Given the proximity of Ksi Lisims LNG to the Canada-USA border and that the Application Information Requirements outlined the potential for Ksi Lisims LNG to affect marine resources through changes in water quality, changes to the marine environment caused by pollution outside of Canada was identified as a non-negligible effect within federal jurisdiction to be included in the substituted assessment. This approach is consistent with the mandate of the IAA to apply the precautionary principle in impact assessments. The results of the substituted assessment identified no residual adverse federal effects because changes to water and sediment quality as a result of Ksi Lisims LNG activities or physical works and accidents and malfunctions are not anticipated. The EAO concluded that Ksi Lisims LNG is not expected to cause a non-negligible adverse change to the marine environment that is caused by pollution and that would occur outside Canada. As a result, the EAO predicts the adverse effects within federal jurisdiction are negligible and this federal effect was not carried forward for a significance determination.

#### **27.4. Pollution to Boundary, International, or Interprovincial Waters**

Ksi Lisims LNG is approximately 2 kilometres east of the Canada-USA border within the Pearse Canal, which separates Pearse Island and Alaska. [Section 27.3](#) assesses Ksi Lisims LNG's effects caused by pollution that may occur in the marine environment beyond the international boundary.

International waters are waters of rivers that flow across the international boundary between Canada and the USA. Interprovincial waters are waters that flow across a provincial boundary. Ksi Lisims LNG will not cause pollution to international or interprovincial waters, as there are no rivers that flow across international boundaries or interprovincial water bodies in the surface water valued component assessment boundaries.

Based on the above information, Ksi Lisims LNG is not expected to cause pollution to boundary, international, or interprovincial waters. As a result, the EAO predicts the adverse effects within federal jurisdiction are negligible and this federal effect was not carried forward for a significance determination.

## 27.5. Indigenous Peoples' Cultural Heritage and Current Use of Lands and Resources for Traditional Purposes

### 27.5.1. Changes to Current Use of Lands and Resources for Traditional Purposes – IAA 2(e)(ii)

This section assesses the potential effects of Ksi Lisims LNG on current use of lands and resources by Indigenous Peoples for traditional purposes. In the assessment of current use, the EAO considered the effects of Ksi Lisims LNG on aspects that support the practice of traditional activities in the preferred locations and ways of Indigenous Peoples: access, resource quantity and quality, and the sensory environment (for example: noise, ambient light and visual quality). Traditional activities considered include fishing and marine harvesting, hunting, trapping and plant gathering. Effects on Indigenous Interests are assessed for each individual Indigenous group in [Appendix 5](#).

#### 27.5.1.1. Fishing and Marine Harvesting

Maintaining traditional practices of fishing and marine harvesting by Indigenous Peoples is dependent on access to waters and shorelines where there are marine resources available in sufficient numbers and that are safe for human consumption. Changes to the sensory environment can affect the quality of the fishing and marine harvesting experience and increase perceived safety risks.

##### *Quality and Quantity of Resources for Traditional Fishing and Marine Harvesting*

With respect to marine fish and mammals harvested by Indigenous Peoples, site preparations and construction of marine infrastructure would cause a direct loss, destruction and alteration of fish habitat within the project footprint. Underwater noise from site construction (e.g., pile installation) and vessel traffic has the potential to result in changes in behaviour and movement for marine fish and mammals and increase the risk of injury and mortality. Changes to surface water quality from clearing, grading and construction activities, and changes to surface water quantity from site preparation and Ksi Lisims LNG-related withdrawals have the potential to indirectly affect fish and fish habitat. Increased vessel traffic from Ksi Lisims LNG also has the potential to increase the risk of injury and mortality from vessel strikes to marine mammals. Further, a potential malfunction or accident could result in adverse effects to freshwater and marine resources (See [Appendix 7](#)).

The Revised Application indicates that Ksi Lisims LNG is not predicted to result in a change in the quality of country foods harvested, however, a perceived change in the quality or safety of freshwater and marine foods could adversely impact Indigenous Peoples' fishing and harvesting practices, see [Chapter 18.9](#) (marine use).

Proposed provincial conditions and Key Mitigation Measures and Follow-up Programs, as proposed in Chapter [18.5](#), [18.4](#), [18.9](#) and [Appendix 2](#), would avoid or reduce effects on quantity and quality of resources for traditional fishing and marine harvesting, which include:

- Pre-construction surveys, within the final transmission line section between Ksi Lisims LNG and Nisga'a Lands (as defined under the Nisga'a Treaty), on sensitive marine fish and mammal habitat.
- Construction Environmental Management Plan that includes:
  - measures to mitigate underwater noise
  - measures to control erosion and sediment;
  - freshwater and marine water quality management; and
- acidification and eutrophication monitoring in aquatic environments. Marine Water Quality Baseline Reporting program.

- Implement any offsetting plan related to the harmful alteration, disruption, or destruction of fish habitat, and death of fish.
- Require vessels to navigate safely in the presence of marine mammals by reducing vessel speed, making adjustments to direction, or both, to maintain distance from marine mammals and minimize the risk of collision with marine mammals.
- Follow-up programs to:
  - monitor effluents discharge and marine intakes; and
  - monitor effects from underwater noise on marine fish and marine mammals from operation of the marine terminal.

See [Appendix 6](#), [section 6.3](#), [section 6.7](#) and [Appendix 2](#) for further details.

With respect to water quality and quantity, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, limited in geographic extent (limited to the Local Assessment Area and Transmission Line Assessment Area), reversible in nature and have a low uncertainty.

With respect to freshwater fish and fish habitat, the EAO concludes the residual effects are low to medium in magnitude, generally limited in geographic extent (Local Assessment Area and Transmission Line Assessment Area), reversible in nature and have a low uncertainty. A spill of hazardous materials (non-LNG) in the terrestrial environment may have a moderate consequence on freshwater fish and fish habitat and project-related transportation incidents on roadways may have a minor consequence on freshwater fish and fish habitat.

With respect to marine fish and mammals, the EAO concludes Ksi Lisims LNG effects would be medium in magnitude, generally continuous throughout the life of Ksi Lisims LNG, and of moderate duration. The residual effects would be limited in geographic extent (i.e., Local Assessment Area), with change in behaviour caused by sensory disturbance having a regional extent. The residual effects would be reversible in nature, except for change in habitat, which would be irreversible. The residual effects have a moderate uncertainty, except for change in water and sediment quality, which has a moderate to high uncertainty.

A spill of hazardous materials (non-LNG) in the marine environment and loss of containment of LNG or hazardous material from the floating LNG facilities may have a moderate consequence on marine resources. Project-related transportation incidents that result in a spill of marine diesel or bunker fuel in the marine environment may have a major consequence on marine resources depending on the number of individuals affected. These events could indirectly impact fish through change in water and sediment quality and change in habitat, or directly impact fish through change in injury or mortality risk. Any loss in harvesting would have a disproportionate effect on Indigenous Peoples who heavily rely on marine resources for consumption and other purposes including spiritual and economic.

#### ***Access to Waters and Resources for Traditional Fishing and Marine Harvesting***

Ksi Lisims LNG related marine traffic has the potential to interfere with Indigenous Peoples' ability to access areas for the purpose of traditional fishing and marine harvesting. LNG carriers and NGL product vessels are expected to travel along the marine shipping route between the marine terminal and the B.C. Pilots boarding station at Triple Island and along the open water marine shipping route between Triple Island and the 12nm Canadian territorial sea limit. If Ksi Lisims LNG proceeds, there would be 140 to 160 LNG carriers and 8 to 12 NGL product carriers per year. Materials, supplies and personnel would be transported to site from Prince Rupert, Port Edward and Gingolx. It is estimated that during construction there would be 9 to 10 vessels and barges per week during construction and 4 per week during operations. The presence of Ksi Lisims LNG related vessels and marine shipping activities have the potential to cause avoidance resulting in reduced or altered access to locations for traditional fishing and marine harvesting. Perceived risk of vessel

wake has the potential to affect marine users' willingness to travel in the marine environment, which could also reduce access for traditional fishing and marine harvesting.

A potential malfunction or accident could reduce access for traditional fishing and marine harvesting if a spill of hazardous materials (non-LNG) or a project-related transportation incident occurs in the marine environment (see [Appendix 7](#) for further details).

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) and [Appendix 2](#), would avoid or reduce effects on access to waters and resources for traditional fishing and marine harvesting, which include:

- A Marine Transportation and Communication Plan including:
  - a grievance process for First Nation, Haida Nation, and Nisga'a Nation marine users experiencing loss of marine access, fishing equipment or other marine use effects;
  - a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users related to LNG carrier interference with marine use;
  - a shipping schedule notification process; and
  - communication of Ksi Lisims LNG activities that may affect First Nation marine use.
- An Accidents and Malfunctions Response Plan including:
  - Types of accidents and malfunctions;
  - Measures to mitigate each type of accident and malfunction; and
  - Roles and responsibilities.
- A community feedback protocol to address adverse federal effects resulting from Ksi Lisims LNG and associated marine shipping.

See [Appendix 6](#) for further details.

With respect to access to preferred harvesting locations, the EAO concludes that Ksi Lisims LNG-related effects are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route based on the frequency of shipping, resulting in a low to medium magnitude of impacts on access to preferred harvesting locations. Impacts are partially reversible following decommissioning when there is no longer Ksi Lisims LNG-related marine traffic. There is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Indigenous Peoples will make in response to real and perceived impacts.

A spill of hazardous materials (non-LNG) in the marine environment may have a moderate consequence on Indigenous Peoples' marine use if emergency response activity around the spill means that marine vessels are prevented from using the area of Portland Channel until the spill has been mitigated. Project-related transportation incidents in the marine environment may have a major consequence on marine use if emergency response efforts block access to navigable waters for Indigenous Peoples until the vessel involved in the incident can be removed.

It is anticipated that residual effects would disproportionately affect Indigenous Peoples who use the marine environment as a source of their livelihood and as part of their traditional activities.

#### **27.5.1.2. Sensory Environment for Fishing and Marine Harvesting Experiences**

Changes in noise and visual quality are expected during all phases of Ksi Lisims LNG. During construction, changes in noise would be from equipment and vehicles clearing and preparing the site and building the land and marine infrastructure, and marine vessels transporting supplies and workers to the site. During construction, there would also be an increase in

ground vibration from blasting. During operations, changes in noise would be from the operation of the FLNGs and power barge and marine vessel traffic. During decommissioning, changes in noise would be from equipment and vehicles. Noise levels are predicted to be below guidelines at all residential locations but predicted to exceed Health Canada guidance at noise receptors in Pearse Island-Whiskey Bay during construction and operations, and at the site boundaries during operations. Harvesting activities have the potential to take place at both locations. Increased marine traffic and marine infrastructure is also expected to increase ambient lighting which would change visual quality during all phases of Ksi Lisims LNG.

The Proponents identified that Ksi Lisims LNG's activities have the potential to affect air quality through the increase in concentrations of ambient air pollutants during all phases of Ksi Lisims LNG resulting from emissions sources including operating equipment, vehicles, generating emissions from the FLNG facility, flaring activities, loading LNG carriers and marine vessel operation. During construction, nitrogen dioxide and particulate matter less than 2.5 microns (including diesel particulate matter and fugitive dust) are predicted to be elevated with a potential to exceed the B.C. AQO at the project site during construction. During operations, nitrogen dioxide is predicted to exceed the 2025 CAAQS maximum 1-hour concentrations for nitrogen dioxide in four out of eight scenarios modelled by the Proponents (see, [Chapter 18.2](#) for further details).

Changes in noise and air quality that cause sensory disturbances have the potential to adversely impact Indigenous Peoples' fishing and marine harvesting experiences. Also, perceived safety risks associated with noise and air quality has the potential to increase avoidance of areas that are perceived as unsafe, or change willingness to harvest, potentially resulting in decreased fishing and marine harvesting practices.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in chapters [18.1](#), [18.2](#), and [18.9](#), would avoid or reduce effects on the sensory environment, which include:

- A Marine Transportation and Communication Plan that will include:
  - a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users to report any concerns related to LNG carrier interference with marine use;
  - shipping schedule notification process; and
  - communication of Ksi Lisims LNG activities that may affect marine use.
- Construction Environmental Management Plan that includes:
  - air quality management; and
  - noise management.

See [Appendix 6](#) for further details.

With respect to changes in aesthetic quality from an increase in marine traffic, including changes to visual quality, acoustic environment, noise emissions and ambient lighting, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, limited in geographic extent (i.e., Local Assessment Area and Open Water Assessment Area), reversible in nature and have a moderate uncertainty.

With respect to changes in noise from construction of the transmission line and marine terminal and operation of the facility and marine shipping activities, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, regional in extent, reversible in nature, and have a low uncertainty. With respect to increased ground vibration from blasting activities during construction, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, local in extent, reversible in nature and have a low uncertainty.

With respect to changes in air quality, the EAO concludes that Ksi Lisims LNG-related effects during construction and decommissioning would be low in magnitude, local and regional including the transmission line in extent, reversible in nature and have a low uncertainty. During operation, Ksi Lisims LNG-related effects would be medium in magnitude, the extent is local to regional including the shipping route and have a low uncertainty.

It is anticipated that residual effects would disproportionately affect Indigenous Peoples who use the marine environment as a source of their livelihood and as part of their traditional activities.

### **27.5.1.3. Traditional Hunting, Trapping and Traditional Use Plant Gathering**

#### *Quality and Quantity of Resources for Traditional Hunting, Trapping and Traditional Use Plant Gathering*

Ksi Lisims LNG would result in a change to habitat for terrestrial wildlife and vegetation through the direct loss of plant species, ecological communities and wetlands from site-clearing and construction of land-based infrastructure (project footprint and transmission line). There is also potential for direct harm to plant species of interest, ecological communities of interest and wetlands through the introduction of invasive species on vehicles or equipment.

Ksi Lisims LNG has the potential to result in a change to wildlife movement from physical barriers, such as equipment and land-based infrastructure, and perceived barriers, such as noise, lighting and the presence of humans. Ksi Lisims LNG also has the potential to increase the risk of wildlife mortality as a result of the loss of active habitat features, accidental collisions with vehicles, collision with overhead powerlines, increased hunter and trapper access, and human-wildlife conflict. Though the Proponents have indicated that Ksi Lisims LNG is not predicted to result in a change in the quality of country foods, Indigenous Peoples have indicated that the perceived risk of contamination may cause some Indigenous Peoples to avoid harvesting areas.

Proposed provincial conditions and federal Key Mitigation Measures and Follow-up Programs, as proposed in [Appendix 6](#) and [Appendix 2](#), would address potential effects on quantity and quality of resources for traditional hunting, trapping and traditional use plant gathering, which include:

- A Construction Environmental Management Plan that will include:
  - Invasive species management;
  - Design and construction measures to reduce effects on wetlands;
  - Natural revegetation or active reclamation in areas which are not required for Operations;
  - Measures to avoid or reduce Project-related loss or alteration of wildlife habitat features, impediments to wildlife movement, and injury or mortality of wildlife; and
  - A plan to manage human-wildlife conflict to avoid or reduce direct wildlife mortality.
- Prohibit employees and contractors associated with Ksi Lisims LNG from fishing, hunting, trapping, gathering and using recreational vehicles for any purposes not associated with Ksi Lisims LNG.
- Follow-up programs for migratory birds and their habitat that includes recording discovery of bird mortality or injury during routine inspection and maintenance activities.

See [Appendix 6](#) and [Appendix 2](#) for further details.

With respect to wildlife and wildlife habitat, the EAO concludes that while direct loss of wildlife habitat would be expected to occur, the amount would be limited to the project footprint and thus the consequence would be minor for most wildlife (low magnitude and local extent). The magnitude of the direct loss of wildlife habitat is predicted to be high for some wildlife groups (young forest bird – including some migratory birds, Pacific marten, and moose for winter shelter

habitat) due to a loss of effective habitat in the Local Assessment Area, however, the loss is expected to occur primarily during construction, be limited to the footprint area, and be partially reversible.

Indirect loss of habitat due to increased noise, lighting, and marine vessel movements and vibration would be medium in magnitude, limited in geographic extent to the Local Assessment Area, be reversible in nature, and have a low uncertainty. Changes to wildlife movements patterns and increased mortality risk related to Ksi Lisims LNG would be low to medium in magnitude, limited in geographic extent to the Local Assessment Area and open water assessment area, and have a low to moderate uncertainty. Changes in wildlife movement would be partially reversible to irreversible, while increased mortality risk would be reversible to partially reversible.

While residual effects to wildlife are predicted (directly or indirectly), the sustainability of regional populations is not expected to be adversely affected.

A spill of hazardous materials (non-LNG) in the terrestrial environment and emergency LNG production unit shutdown including flaring may have a minor consequence on wildlife and wildlife habitat. Project-related transportation incidents on roadways and in the terrestrial environment may have a moderate consequence on wildlife and wildlife habitat. These events may result in direct loss of wildlife habitat and increased mortality risk for migratory birds.

#### *Access to Lands and Resources for Traditional Hunting, Trapping and Traditional Use Plant Gathering*

The terrestrial footprint of Ksi Lisims LNG facility is estimated to be 43.6 hectares located on Nisga'a Category A land. These lands are owned in fee simple by the Nisga'a Nation and, as stated in the Revised Application, not accessible to non-Nisga'a citizens. Ksi Lisims LNG is therefore only expected to cause a change in access to traditional hunting, trapping and traditional use plant gathering at the project footprint for Nisga'a citizens. Metlakatla First Nation and Lax Kw'alaams Band each assert "its right to harvest terrestrial resources in the study area, which is located within its territory."

Though the final route has not been selected, the Proponents indicate that there would be approximately 15 to 29 km of terrestrial transmission line located outside of Nisga'a Lands in the Nass Wildlife Area. Changes in access may occur during the construction of the transmission line due to the presence of large equipment and personnel. Once constructed, the transmission line has the potential to cause real or perceived barriers to accessing preferred harvesting areas for traditional medicines, forest products and/or culturally appropriate foods.

Increases in marine traffic around the project footprint and road traffic along Highway 113/Nisga'a Highway, or access roads should they be needed for the transmission line, has the potential to affect access to preferred harvesting areas if present within the selected transmission line route.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) and [Appendix 2](#), would address potential effects on access to lands and resources for traditional hunting, trapping and traditional use plant gathering, which include:

- A Road Traffic Management Plan including traffic management details that address increased traffic resulting from Ksi Lisims LNG.
- A Marine Transportation and Communication Plan including a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users related to LNG carrier interference with marine use.
- A community feedback protocol to address adverse federal effects resulting from Ksi Lisims LNG and associated marine shipping.

See [Appendix 6](#) and [Appendix 2](#) for further details.

Impacts to terrestrial harvesting are within a broader regional extent at regular intervals with an increase in traffic and disturbance, resulting in impacts to experience and methods for hunting and gathering. Impacts are partially reversible



following decommissioning. Impacts may disproportionately affect Indigenous Peoples who rely heavily on marine and terrestrial resources for food, social, and ceremonial purposes. There is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Indigenous Peoples will make in response to real and perceived impacts.

#### ***Sensory Environment for Traditional Hunting, Trapping and Traditional Use Plant Gathering***

Ksi Lisims LNG has the potential to alter the quality of experiences for Indigenous Peoples while hunting, trapping and gathering, as a result of increased noise, changes to visual quality and changes to air quality from marine traffic (e.g., LNG carriers), highway traffic, construction and operation of the FLNG facility, and construction of the transmission line. Also, perceived safety risks associated with noise and air quality has the potential to increase avoidance of areas that are perceived as unsafe, or change willingness to harvest, potentially resulting in decreased terrestrial harvesting practices.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) would avoid or reduce effects on the sensory environment, which include:

- A Marine Transportation and Communication Plan that will include:
  - a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users to report any concerns related to LNG carrier interference with marine use;
  - shipping schedule notification process; and
  - communication of Ksi Lisims LNG activities that may affect marine use.
- Construction Environmental Management Plan that includes:
  - air quality management; and
  - noise management.

See Sections [Appendix 6](#) for further details.

With respect to changes in noise from construction of the transmission line and marine terminal and operation of Ksi Lisims LNG, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, regional in extent, reversible in nature, and have a low uncertainty. With respect to increased ground vibration from blasting activities during construction, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, local in extent, reversible in nature and have a low uncertainty.

With respect to changes in air quality, the EAO concludes that Ksi Lisims LNG-related effects during construction and decommissioning would be low in magnitude, local in extent, reversible in nature and have a low uncertainty. During operation, Ksi Lisims LNG-related effects would be medium in magnitude, the extent is local and regional including the shipping route, and have a low uncertainty.

Impacts to terrestrial harvesting are within a broader regional extent at regular intervals with an increase in traffic and disturbance, resulting in impacts to experience and methods for hunting and gathering. Impacts are partially reversible following decommissioning. Impacts may disproportionately affect Indigenous Peoples who rely heavily on marine and terrestrial resources for food, social, and ceremonial purposes. There is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Indigenous Peoples will make in response to real and perceived impacts.

#### **27.5.1.4. Cumulative Effects**

Potential cumulative effects on both marine navigation and marine fisheries may occur along the Marine Shipping Route from the interaction of vessels with overlapping routes or increasing shipping traffic interfering with access to sites or

activities (e.g., fishing and shoreline harvesting). The increase in large vessels has the potential to prevent or reduce access to fishing or shoreline harvesting sites and may result in a disproportionate effect to Indigenous Peoples based on the use of the marine environment and resources for food, social, ceremonial, economic, subsistence and trade purposes.

If Ksi Lisims LNG proceeds to construction, it is anticipated that the construction of the pipeline and transmission line, projects associated with Ksi Lisims LNG, could happen concurrently. This additional concurrent activity could amplify the cumulative effects by adding vehicles and activity to the Highway 113 corridor, as well as increasing construction activities of underwater infrastructure in the project area.

The increase in local population associated with Ksi Lisims LNG workforce, in conjunction with other projects, has the potential for cumulative effects on wildlife and fish due to effects including increases in recreational hunting and fishing along the Highway 113 corridor affecting access to harvesting sites, as well as increased risk for wildlife collisions, noise and disturbance.

#### **27.5.1.5. EAO's Overall Conclusion on Current Use of Lands and Resources for Traditional Purposes**

In determining conclusions on Ksi Lisims LNG impacts on Indigenous Peoples' current use of lands and resources for traditional purposes, the EAO considers the collective impact to quality and quantity of marine, freshwater and terrestrial resources, access to marine and terrestrial harvesting, and impacts to marine and terrestrial harvesting from sensory disturbances. In consideration of the available information, Ksi Lisims LNG's commitments, the EAO's recommended conditions, and federal Key Mitigation Measures, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction are significant to a low extent.

#### **27.5.2. Changes to Cultural Heritage – IAA 2(e)(i)**

This section assesses the potential adverse impacts of Ksi Lisims LNG on Indigenous cultural heritage, as set out in subparagraph (e)(i) of the definition of adverse effects within federal jurisdiction in section 2 of the IAA.

[Appendix 5](#) includes further discussion of physical and cultural heritage for Nisga'a Nation, Lax Kw'alaams Band, Metlakatla First Nation, Gitxaala Nation, Kitselas First Nation, Kitsumkalum First Nation, Gitga'at First Nation, Haida Nation and Métis Nation British Columbia.

##### **27.5.2.1. Disrupted or Restricted Access**

Increases in marine traffic around the project footprint and along the marine shipping route, material supplies shipping route, and open water assessment area, and increased traffic on Highway 113, have the potential to disrupt Indigenous Peoples' access to sacred and culturally important sites and landscape features. The real or perceived risk of wake waves caused by Ksi Lisims LNG marine traffic also has the potential to reduce or alter access to sacred and culturally important sites and landscape features.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) and [Appendix 2](#) would avoid or reduce effects on access to sacred and culturally important sites and landscape features for Indigenous Peoples, which include:

- A Marine Transportation and Communication Plan including a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users related to LNG carrier interference with marine.
- A Road Traffic Management Plan including traffic management details that address increased traffic resulting from Ksi Lisims LNG.
- A community feedback protocol to address adverse federal effects resulting from Ksi Lisims LNG and associated marine shipping.

See [Appendix 6](#) and [Appendix 2](#) for further details.

For the terrestrial and marine environments, impacts to sacred and culturally important sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route and regular intervals along Highway 113, resulting in a low to medium magnitude of impacts on access to preferred locations. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of the project will extend beyond a generation and potentially impact the transmission of knowledge between generations. For both the terrestrial and marine environment, there is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Indigenous Peoples will make in response to real and perceived impacts. Disproportionate effects may be experienced by Indigenous People who rely on access to sacred and culturally important sites and landscape features for food, social, and ceremonial purposes.

A spill of hazardous materials (non-LNG) in the marine environment may have a moderate consequence on Indigenous peoples' marine use if emergency response activity around the spill means that marine vessels are prevented from using the area of Portland Channel until the spill has been mitigated. Project-related transportation incidents in the marine environment may have a major consequence on marine use if emergency response efforts block access to navigable waters for Indigenous Peoples until the vessel involved in the incident can be removed.

#### **27.5.2.2. Sensory Disturbance**

Sensory disturbances have the potential to impact Indigenous Peoples' experience of sacred and culturally important sites and landscape features. Specifically, increased noise, changes in visual quality and a change in air quality associated with the increase in Ksi Lisims LNG related marine traffic in the marine shipping route, material supplies shipping route, and open water assessment area, and in the vicinity of the project footprint, have the potential to reduce the quality of experience and increase avoidance at sacred and culturally important sites and landscape features. If Indigenous Peoples experience a disconnect from sacred and culturally important sites and landscape features, they may also experience loss or alteration of the ability to share knowledge and history with current and future generations.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) would avoid or reduce effects on the sensory environment, which include:

- A Marine Transportation and Communication Plan that will include a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users related to LNG carrier interference with marine.
- Construction Environmental Management Plan that includes:
  - air quality management; and
  - noise management.

See [Appendix 6](#) for further details.

With respect to changes in aesthetic quality from an increase in marine traffic, including changes to visual quality, acoustic environment, noise emissions and ambient lighting, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, limited in geographic extent (Local Assessment Area and Open Water Assessment Area), reversible in nature and have a moderate uncertainty.

With respect to changes in noise from construction of the transmission line and marine terminal and operation of Ksi Lisims LNG, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, regional in extent, reversible in nature, and have a low uncertainty. With respect to increased ground vibration from blasting activities during

construction, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, local in extent, reversible in nature and have a low uncertainty.

With respect to changes in air quality, the EAO concludes that Ksi Lisims LNG-related effects during construction and decommissioning would be low in magnitude, local in extent, reversible in nature and have a low uncertainty. During operation, Ksi Lisims LNG-related effects would be medium in magnitude, the extent is mostly local (Local Assessment Area) but extends to and along the shipping route of the Regional Assessment Area and have a low uncertainty.

Impacts to sacred and culturally important sites and landscape features are considered within a broader regional extent occurring at sporadic intervals along the Marine Shipping Route resulting in a low to medium magnitude of impacts on real or perceived sensory experience. Effects are considered irreversible in the potential change in use and integrity of sacred and culturally important sites and landscape features due to factors such as the life of Ksi Lisims LNG will extend beyond a generation and potentially impact the transmission of knowledge between generations. Impacts may disproportionately affect Indigenous Peoples who rely heavily on culturally important sites and landscape features. There is moderate overall uncertainty due to difficulty in predicting experiential effects as well as predicting the choices Indigenous Peoples will make in response to real and perceived impacts.

### 27.5.2.3. Cumulative Effects

The potential cumulative effects resulting from Ksi Lisims LNG on sacred and culturally important sites and landscape features include those related to marine navigation and road transportation due to interaction with vessels and increasing shipping traffic and the increase in traffic on Highway 113, which are described in [Section 27.5.1.4](#) above.

The increase in local population associated with Ksi Lisims LNG workforces, in conjunction with other projects, has the potential for cumulative effects on access and the sense of peace and enjoyment of sacred and culturally important sites and landscape features due to a greater number of people accessing the land base in the region.

### 27.5.2.4. EAO's Overall Conclusions on Cultural Heritage

In determining conclusions on Ksi Lisims LNG impacts on Indigenous Peoples from changes to cultural heritage, the EAO considers the collective impact from disrupted or restricted access and sensory disturbance to sacred and culturally important sites and landscape features that are valued by Indigenous Peoples. In consideration of the available information, Ksi Lisims LNG's commitments, the EAO's recommended conditions, and federal Key Mitigation Measures, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction for changes to cultural heritage are not significant.

## 27.6. Health, Social or Economic Conditions of the Indigenous Peoples of Canada

One of the effects within federal jurisdiction under the IAA that must be considered is any change occurring in Canada to the health, social or economic conditions of the Indigenous Peoples of Canada as set out in paragraph (f) of the definition of effects within federal jurisdiction in section 2 of the IAA.

The EAO based its assessment of effects on the health, social and economic conditions of Indigenous Peoples as a result of Ksi Lisims LNG on the following valued components and factors:

- Human Health
  - Air Quality
  - Acoustic
- Marine Use
- Employment and Economy

- Infrastructure and Services
- Community Health and Wellness, including Summary of Human and Community Well-being

### 27.6.1. Human Health – Air Quality

The Revised Application noted that during the Operations Phase, contaminants of potential concern, sulfur dioxide and nitrogen dioxide, are predicted to exceed World Health Organization air quality Guidelines in the immediate vicinity of the project footprint and then would dissipate rapidly beyond the fence line to concentrations that are below guidelines. Ksi Lisims LNG has the potential to impact health from impacts to air quality, however, the likelihood of Indigenous Peoples being present in the area where contaminants exceed guidelines is low. Further details on the health effects from air quality are assessed in [Appendix 6](#). A potential malfunction or accident has the potential to result in adverse impacts to Air Quality (See [Appendix 7](#)).

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#), would avoid or reduce effects of air quality on Indigenous Peoples, which include:

- A Construction Environmental Management Plan that includes air quality management.
- Participation in Regional Cumulative Effects Initiatives including the appropriate airshed group, or successor airshed monitoring programs.

See [Chapter 18.2](#) for further details.

With respect to human health effects from air quality, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude based on the increase from baseline levels as the existing air conditions on Pearse Island are considered very good, local and regional in extent, occur continuously during all phases of Ksi Lisims LNG but would stop once Decommissioning has occurred, are fully reversible in nature and have a low uncertainty. Indigenous Peoples could be affected disproportionately as Indigenous harvesters may be brought closer to the Ksi Lisims LNG fence line where air quality emissions are greater. A spill of hazardous materials in the terrestrial or marine environment would temporarily impact local air quality; however, with mitigation measures (including design standards) the consequence of a hazardous spill affecting air quality would be insignificant. The consequence of the loss of containment of LNG, or the release of NGL due to a product vessel spill, on air quality would be insignificant because natural gas is non-toxic and therefore would result in short-term effects. If condensate was released, it would have minimal effects on air quality as very little would evaporate, and most would remain in liquid form. There could possibly be an unplanned shutdown resulting in a flaring event with minor consequence on air. Finally, a potential transportation incident could result in insignificant consequences to local air quality.

### 27.6.2. Human Health – Acoustic

The Revised Application indicates that Ksi Lisims LNG is expected to contribute to an increase in noise. During construction the predicted changes to noise levels would be below the limits set by Health Canada except in Pearse Island-Whiskey Bay which is the workers' accommodation location. During operations the predicted change to noise levels would be below the limits set by Health Canada except in Pearse Island-Whiskey Bay and at site boundaries. During the operations phase no residential receptor would experience sleep disturbance based on Health Canada noise guidance recommendation, except for the workers residing in the permanent workers' accommodation. Further, a potential malfunction or accident has the potential to result in adverse impacts to the acoustic environment (See [Appendix 7](#)).

As noted in [Appendix 6, chapter 18.1](#) several participating Indigenous nations expressed concerns about the impact of increased noise from Ksi Lisims LNG on the ability to carry out traditional activities in their territories. Noise generated from Ksi Lisims activities and physical works has the potential to adversely affect the quality of life of Indigenous Peoples

and nearby residents, including along the shipping route, if it affects their ability to carry out, and enjoy, traditional activities.

Proposed Provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6, chapter 18.1](#) would avoid or reduce effects of acoustics on Indigenous Peoples, which includes:

- A Construction Environmental Management Plan that includes a noise management plan.

See [Appendix 6, chapter 18.1](#) for further details.

With respect to human health effects from noise, the EAO concludes that Ksi Lisims LNG-related effects would be low in magnitude, local and regional in extent but do not extend beyond the Local Assessment Area and Regional Assessment Area, occur continuously during all phases of Ksi Lisims LNG but would stop once Decommissioning has occurred, are fully reversible in nature and have a low uncertainty. Indigenous Peoples could be affected disproportionately as Indigenous harvesters may be brought closer to the Ksi Lisims LNG fence line where high levels of noise may be experienced. The consequence of an emergency shutdown including flaring would be insignificant given that the off-shift workers will be in the workers accommodation building and the other nearest receptors are in Gingolx, 15 km east of the project Site.

### 27.6.3. Marine Use

The Revised Application indicates that Ksi Lisims LNG will increase the number of vessels transiting the Marine Shipping Route and Open Water Assessment Area by 140 to 160 LNG carriers and 8 to 12 NGL product carriers per year. During construction there will be approximately 9 to 10 vessels and barges per week and during operations there will be approximately 4 vessels and barges per week carrying material and personnel transiting the material and supply shipping route. The increase in vessel traffic has the potential to result in loss or alteration of preferred harvesting methods, locations, access and time that could affect Indigenous Peoples mental and physical health and transmission of culture and knowledge. In addition, an economic effect may be felt from the potential reduction in the ability to trade as a result of these effects. Wake from Ksi Lisims LNG marine vessels could have potential impacts on marine fishing and harvesting activities.

Further, a potential malfunction or accident could result in adverse impacts to marine use if a spill of hazardous materials (non-LNG) or a project-related transportation incident occurs in the marine environment (See [Appendix 7](#)).

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Chapter 18.9](#) and [Appendix 2](#), would avoid or reduce the marine use effects on Indigenous Peoples, which include:

- A Transportation and Communication Plan that will include:
  - a grievance process for First Nation, Haida Nation, and Nisga'a Nation marine users experiencing loss of marine access, fishing equipment or other marine use effects;
  - a reporting mechanism for First Nation, Haida Nation, and Nisga'a Nation marine users related to LNG carrier interference with marine use;
  - a shipping schedule notification process; and
  - communication of Ksi Lisims LNG activities that may affect marine use.
- An Accidents and Malfunctions Response Plan including:
  - Types of accidents and malfunctions;
  - Measures to mitigate each type of accident and malfunction; and
  - Roles and responsibilities.

- A community feedback protocol to address adverse federal effects resulting from Ksi Lisims LNG and associated marine shipping.

See [Appendix 6](#) and [Appendix 2](#) for further details.

With respect to marine navigation, the EAO concludes that changes to marine navigation due to Ksi Lisims LNG-related effects would be low in magnitude as the change will be measurable but is not expected to alter the existing marine use and navigation levels, are limited in their extent to the Local Assessment Area and Open Water Assessment Area, occur during all phases of Ksi Lisims LNG but would stop upon Decommissioning, are fully reversible in nature, are expected to be continuous and occur in both multiple and irregular intervals and have a moderate uncertainty. It is expected that changes to marine navigation would disproportionately affect Indigenous Peoples who use the marine environment as a source of their livelihood and as part of their traditional activities.

With respect to marine fisheries and other uses, the EAO concludes that changes to marine fisheries and other uses due to Ksi Lisims LNG-related effects would be low to medium in magnitude as the change will be measurable but is not expected to alter the existing marine use and navigation levels, are limited in their extent to the Local Assessment Area and Open Water Assessment Area, occur in multiple regular intervals lasting through all Ksi Lisims LNG phases potentially beyond its Operations period of 30 years, are fully reversible upon Decommissioning and have a moderate uncertainty. It is expected that changes to marine fisheries and other uses would disproportionately affect Indigenous Peoples who use the marine environment as a source of their livelihood and as part of their traditional activities. A spill of hazardous materials (non-LNG) in the marine environment may have a moderate consequence on Indigenous peoples' marine use if emergency response activity around the spill means that marine vessels are prevented from using the area of Portland Channel until the spill has been mitigated. Project-related transportation incidents in the marine environment may have a major consequence on marine use if emergency response efforts block access to navigable waters for Indigenous Peoples until the vessel involved in the incident can be removed.

#### 27.6.4. Employment and Economy

The economy related to Indigenous Peoples includes local employment, training and education opportunities and financial support, as well as access to, and security of, the traditional food and resources (marine and terrestrial). For some Indigenous Peoples, economic activities combine harvesting, sharing and trading traditional food and medicines and wage-based employment such as marine, service, industrial and ecotourism services.

The Revised Application indicates that increased economic activity from Ksi Lisims LNG has the potential to increase business costs, which has the potential to contribute to an increase in cost of living.

The Proponents assessed that Ksi Lisims LNG has the potential to introduce positive effects such as employment opportunities and economic growth in the region. The Revised Application recognized however, that the effects to employment and the economy may be disproportionately distributed, with Indigenous Peoples, visible minorities, and women generally experiencing fewer positive effects and having more exposure to adverse economic effects.

Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) and [Appendix 2](#), would avoid or reduce the employment and economy effects on Indigenous Peoples, which include:

- A community feedback process to submit comments or concerns about Ksi Lisims LNG
- A Socioeconomic Management Plan that would include:
  - prioritizing regional hiring and procurement;
  - providing on the job training and apprenticeship; and

- identifying potential shortages of workers with specific skill requirements and training, and working with regional agencies to increase opportunities for Indigenous and regional community members to obtain training required for Ksi Lisims LNG participation.
- A Training and Employment Plan that will include:
  - Identifying and addressing skill gaps among Indigenous Peoples with measures such as on-the-job training and apprenticeships; and
  - informing Indigenous groups of employment and procurement opportunities.

See [Appendix 6](#) and [Appendix 2](#) for further details.

With respect to changes in regional business, the EAO concludes that Ksi Lisims LNG-related effects could contribute to wage inflation and labour drawdown in the region. These effects would be medium in magnitude, would be limited in their extent to the Local Assessment Area, would persist throughout Construction and Operations, would be expected to be reversible in nature and to be reversed upon completion of Decommissioning and have a moderate uncertainty. There is potential for the effects to regional business to proportionately benefit Indigenous communities over non-Indigenous businesses. This may help address employment and economic inequities often experienced by Indigenous communities.

With respect to changes in regional economy, the EAO concludes that Ksi Lisims LNG-related effects could contribute to increases to the cost of living. These increases to cost of living would be medium in magnitude, would be limited in their extent to the Local Assessment Area, would occur throughout construction and operations, are reversible in nature and are anticipated to be reversed once Ksi Lisims LNG is decommissioned and have a moderate uncertainty. There is potential for Indigenous Peoples to be disproportionately affected, as increases to cost of living tend to disproportionately affect those who fall into lower-income brackets and Indigenous Peoples are disproportionately represented in this category.

The EAO acknowledges that Ksi Lisims LNG would contribute to a number of positive effects to employment and economy in the region including regional gains in employment and income.

#### 27.6.5. Infrastructure and Services

Infrastructure and services that support the needs of Indigenous Peoples include regional infrastructure, services and utilities, education and childcare, emergency services, housing and accommodations and transportation. Health and medical infrastructure and services also support the needs of Indigenous Peoples and are discussed below in [Section 27.6.6](#). The Revised Application indicates that Ksi Lisims LNG has the potential to cause effects to existing infrastructure and services directly through demand from the Ksi Lisims LNG or as a result of population growth related to the Ksi Lisims LNG. The increase in demand as a result of Ksi Lisims LNG or population growth associated with the Ksi Lisims LNG has the potential to increase pressure on existing infrastructure and services, including childcare, education, recreation, utilities, transportation infrastructure, and emergency and safety services. As discussed in [Appendix 7](#), a potential malfunction or accident could result in adverse impacts to infrastructure and services depending on the type and severity of the incident and the resources required to respond.

Despite the proposed on-site accommodation for Ksi Lisims LNG's workforce, the number of local housing units and affordability of housing may be adversely affected during construction and operations.

Indigenous Peoples may experience disproportionate effects such as reduced access to childcare should Ksi Lisims LNG's workforce require access to existing childcare spaces, as well as reduced access to affordable housing should Ksi Lisims LNG's workforce reduce the supply of such housing options. Further impacts could result from workforce access to existing transportation infrastructure in the region.



Proposed provincial conditions and federal Key Mitigation Measures, as proposed in [Appendix 6](#) and [Appendix 2](#), would avoid or reduce the infrastructure and services effects on Indigenous Peoples, which include:

- A community feedback process to submit comments or concerns about Ksi Lisims LNG
- A Health and Medical Services Plan that will include:
  - disease and infection management;
  - definitions for urgent and non-urgent health conditions;
  - communication procedures for outside emergency aid; and
  - a workplace health promotion program.
- A Road Transportation Management Plan that will include:
  - Traffic management details that address increased road traffic resulting from the Project;
  - Adaptive management procedures to address transportation effects on services and infrastructure; and
  - An emergency response plan to address any road transportation related accidents or malfunctions.

See [Appendix 6](#) and [Appendix 2](#) for further details.

With respect to infrastructure and services, the EAO concludes that a change in infrastructure and services due to Ksi Lisims LNG-related effects would be medium in magnitude, would be local to communities neighbouring Ksi Lisims LNG, and largely centered in Terrace, Prince Rupert and Gingolx, would be continuous throughout Construction and Operations, are reversible in nature and are expected to be reversed upon Decommissioning, and have a moderate uncertainty. Indigenous Peoples who are already experiencing challenges in accessing infrastructure and services could experience disproportionate effects, including Indigenous women requiring reliable transportation. Additionally, Indigenous women and children could be vulnerable to safety issues that may arise from increased activity and population density in communities that may serve as transit hubs and/or experience population growth as a result of Ksi Lisims LNG.

With respect to accommodation availability and affordability, the EAO concludes that a change in accommodation availability and affordability due to Ksi Lisims LNG-related effects would be low to medium in magnitude, would be local to communities neighbouring Ksi Lisims LNG, and largely centered in Terrace, Prince Rupert and Gingolx, would be continuous throughout Construction and Operations, are reversible in nature and would be reversed upon Decommissioning, and have a moderate uncertainty. Indigenous Peoples may be disproportionately affected, as increases to housing costs tend to disproportionately affect low-income families, people on fixed incomes, and renters. Indigenous Peoples are disproportionately represented in these categories.

With respect to transportation infrastructure, the EAO concludes that a change in transportation infrastructure due to Ksi Lisims LNG-related effects would be medium in magnitude, would be local to communities neighbouring Ksi Lisims LNG and the road infrastructure that connects them, would be continuous throughout Construction and Operations, are reversible in nature and are expected to be reversed upon Decommissioning, and have a moderate uncertainty.

A project-related transportation incident would be insignificant to major in consequence depending on the type and severity of the incident and the resources required to respond, and where the incident occurred. An incident in the open water area (i.e., Triple Island to the 12 nm) would be insignificant to moderate. An LNG carrier or NGL product vessel spill would rely on Ksi Lisims LNG personnel, Western Canada Marine Response Corporation, or local SAR, depending on the material and volume spilled, the location and whether there are fatalities. The consequences of an LNG carrier or NGL product vessel spill affecting infrastructure and services would be insignificant to major depending on the type and severity of the incident and the resources required.

### 27.6.6. Community Health and Wellness

Ksi Lisims LNG has the potential to cause changes that have both positive and negative impacts on Indigenous Peoples' health and wellness.

Indigenous Peoples' health and wellness has the potential to be adversely impacted as a result of population change associated with Ksi Lisims LNG. Population growth from increases in temporary workers may result in increased demand for health and medical infrastructure and services; may adversely affect physical and mental health from, for example, increased substance abuse and communicable diseases; may adversely affect social determinants of health such as cost of living, food security (including access to country foods), gender-based violence, particularly against Indigenous women, and community cohesion and sense of place.

Traffic related to Ksi Lisims LNG has the potential to lead to an increase in the number of traffic incidents in the region, with implications on health and medical infrastructure and services, depending on the type and severity of the incident and the resources required to respond (See [Appendix 7](#)). Physical works associated with all phases of Ksi Lisims LNG, including marine shipping activities, has the potential to result in a disruption of Indigenous land and marine use, changes to aesthetic conditions, and a loss of culture or altered "sense of place".

Positive effects may result from increased employment opportunities and income advancement for the local workforce, which has the potential to improve physical and mental health outcomes, health behaviours, and other social determinants of health (e.g., food security, housing security). However, positive effects may be disproportionately distributed and not have as much benefit for groups that are under-represented, including Indigenous Peoples.

Proposed provincial conditions and federal Key Mitigation Measures, as described in [Appendix 6](#) and [Appendix 2](#) would avoid or reduce the health and well-being effects on Indigenous Peoples, which include:

- A Socioeconomic Management Plan that will include:
  - prioritizing regional hiring and procurement;
  - providing on the job training and apprenticeship; and
  - identifying potential shortages of workers with specific skill requirements and training and working with regional agencies to increase opportunities for Indigenous and regional community members to obtain training required for Ksi Lisims LNG participation.
- A Health and Medical Services Plan that will include:
  - disease and infection management;
  - definitions for urgent and non-urgent health conditions;
  - communication procedures for outside emergency aid; and
  - a workplace health promotion program.
- A Gender and Cultural Safety Plan that will include:
  - a gender-based violence prevention program;
  - workplace harassment and violence prevention training;
  - gender and cultural safety training; and
  - violence and sexual harassment or abuse prevention training.
- A Training and Employment Plan that will include:

- Identifying and addressing skill gaps among Indigenous Peoples with measures such as on-the-job training and apprenticeships; and
- informing Indigenous groups of employment and procurement opportunities.
- A Worker Health and Wellness initiative to ensure required medical and/or mental health professionals and services are provided and accessible to Workers at Ksi Lisims LNG.
- Measures to promote safe, respectful and inclusive conduct in the workplace and the community that should include actions to respond to call to justice 13.1 in Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls.
- A community feedback process to submit comments or concerns about Ksi Lisims LNG.

See [Appendix 6](#) and [Appendix 2](#) for further details.

Based on the current conditions in the region, Indigenous communities' health and wellness have a low resilience to easily adapt to residual effects. Impacts to health and wellness may be experienced in some manner by Indigenous Peoples residing throughout the region, as they are regional in extent. These effects will be irreversible and last throughout the lifetime of Ksi Lisims LNG. The effectiveness of mitigation measures may be moderate; uncertainty is moderate due to difficulty in predicting how Indigenous Peoples will respond to impacts that influence community health, as well as other external factors that may influence social determinants of health. Indigenous women living in communities accessed by the Ksi Lisims LNG workforce are at disproportionate risk of being affected by violence and communicable diseases. Indigenous Peoples may disproportionately experience adverse effects related to food security with predominantly Indigenous communities and individuals experiencing effects to traditional food harvesting.

A spill of hazardous materials (non-LNG) in the terrestrial or marine environment may have a moderate consequence on Indigenous peoples' community health and wellness if organisms are harvested for human consumption. Changes in perception associated with the quality of country foods could result, leading to Indigenous Peoples reducing or avoiding consumption of country foods from locations around a spill. Project-related transportation incidents in the terrestrial environment may have a severe consequence on community health and wellness if organisms are harvested for human consumption or if road closures impact Indigenous peoples' access to employment, childcare, and food. Project-related transportation incidents in the marine environment may have a severe consequence on community health and wellness if organisms are harvested for human consumption.

#### 27.6.7. Cumulative Effects

The potential for cumulative effects from Ksi Lisims LNG from air quality and noise on human health is considered low due to limited-to-no spatial overlap of dispersion plumes between Ksi Lisims LNG and the one existing and reasonably foreseeable project that has the potential to act cumulatively with Ksi Lisims LNG. Furthermore, the concentration of contaminants of potential concern are predicted to be well-below the World Health Organizations air quality guidelines in any areas of spatial overlap.

Potential cumulative effects on changes to marine navigation from an increase in large vessel traffic along the marine shipping route and on changes to marine fisheries and other uses are expected to have a low magnitude of cumulative interaction between Ksi Lisims LNG and other identified projects or activities, given the remote location of Ksi Lisims LNG and existing limited presence of industrial or residential marine project components. For changes to marine navigation, this is further characterized as being limited to the Regional Assessment Area, reversible and occurring over multiple regular events. For changes to marine fisheries and other uses, this is further characterized as being limited to the Regional Assessment Area, Open Water Assessment Area and Transmission Line Assessment Area, reversible and

occurring over multiple regular events. Adverse cumulative residual effects for changes to marine navigation and marine fisheries and other uses can largely be mitigated.

For employment and economy, Ksi Lisims LNG residual adverse effects of labour drawdown, wage inflation and increase cost of living could interact cumulatively with other projects. In cases where Ksi Lisims LNG overlaps temporally with other projects, each of those projects would be in a position to draw from the same labour pool and housing stock, thereby contributing to shortages of labour and housing which could push the cost of living upward. The EAO assessed a moderate potential that cumulative effects that are high in magnitude would occur during periods of time in which Ksi Lisims LNG, particularly its Construction phase, overlaps with periods of high labour activity on other projects in the region. These effects may shift in magnitude as workforces on the various projects ramp up and down over time. Ksi Lisims LNG's direct contribution would cease upon its decommissioning, although the potential shift in demographics and economic activity, suggest that cumulative effects would be irreversible.

Projects that are most likely to interact cumulatively with Ksi Lisims LNG's cumulative effects for infrastructure and services are those projects for which the labour force would be in the region at the same time as Ksi Lisims LNG's workforce, which could increase the region's population, traffic and demand for housing and services. The potential for cumulative effects could be altered as reasonably foreseeable project timelines may shift. The EAO assessed a moderate potential for cumulative effects that are medium in magnitude to regional infrastructure, services, housing and traffic. Ksi Lisims LNG's provision of on-site housing and shuttle service for its workforce would mitigate the potential for individuals traveling to the region and recommended conditions would further mitigate potential for cumulative effects.

For community health and wellness, projects that are most likely to interact cumulatively with Ksi Lisims LNG are those projects for which the labour forces would be in the region at the same time that Ksi Lisims LNG's workforce would be present. The potential for, and magnitude of, cumulative effects could be altered as reasonably foreseeable project timelines may shift. On community health, the EAO assessed a moderate to high risk of cumulative effects that are medium in magnitude. These effects are anticipated to be related to increased alcohol use, substance use and potentially increased rates of communicable diseases, linked to the presence of Ksi Lisims LNG's workforce overlapping with other projects' workforces. On community wellness, the EAO assessed a moderate to high risk of cumulative effects that are medium to high in magnitude. The effects may result in Ksi Lisim's LNG and other projects collectively affecting changes in various social determinants of health including community safety, community cohesion, family dynamics, housing, education and Indigenous determinants of health. On food security, the EAO assessed a high risk of cumulative effects that are high in magnitude due to the potential for avoidance or less access to harvested foods. On health and medical infrastructure and services, the EAO assesses a high risk of cumulative effects that are high in magnitude, as a result of population growth. The EAO recognizes that Ksi Lisims LNG's contribution to these cumulative effects would be limited, due to Ksi Lisims LNG's remote location and the EAO's conditions.

The increase in local population associated with Ksi Lisims LNG's workforce, in conjunction with other projects, has the potential for adverse cumulative effects on Indigenous Peoples receiving support and education, access to recreation, access to healthcare and holistic mental health support, food security, increase in homelessness and decrease in access to lands and resources.

#### 27.6.8. EAO's Conclusions

In determining conclusions on Ksi Lisims LNG for the health, social or economic conditions on Indigenous Peoples, the EAO considers the collective impact to human health (air quality and acoustic), marine use, employment and economy, infrastructure and services and community health and wellness. In consideration of the available information, Ksi Lisims LNG's commitments, the EAO's recommended conditions, and federal Key Mitigation Measures, the EAO concludes that adverse residual effects and adverse cumulative effects within federal jurisdiction for the health, social or economic conditions on Indigenous Peoples are significant to a low extent.

## 27.7. Indigenous Knowledge Provided With Respect to the Designated Project

Paragraph 22(1)(g) of the IAA specifies that the assessment of a designated project must take into account Indigenous Knowledge provided with respect to Ksi Lisims LNG. Pursuant to the *Impact Assessment Cooperation Agreement Between Canada and British Columbia*, the EAO worked together with Indigenous Peoples with respect to the sharing and protection of Indigenous Knowledge, and the Revised Application describes how Indigenous Knowledge was used to inform the assessment. Where available and shared by Indigenous groups, the EAO described key concerns expressed by participating Indigenous nations in the assessment of valued components in [Appendix 6](#), Sections 6.1 to 6.14. Examples of Indigenous Knowledge that was provided that informed the EA include but are not limited to:

- Characterization of existing conditions in the Revised Application;
- Recommendations for mitigation measures;
- Identification of species of importance;
- Detailed First Nation assessments in the Assessment Report.

The following Indigenous Peoples participated in the Technical Advisory Committee:

- Gitga'at First Nation
- Gitxaala Nation
- Haida Nation
- Kitselas First Nation
- Kitsumkalum First Nation
- Lax Kw'alaams Band
- Metlakatla First Nation
- Nisga'a Nation

Through the Technical Advisory Committee, these Indigenous Peoples applied Indigenous Knowledge through their technical feedback on documents. Application review comments are captured in the [Application Review Issues Tracking Table](#).

The Proponents engaged with Indigenous Peoples to complete Indigenous Knowledge studies and other reports specific to Ksi Lisims LNG, including:

- Final Report: Gitga'at First Nation Traditional Use and Occupancy Study for the Ksi Lisims LNG Project, Pearse Island, Portland Inlet and Chatham Sound
- Proposed Potential Adverse Project Effects, Rationale and Measurable Parameters for the Ksi Lisims LNG Project (Gitga'at First Nation)
- Supplemental Community Health and Safety Assessment for Ksi Lisims LNG Project (Gitga'at First Nation).
- Gitxaala Nation Preliminary Existing Conditions Report for the Ksi Lisims LNG Natural Gas Liquefaction and Marine Terminal Project (Gitxaala Existing Conditions Report)
- Preliminary Report: Kitselas First Nation Traditional Use and Occupancy Study for the Ksi Lisims LNG Project, Pearse Island, Portland Inlet

- Kitselas First Nation’s Community Well-being Risk Report for the Ksi Lisims LNG Project
- Final Report: Kitselas First Nation Traditional Use and Occupancy Study for the Ksi Lisims LNG Project, Pearse Island, Portland Inlet
- Kitselas First Nation: Ksi Lisims Interactions with Kitselas Values (Kitselas First Nation 2023)
- Kitsumkalum First Nation Highway 113 and Supporting Roadways Risk Assessment
- Kitsumkalum First Nation Social and economic/Community Well-Being Literature Review: Ksi Lisims LNG Project
- Kitsumkalum First Nation Indigenous Land and Marine Use (ILMU) Study Regarding the Ksi Lisims LNG Project
- Lax Kw’alaams Band Indigenous knowledge and Traditional Land Use Study (IKTLUS) Specific to the Ksi Lisims LNG Project
- Metlakatla First Nation Traditional Knowledge and Use Study Specific to the Project Proposed by Nisga'a Nation, Rockies LNG Limited Partnership, and Western LNG LLC

Social, Economic, Resource Use, and Cultural surveys (Nisga'a Nation), Gitga’at First Nation, Kitselas First Nation, Lax Kw’alaams Band and Metlakatla First Nation completed their own assessment of the impact of Ksi Lisims LNG on their rights, interests and values. Where Indigenous groups did not complete their own assessment, the EAO collaborated with Indigenous Peoples on the assessment of their Indigenous Peoples’ Interests, and Indigenous Peoples incorporated Indigenous Knowledge into these assessments.

The EAO’s consensus-seeking with participating Indigenous nations was informed by participating Indigenous nation’s Indigenous Knowledge.

While the EAO has described Indigenous Knowledge in this Report, as available, the EAO recognizes that Knowledge Holders are the only people who can truly define Indigenous Knowledge for their communities.

## 27.8. Effects of Federal Work or Undertaking - Marine shipping

Project-related marine shipping activities up to the 12 nautical mile limit, including supporting marine traffic between the project site and Port Edward/Prince Rupert and Gingolx, are incidental activities that are part of Ksi Lisims LNG.

These marine shipping activities are federal works or undertakings within the legislative authority of Parliament, as per paragraph 3(1) of the *Canadian Environmental Protection Act, 1999*.<sup>62</sup> As such, the non-negligible adverse effects of marine shipping are considered adverse effects within federal jurisdiction under the IAA.<sup>63</sup> Effects of marine shipping activities to fish and fish habitat; the marine environment outside Canada; boundary, international or interprovincial waters; Indigenous and non-Indigenous marine use; and effects of malfunctions and accidents from marine shipping are assessed in other sections of this Appendix and Assessment Report. This section focuses on the adverse effects of greenhouse gas (GHG) emissions from project-related marine shipping activities to the 12 nautical mile limit, and the extent of significance of the effects. An analysis of the effects of GHG emissions from Ksi Lisims LNG as a whole is described in [Appendix 12](#). GHG emissions from project-related marine shipping activities are generated by operating LNG carriers, associated escort tugboats, and material and personnel vessels. The annual GHG emissions from these project-

<sup>62</sup> Federal work or undertaking is defined under the *Canadian Environmental Protection Act, 1999*, to include a work or undertaking operated for or in connection with navigation and shipping, whether inland or maritime, including the operation of ships and transportation by ship.

<sup>63</sup> As per section 2 of the IAA, in the case of a physical activity or a designated project that is carried out on federal lands or is a federal work or undertaking, as defined in subsection 3(1) of the *Canadian Environmental Protection Act, 1999*, the definition of adverse effects within federal jurisdiction also includes the non-negligible adverse effects of that activity or project.

related marine shipping activities are summarized in Table 74. For the construction phase, the Proponents projected 688 roundtrips of personnel shipping and 476 roundtrips of material shipping over 4 years, resulting in an emission of 1,080 tonnes (t) of carbon dioxide equivalents (CO<sub>2</sub>e) per year. During operations, the Proponents estimated 140 to 160 LNG carrier shipments per year, which would emit 30,182 t CO<sub>2</sub>e annually. Accompanying escort tugboats are estimated to emit 4,363 t CO<sub>2</sub>e per year, and material and personnel vessels are estimated to emit 1,871 t CO<sub>2</sub>e per year. There would also be 8 to 12 NGL product carriers calling to Ksi Lisims LNG each year. The Proponents estimated that the emissions from these carriers and associated tugboats would represent less than 1% of Ksi Lisims LNG’s direct emissions and therefore did not include their emissions in the calculation.

Table 75: Annual GHG emissions from marine shipping

Project phase	Sources	Annual Emissions (t CO <sub>2</sub> e /year)
Construction	Material and Personnel shipping	1,080
Operations	LNG Carriers	30,182
	Escort tugboats	4,363
	Material and Personnel shipping	1,871

Canada’s total GHG emissions from domestic and international marine traffic in 2022 were estimated to be 11,000,000 t CO<sub>2</sub>e.<sup>64</sup> Emissions from project-related marine shipping activities would account for 0.0089% during construction, and 0.33% during operations, of Canada’s total marine GHG emissions.

The effects of GHG emissions from marine shipping activities could be mitigated through a range of measures. An evaluation of the Best Available Technologies/Best Environmental Practices (BAT/BEP), including options related to marine shipping emissions can be found in [Appendix 12](#). Project-related marine vessels must adhere to all federal and international emissions requirements and standards. While the Proponents do not have direct care and control over LNG carriers, and are therefore limited in their ability to directly influence the conduct of all project-related marine shipping activities, the Proponents have indicated that there is an opportunity to include in contracts with LNG buyers, conditions or clauses that encourage the use of LNG carriers that have high ratings on their energy efficiency and carbon intensity as defined by the International Maritime Organization (IMO). The EAO also understands that Canada has been working with the IMO, of which Canada is a member state, to address GHG emissions in the international maritime sector. With the implementation of the IMO GHG strategy described in [Section 27.10.2](#), GHG emissions from project-related marine shipping activities are expected to decrease over the life of Ksi Lisims LNG. Regarding the Proponent’s plan to achieve net-zero GHG emissions by 2050, the intent as outlined in their net-zero plan is to prioritize the implementation of mitigation measures to directly reduce the GHG emissions from marine shipping activities to the extent possible. Following that, the Proponent plans to purchase offset credits to address the residual GHG emissions to achieve net-zero by 2050.

The EAO’s characterization of the expected residual effects of GHG emissions from Ksi Lisims LNG’s marine shipping activities is summarized below (Table 75). GHG emissions are considered inherently cumulative in the context of their potential effects related to climate change. Consequently, a separate cumulative effects assessment for the GHG emissions from project-related marine shipping activities has not been conducted.

<sup>64</sup> Figure taken from Environment and Climate Change Canada’s 2024 [National inventory report: greenhouse gas sources and sinks in Canada](#).

Table 76: Summary of Residual Effects for GHG emissions from Marine Shipping

Criteria	Assessment Rating	Rationale
Context	Low	The EAO considers GHGs to have low resiliency/be acutely sensitive to existing conditions. The Intergovernmental Panel on Climate Change (IPCC) has confirmed that GHG emissions are at levels that are affecting the global climate, and the Government of Canada declared a climate emergency in 2019. As such, the EAO considers GHGs to have low resiliency/be acutely sensitive to existing conditions.
Magnitude	Low	GHG emissions from project-related marine shipping activities are expected to contribute to 0.0098% and 0.33% of Canada's total marine emissions during construction and operations respectively, until 2050 when Ksi Lisims LNG would be required to achieve net-zero, inclusive of GHGs from marine shipping.
Extent	Beyond regional	The geographic extent of GHG emissions from project-related marine shipping activities is cumulative globally.
Duration	Long-term	The residual effects of project-related marine shipping activities GHG emissions will be long term as these effects will continue to be experienced long after (hundreds of years) emissions are no longer produced.
Frequency	Continuous	Shipping activities will continuously emit GHGs during construction and operations.
Reversibility	Irreversible	Given current technology and the persistence of CO <sub>2</sub> in the atmosphere, the effects of the marine shipping GHG emissions are effectively irreversible.
Risk	Moderate	Likelihood: There is a high likelihood that the levels of GHG emissions from project-related marine shipping activities reported will be produced by marine shipping activities, and that these emissions would contribute to a residual effect and climate change.  Consequence: Moderate consequence based on the low magnitude extending beyond regional.  Risk: Based on the likelihood and consequence of residual effects from GHGs, it was determined that there would be a moderate level of risk. Risks associated with GHG emissions include climate change, sea level rise, biodiversity loss, and health impacts.
Uncertainty	Low	The EAO has a high level of confidence in the likelihood of adverse residual effects from project-related marine shipping based on there being a good understanding of the predicted GHG emissions and their contributions to climate change. There is a low degree of uncertainty associated with data inputs and modelling techniques.
Importance	Moderate	GHG emissions from marine shipping activities are identified as an issue by several Indigenous groups, including the Council of Haida Nation, Gitxaala Nation and Gitga'at First Nation.

As noted above, when concluding the extent of significance of GHG emissions from project-related marine shipping activities, the EAO notes that these emissions would account for a small percentage of Canada's total GHG emissions from marine shipping activities. The effects are expected to be of low magnitude during construction and throughout operations until 2050, at which point the net GHG emissions from Ksi Lisims LNG will equal zero in alignment with the Proponents' net-zero plan, as required by the SACC. Based on the analysis presented, the EAO is of the view that GHG emissions from project-related marine shipping activities are not significant.



## 27.9. Considering the Extent to which Ksi Lisims LNG’s Likely Effects Contribute to Sustainability

This section assesses the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability. Under the IAA, sustainability is “the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations”.

As per paragraph 22(1)(h) of the IAA, the assessment must take into account the extent to which Ksi Lisims LNG contributes to sustainability. The extent to which the likely effects of Ksi Lisims LNG contribute to sustainability is also one of the three public interest factors considered in decision-making on Ksi Lisims LNG, should there be a determination that adverse effects within federal jurisdiction are likely to be, to some extent, significant.

The requirements of the IAA focus the sustainability analysis on the balance of positive effects and adverse federal effects. If a project’s effects are likely to result in net positive contributions to sustainability, that means the project is likely to result in positive and lasting equitable effects for present and future generations, and that positive effects include improvements over adverse environmental and socio-economic conditions or trends. Net positive contributions to sustainability may be considered by the federal Minister of Environment and Climate Change or the Governor in Council (Cabinet) to determine whether a project’s significant adverse federal effects are justified in the public interest.

If a project’s effects are likely to result in net negative contributions to sustainability (net sustainability losses rather than sustainability gains), that means the project’s adverse federal effects or risk of irreversible harm outweigh a project’s lasting contributions to sustainability.

### 27.9.1. Valued components

The EAO considered Indigenous Knowledge and the values, issues and perceptions of risk as described by Indigenous Peoples, the public and other Knowledge Holders affected by Ksi Lisims LNG to identify valued components important to sustainability. The EAO also considered whether the valued components could experience long-term effects, interact with other valued components and interact with Ksi Lisims LNG’s likely effects.

The valued components considered in the sustainability analysis are listed below:

- Marine resources;
- Wildlife (including migratory birds);
- Vegetation and wetlands;
- Employment and economy;
- Current use of lands and resources for traditional purposes;
- Community and human health and social well-being.

The sustainability analysis also considered how changes to valued components may be experienced differentially among populations and communities, and across generations.

### 27.9.2. Temporal boundaries

The temporal boundary for the valued components considered in the sustainability analysis was determined to be 40 to 50 years. This considered the timeframe for Ksi Lisims LNG’s construction (3 to 4 years), operations (minimum of 30 years), decommissioning (approximately 1 year) and that Ksi Lisims LNG’s effects on the marine environment and on health and social conditions could persist beyond closure and decommissioning.

For effects on future generations, the EAO considers 25 years as representative of a single generation. This timeframe is based on understandings that Indigenous Knowledge and associated customs, traditions, practices or locales may be displaced from collective memory if the transfer of knowledge or the ability to engage in traditional practices is disrupted beyond a single generation. The timeframe also reflects input provided by Indigenous groups which recognize that Indigenous Peoples have been in their territories since time immemorial and must preserve their environment for all generations to come. The temporal boundary of 40 to 50 years represents potential effects on two future generations.

### 27.9.3. Applying the Sustainability Principles

Table 76 below summarizes how the EAO characterized effects on valued components in relation to the sustainability principles, which are the basis for conclusions on the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability.

Table 77: Applying the Sustainability Principles

Principle	Summary of Analysis	Conclusion
<p><b>Principle 1: Consider the interconnectedness and interdependence of human-ecological systems</b></p> <p>The analysis considered changes to system components, function and connectivity that could affect environmental, health, social and economic conditions. These changes occur through a series of interactions.</p>	<p>Ksi Lisims LNG is situated within a complex and interconnected marine ecosystem that supports marine resources linked to the health and well-being of Indigenous Peoples.</p> <p>Adverse effects (including cumulative effects) on marine resources and their ecosystems are likely to affect Indigenous marine harvesting activities, food security, sense of place, self-governance structures and the economic, social, and cultural well-being of Indigenous Peoples over generations.</p> <p>Economic and employment opportunities, as well as new tax revenue and skills training, could affect the long-term health and well-being of Indigenous Peoples and local communities, and supplement traditional economies. Wage employment and a strong economy could help communities manage the cost of living, while education and skills training could increase employability.</p> <p>The analysis considered the Proponents’ mitigation measures with respect to the marine environment, and determined that Ksi Lisims LNG’ effects would not threaten the persistence or viability of species of cultural or traditional importance. The analysis also determined that adverse cumulative effects could be addressed through the mitigations of regional initiatives and programs, and that positive effects on the local, regional and provincial economy would occur during construction and operations.</p>	<p>Ksi Lisims LNG activities would affect the marine ecosystem upon which human and ecological well-being depends. These effects, in turn, were considered likely to affect Indigenous Peoples.</p> <p>Ksi Lisims LNG’s effects are likely to result in both opportunities for positive contributions to the sustainability of the human-ecological system for present and future generations, as well as risk of adverse effects or irreversible harm.</p> <p>For principle 1, the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability points to moderate<sup>65</sup>.</p>
<p><b>Principle 2: Consider the well-being of present and future generations</b></p> <p>The analysis considered how Ksi Lisims LNG’s likely effects on well-being</p>	<p>Indigenous Peoples identified the following elements as integral to well-being, reflecting a deep connection between people, the environment, resource use and culture:</p> <ul style="list-style-type: none"> <li>• The ability to participate in traditional-use activities and cultural practices;</li> <li>• Marine safety and access to marine harvesting sites;</li> <li>• Health of lands, waters and resources;</li> <li>• Opportunities to sustain traditional livelihoods;</li> </ul>	<p>Ksi Lisims LNG activities would result in positive and adverse effects on the well-being of present and future generations.</p> <p>Mitigation measures and conditions would help to address pressures on infrastructure, services and the effects of an increased workforce of predominately male outsiders, but residual effects to the health and</p>

<sup>65</sup> A moderate extent means that Ksi Lisims LNG is likely to result in both opportunities for positive contributions to sustainability and the risk of adverse effects or irreversible harm. Contributions to sustainability are expected for present and future generations, but depend on the effectiveness of future decisions and actions to enhance positive effects and/or to mitigate adverse effects. Continued follow-up and monitoring will be required to balance opportunities for sustainability and risks of adverse effects. Trade-offs may be required (although not desirable) to respond to changing conditions and enhanced information as it becomes available.

Principle	Summary of Analysis	Conclusion
<p>could change over time, and how future generations could be affected beyond the lifecycle of the project.</p>	<ul style="list-style-type: none"> <li>• Food security;</li> <li>• Economic stability and prosperity;</li> <li>• Cultural integrity and way of life;</li> <li>• Social cohesion and community safety;</li> <li>• Access to adequate housing; and</li> <li>• Spiritual, physical and mental wellness.</li> </ul> <p>Positive effects on the well-being of Indigenous Peoples and local communities would include:</p> <ul style="list-style-type: none"> <li>• Increase in income through wage employment, contributing to obtaining appropriate housing and adequate food, as well as collective benefits such as diversification of the region’s economic base and greater economic resiliency, reduced stress and anxiety among the underemployed, and improved standards of living;</li> <li>• Opportunities for economic self-determination for Nisga'a Nation, contributing to reconciliation and individual and collective benefits such as self-governance;</li> <li>• Increased levels of educational attainment through on-the-job skills training that may improve socio-economic well-being and enhance the competitiveness of the existing labour pool;</li> <li>• Financial autonomy and independence of some women through employment that may improve social and physical well-being;</li> <li>• Increased financial revenue for infrastructure and services, and local, regional and provincial procurement and contracting strategies, both short and long term;</li> </ul> <p>Adverse effects on the well-being of Indigenous Peoples and local communities would include the following:</p> <ul style="list-style-type: none"> <li>• Risks to the safety of Indigenous women and girls from an influx of male temporary workers;</li> </ul>	<p>safety of Indigenous women and girls, as well as income and employment disparities remain. Long-term adverse effects may not be offset by the benefits of wage employment.</p> <p>However, the analysis considered the importance of Nisga'a Nation in benefiting from opportunities for economic self-determination, and the use of revenues to support Indigenous and local social, educational and health programs, alongside important benefits to wage employment and household incomes.</p> <p>The analysis concluded that Ksi Lisims LNG’s effects are likely to result in opportunities for positive contributions to the well-being of present and future generations but will depend on the effectiveness of future decisions and actions for their enhancement, as well as the mitigation of adverse federal effects.</p> <p>For principle 2, the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability points to moderate.</p>

Principle	Summary of Analysis	Conclusion
	<ul style="list-style-type: none"> <li>• Food insecurity;</li> <li>• Effects related to a decrease in housing availability and increased pressure on medical emergency and social services from population changes, resulting in overcrowding, conflict, stress levels and risks to health;</li> <li>• An influx of non-resident workers, which may burden local infrastructure and services, increase the cost of living and introduce adverse health and social effects such as substance abuse, violence and illegal behaviours, which future communities would inherit;</li> <li>• Increased disposable income and non-local temporary workforce, leading to potential increase in use of drugs and alcohol, and rates of sexually transmitted infections;</li> <li>• Impeded access to traditional lands and resources, particularly within marine areas along Ksi Lisims LNG’s shipping route, that are important for food, social and ceremonial purposes;</li> <li>• Disruption in cultural practices, the transfer of Indigenous Knowledge, and a loss of balance and control over individuals’ lives that may persist indefinitely into the future;</li> <li>• Income disparity, employment inequity and barriers to employment opportunities for Indigenous Peoples and women;</li> <li>• Potential changes in the real or perceived risks of accidents and malfunctions;</li> <li>• Effects of relocation and shift work on Indigenous cultural engagement and family structures.</li> </ul>	
<p><b>Principle 3: Consider the positive effects and reduce adverse effects of a designated project</b></p>	<p>The analysis considered the Proponents’ measures to enhance positive economic and social effects. Local employment opportunities would have positive effects on health and well-being through increased income, especially for those who have been unemployed or underemployed. Revenues from Ksi Lisims LNG would also support investments in social, health, and educational programs intended to empower future generations, particularly youth.</p>	<p>The analysis determined that enhancement measures, such as health, social and educational programs, would contribute positively to present and future generations, particularly through investment in education and skills training for Nisga'a Nation, as well youth.</p>

Principle	Summary of Analysis	Conclusion
<p>The analysis considered whether Ksi Lisims LNG’s positive effects would be maximized and adverse federal effects reduced to ensure lasting contributions to present and future generations.</p>	<p>Positive effects were anticipated to be unevenly distributed, with non-Indigenous males expected to realize a disproportionate share of Ksi Lisims LNG employment. Women, in particular, could be excluded due to factors such as lack of access to childcare and safety risks and fear of the male-dominated nature of the workforce. However, the analysis noted that barriers to employment would be removed through gender equity and diversity policies.</p> <p>Employment and economic benefits of Ksi Lisims LNG would contribute to Nisga’a Nation’s economic reconciliation and self-determination. Several Nations expressed that these benefits appeared to favor members of Nisga’a Nation. The Proponents assured that while Nisga’a Nation members and businesses may have preferential opportunity as a partner to Ksi Lisims LNG, members of all affected Indigenous Peoples would have equal access to procurement and employment opportunities.</p> <p>Regional hiring and procurement would reduce the increase in population associated with Ksi Lisims LNG workforce; however, an influx of transient workers could present associated risks to community safety, including crime and gender-based violence, which are highly likely to be disproportionately experienced by Indigenous women and girls.</p> <p>In addition, concerns related to food and housing security, including a decrease in traditional food supply, as well as the quality and cost of local food, were identified as an adverse effect on the physical, cultural and social well-being of all Indigenous Peoples affected by Ksi Lisims LNG. Although enhancements of positive effects on employment and income could improve household incomes, additional mitigation measures would be necessary to protect sustainable Indigenous-based food systems and practices, especially given the importance of marine harvesting for Indigenous food, social, ceremonial and economic purposes.</p>	<p>as the Proponents’ gender equity and diversity policies.</p> <p>However, the analysis noted uncertainty regarding the Proponents’ ability to mitigate income disparity and employment inequity. Furthermore, the analysis noted that residual effects on the health and safety of Indigenous women and girls remained, and that there was uncertainty related to the effectiveness of mitigation measures in spite of targeted measures for safe resource worksites and communities.</p> <p>For principle 3, the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability points to moderate.</p>
<p><b>Principle 4: Apply the precautionary principle and consider uncertainty and risk of irreversible harm</b></p>	<p>The analysis considered risks of irreversible harm to the well-being of Indigenous Peoples to include:</p> <ul style="list-style-type: none"> <li>• Cultural dislocation from traditional activities and practices;</li> <li>• Impeded access to land and waters for sustenance and spiritual connection;</li> <li>• Increased food insecurity;</li> </ul>	<p>For potential social effects, a precautionary approach had been applied by way of early enhancement measures, such as Proponents-supported health, social and educational programs, although cumulative effects would remain.</p>

Principle	Summary of Analysis	Conclusion
<p>The analysis considered whether gaps in knowledge and understanding related to key issues and conclusions for the sustainability analysis, and the steps taken to address these gaps, had been identified.</p>	<ul style="list-style-type: none"> <li>• Potential changes in the real and perceived risks of accidents and malfunctions, especially from project-related transportation incidents that could result in higher than moderate risks;</li> <li>• Cumulative adverse effects on health and social conditions;</li> <li>• Adverse effects on the health and safety of Indigenous women and girls related to population change and in-migration;</li> <li>• Adverse effects on Indigenous territories, including marine waters, as it relates to the carrying capacity of the existing human and ecological environment.</li> </ul> <p>The analysis determined that there were gaps in knowledge and understanding related to the following key issues of importance to sustainability, including uncertainties in:</p> <ul style="list-style-type: none"> <li>• the effectiveness of mitigation measures;</li> <li>• the effects on income disparity, employment inequity and barriers to employment opportunities within Indigenous groups and between Indigenous and non-Indigenous populations within the region; and</li> <li>• effects on food security.</li> </ul>	<p>With respect to accidents and malfunctions and effects on biological valued components, the Proponents had applied the precautionary principle and considered the values of Nisga'a Nation to minimize adverse effects on the marine environment and maximize socio-economic benefits, with no ensuing risks of irreversible harm.</p> <p>For other components at risk, such as the risks to the health and safety of Indigenous women and girls the precautionary principle had not been applied, but the application of the precautionary principle would necessarily involve the “no project” alternative. To address these risks, the EAO proposed federal Key Mitigation Measures to implement measures that promote safe, respectful and inclusive conduct in the workplace and the community. Measures should include actions to respond to call to justice 13.1 in <i>Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls</i>.</p> <p>The analysis determined that contributions to sustainability are expected for present and future generations, but there is uncertainty in the effectiveness of mitigation measures, and gaps in knowledge or understanding remained. The Proponents have demonstrated that the precautionary principle was applied in most cases where there is a risk of irreversible harm. As a result, for principle 4, the extent to which Ksi Lisims LNG’s likely effects contribute to sustainability points to moderate.</p>

#### 27.9.4. Considering Project Alternatives through a Sustainability Lens

The Proponents assessed two project alternatives in the Revised Application. Additionally, the EAO considered a “no project” alternative to serve as the benchmark to assess predicted future conditions without Ksi Lisims LNG in place. The three alternatives assessed through a sustainability lens include:

1. An LNG facility at a different location in Nisga'a Nation territory with a different proponent collaboration structure;
2. A different Nisga'a-led economic opportunity on Nisga'a Lands;
3. No project.

Neither the first nor second alternatives were considered by the Proponents to be technically and economically feasible, and to align with Ksi Lisims LNG's goals of providing economic development opportunities to improve the quality of life and well-being of Nisga'a Nation citizens. The Proponents noted that although Wil Milit is remote and undeveloped, it is close to established shipping routes, thus minimizing potential adverse environmental, health, social and economic effects. The Proponents also indicated that Ksi Lisims LNG's small footprint, which limits land-based infrastructure, allows for less disturbance of the local environment and greater potential for restoration following decommissioning. Additionally, the Proponents noted that Ksi Lisims LNG is likely to be one of the lowest emission-intensity producers of LNG globally, largely because of its reliance on clean B.C. electricity.

Nisga'a Nation has also indicated that seeking another proponent collaboration structure in another LNG project could potentially limit their ability to consider Ksi Lisims LNG's contributions to sustainability. Other economic opportunities may not allow Nisga'a Nation to fulfil the goals of the First Nations Climate Initiative, of which Nisga'a is a founding member, including economic self-determination and an opportunity to address challenges associated with climate change.

A “no project” alternative, would prevent associated environmental, health, social and cultural risks, but also would not provide local and regional economic benefits or opportunities for economic reconciliation. The EAO determined that in lieu of the “no project” alternative, Ksi Lisims LNG, as proposed, would provide the best sustainability gains to present and future generations. Although Ksi Lisims LNG's likely positive and adverse effects on health, social, economic and cultural conditions would be experienced disproportionately by sub-groups and across generations, this scenario would also be the case with the first two project alternatives.

#### 27.9.5. The Proponents' Analysis and Conclusion

The Proponents concluded that Ksi Lisims LNG would contribute meaningfully to sustainability.

The Proponents indicated that Ksi Lisims LNG would contribute to the social and economic sustainability of local, regional and provincial populations, and would create economic self-determination for Nisga'a Nation, improving the quality of life for Nisga'a citizens across generations. With the implementation of mitigation and enhancement measures, the Proponents stated that Ksi Lisims LNG would minimize adverse effects on the marine environment and on Indigenous harvesting and cultural practices. Although, the Proponents recognized the potential for disproportionate effects on sub-groups, such as Indigenous communities closest to Ksi Lisims LNG, women and low-income families who depend upon subsistence harvesting and country foods, the Proponents considered that adverse effects on these sub-groups are anticipated to be low as mitigation and enhancement measures would address gender equity disparities and barriers to employment. The Proponents anticipate that on-the-job training opportunities, investments in infrastructure and healthcare services, and the location of Ksi Lisims LNG close to existing shipping lanes would also contribute to lasting health and social benefits and minimize adverse effects on marine harvesting areas. As part of a commitment to reducing adverse effects on Indigenous and local communities, the Proponents commits to implementing a community feedback process.



### 27.9.6. The EAO's Analysis and Conclusion

The EAO considered the Ksi Lisims LNG-specific context, including key issues of importance to Indigenous Peoples and sub-groups, and how the sustainability principles were applied. Key considerations in determining the extent to which Ksi Lisims LNG's likely effects would contribute to sustainability include:

- **Positive effects on current and future generations from increased economic opportunities** would contribute to the health and well-being of communities, including financial autonomy of households, and improved infrastructure and services. However, these positive effects would be unevenly distributed.
- **Positive effects by supporting self-governance and self-determination for Nisga'a Nation** as one of Ksi Lisims LNG Proponents, to have an opportunity to advance Indigenous reconciliation.
- **Adverse federal effects on socio-economic conditions and on cultural and material connections to land and waters for present and future generations** could pose risks to food security, loss or alteration of preferred marine harvesting methods, locations or opportunities, the transfer of Indigenous Knowledge and the mental health and well-being of Indigenous Peoples, particularly by changing the way in which Indigenous Peoples experience and use the marine environment.
- **Adverse federal effects on social and family cohesion, and the health and safety of Indigenous women and girls** may be associated with an influx of a male workforce and changes in social conditions and structures.

The EAO considered that mitigation and enhancement measures would reduce employment inequities during and beyond the life of Ksi Lisims LNG, although some uncertainty remains regarding mitigating cumulative adverse effects on social conditions; the health and safety of Indigenous women and girls; food insecurity; and culture. The EAO also considered that adverse cumulative effects on the health, social, economic and cultural conditions of surrounding Indigenous Peoples would partially offset the high positive contributions to sustainability for Nisga'a Nation anticipated by the Proponents.

The EAO considered the Proponents' sustainability analysis and conclusions, focusing on the extent to which Ksi Lisims LNG's likely effects would result in both positive effects and adverse federal effects. There is certainty that Ksi Lisims LNG would provide economic benefits to Nisga'a Nation and to other Indigenous Peoples and communities (although these benefits would be unevenly distributed) and would support self-governance and self-determination for Nisga'a Nation as one of the Proponents of Ksi Lisims LNG. Ksi Lisims LNG's likely effects, however, would involve a loss of "use" values associated with adverse effects on marine resources and the ability to harvest these resources. It would also involve a loss of "existence" values, which are values that Indigenous Peoples and local communities place on resources and attributes, not because of their expected human use, but because of their environmental, cultural and social significance for present and future generations.

Contributions to sustainability are therefore expected for present and future generations, but depend on the effectiveness of future decisions and actions to enhance positive effects (e.g., employment and income opportunities for all) and to mitigate adverse federal effects (e.g., cumulative adverse effects on the health and social conditions of Indigenous Peoples, including adverse effects on cultural continuity and food security; and adverse effects on the health and safety of Indigenous women and girls). Ksi Lisims LNG could support continuous progress towards sustainability through its follow-up and monitoring programs.

Based on conclusions reached through the application of the sustainability principles, the EAO determined that Ksi Lisims LNG's likely effects would contribute to sustainability to a moderate extent. The EAO is therefore of the view that Ksi Lisims LNG's likely effects would result in net positive contributions to sustainability.

## 27.10. Considering Environmental Obligations and Commitments in Respect of Climate Change

This section assesses the extent to which the effects of Ksi Lisims LNG hinder or contribute to Canada's ability to meet its environmental obligations and its commitments in respect of climate change. This assessment is a requirement under paragraph 22(1)(i) of the IAA. The extent to which the likely effects of Ksi Lisims LNG contribute to Canada's ability to meet these obligations and commitments is also one of the three public interest factors to be considered in decision making on Ksi Lisims LNG, should there be a determination that adverse effects within federal jurisdiction are likely to be, to some extent, significant.

This section draws on the analysis of GHG emissions presented in [Appendix 12](#) and considers the effects of Ksi Lisims LNG in the context of Canada's commitments in respect of climate change (see Table 77 below). It also considers Ksi Lisims LNG's effects to species at risk and migratory birds (see [Appendix 6, chapter 18.7](#)) and to marine fish, marine invertebrates, marine mammals, and the marine environment (see [Appendix 6, chapter 18.5](#)).

The term "environmental obligations" refers to Canada's obligations in domestic and international law in relation to protecting the natural environment. In international law, legally binding international instruments (such as conventions) to which Canada is a party can create environmental obligations. "Commitments in respect of climate change" are set out in legally binding and non-binding domestic and international instruments.<sup>66</sup>

Identification of relevant obligations and commitments took into consideration the specific context of Ksi Lisims LNG, including:

- The location of Ksi Lisims LNG (that is, Ksi Lisims LNG will be developed on fee simple land owned by the Nisga'a Nation, is close to the international border with the United States, and involves the marine environment);
- The potential emissions and discharges from Ksi Lisims LNG (such as GHG emissions and discharges to marine waters); and
- Components of the environment (such as species at risk and migratory birds) and potential effects to these components.

The assessment considered all Indigenous Knowledge provided in relation to these factors as described throughout this Report.

### 27.10.1. Environmental Obligations

The following environmental obligations were identified as relevant to the assessment of changes to terrestrial and marine environments, as well as effects to species at risk and migratory birds (Table 77).

Table 78: Environmental obligations relevant to Ksi Lisims LNG

Environmental obligation	Description
<i>Convention on Biological Diversity</i> , including the Kunming-Montreal Global Biodiversity Framework, and Canada's supporting national frameworks: Canadian Biodiversity	The <i>Convention on Biological Diversity</i> is an international, legally binding treaty with three main goals: <ul style="list-style-type: none"> <li>• Conservation of biodiversity;</li> <li>• Sustainable use of the components of biological diversity; and</li> </ul>

<sup>66</sup> For more information, see Policy Context: [Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act](#).

Environmental obligation	Description
Strategy, Canada's Biodiversity Outcomes Framework and current Biodiversity Goals and Targets for Canada	<ul style="list-style-type: none"> <li>Fair and equitable sharing of the benefits arising from the utilization of genetic resources.</li> </ul> <p>It encourages actions that will lead to a sustainable future. The conservation of biodiversity is a common concern of humankind. The <i>Convention on Biological Diversity</i> covers biodiversity at all levels: ecosystems, species and genetic resources.</p>
<i>Species at Risk Act (SARA)</i>	SARA provides for the legal protection of wildlife species to prevent wildlife species from becoming extinct and to secure the necessary actions for their recovery.
<i>Canada Wildlife Act</i>	The <i>Canada Wildlife Act</i> allows for the creation, management and protection of wildlife areas for wildlife research activities, or for conservation or interpretation of wildlife. The purpose of wildlife areas is to preserve habitats that are critical to migratory birds and other wildlife species, particularly those at risk.
Recovery Strategies and Action Plans developed under the SARA for all species at risk potentially affected by the project	<p>A Recovery Strategy is a planning document that identifies what needs to be done to stop or reverse the decline of a species.</p> <p>An Action Plan identifies the measures to take to implement the Recovery Strategy for a threatened, endangered or extirpated species.</p>
<i>Convention for the Protection of Migratory Birds in the United States and Canada, as implemented in part through the Migratory Birds Convention Act, 1994, and supporting guidance on conservation objectives arising from Bird Conservation Region Strategies</i>	<p>The Convention is an international agreement with the objective to protect migratory birds, their eggs, and their nests. The requirements of the Convention have legislated components embedded in the <i>Migratory Birds Convention Act, 1994</i>, Migratory Birds Regulations and Migratory Bird Sanctuary Regulations.</p> <p>Elements of the Convention are also implemented via the North American Waterfowl Management Plan and the <i>Declaration of Intent for the Conservation of North American Birds and their Habitat</i>.</p>
The Canada-United States Air Quality Agreement	The Agreement seeks to control and reduce transboundary air pollution between Canada and the United States and includes commitments on notification of potential new sources of transboundary pollution, consultation on existing sources of possible transboundary pollution, and biennial progress reports.
<i>Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention)</i>	<p>The Ramsar Convention, ratified by Canada in 1981, has the mission of the wise use of all wetlands through local and national actions and international cooperation. Canada has designated 37 Wetlands of International Importance (Ramsar sites) under the Convention.</p> <p>The Convention was considered not to apply as Ksi Lisims LNG is not located near any designated Wetland of International Importance.</p>

#### 27.10.1.1. Terrestrial Species at Risk and Migratory Birds

Species at risk and migratory birds identified during the assessment are protected or supported under the *Convention on Biological Diversity*, the *Migratory Birds Convention Act, 1994*, the *Species at Risk Act* and recovery strategies and action plans.

One hundred sixty-seven migratory birds are known or likely to occur in the Terrestrial Wildlife, Marine Terminal, or Marine Shipping Regional Assessment Areas, transmission line assessment area, or open water assessment area. Twenty

bird species of conservation concern, five mammal species of conservation concern and two amphibians of conservation concern as listed under the *Species at Risk Act* were identified as likely to occur within the same assessment areas (see in [chapter 18.7](#)).

Recovery strategies have been prepared for little brown myotis and northern myotis, Haida ermine, red knot, marbled murrelet, short-tailed albatross and pink-footed shearwater, as well as northern goshawk. The project site falls outside the identified critical habitat of the red knot, northern goshawk, little brown myotis and northern myotis, as outlined in their recovery strategies.

Of those identified above, Ksi Lisims LNG only falls within the geographic area for the recovery strategy for marbled murrelet. Construction of Ksi Lisims LNG is anticipated to cause direct and indirect loss or alteration of 31.8 hectares of effective breeding habitat for marbled murrelet, 21.8 hectares of which overlaps with Geographic Location Polygons that may contain terrestrial (nesting) critical habitat for the species. The transmission line may result in changes to an additional 22 to 53 hectares of marbled murrelet critical habitat polygons. Sensory disturbance from construction, operations and decommissioning activities may further result in avoidance of breeding habitat. The Proponents proposed a follow-up program to confirm the presence of terrestrial (nesting) marbled murrelet critical habitat within the project's footprint prior to vegetation clearing. The EAO has proposed Key Mitigation Measures to IAAC to clear and prepare the site outside of nesting season and apply the mitigation hierarchy (by prioritizing the reduction of adverse effects over offsetting) to prevent mortality and disturbance.

#### **27.10.1.2. Marine Species at Risk**

Eight marine fish and invertebrate species at risk, twelve marine mammal species at risk, and one sea turtle as listed under the *Species at Risk Act* were identified as likely to occur within the Marine Terminal Regional Assessment Area, Marine Shipping Regional Assessment Areas and transmission line assessment area (see [Chapter 18.5](#)).

Recovery strategies have been prepared for all of the threatened and endangered marine species at risk. The critical habitat for northern resident killer whales located off the north coast of Haida Gwaii overlaps the Marine Shipping open water assessment area and is within an area where underwater noise is expected to be above the behavioural disturbance threshold for marine mammals. Reducing disturbance and protecting their critical habitat are two of the principal objectives of the recovery strategies for northern resident killer whales. As such, the EAO has proposed a Key Mitigation Measure to IAAC to implement a follow-up program to address underwater noise from operation of the marine terminal and consider approaches to reduce the generation and transmission of underwater noise caused by operating marine infrastructure, including the floating LNG facility. Northern abalone also exists in the waters that may interact with Ksi Lisims LNG activities; however, there are no Fisheries and Oceans Canada important areas or critical habitat identified for the species. Measures to avoid and reduce effects to northern abalone include engineering efforts to limit the in-water footprint of project infrastructure and a commitment to conduct a pre-construction salvage of marine invertebrates in areas of infilling. No critical habitats have been identified for marine fish in the assessment areas.

#### **27.10.1.3. The EAO's conclusion**

Based on the analysis presented above, the EAO concludes that the likely effects of Ksi Lisims LNG would hinder Canada's ability to meet its environmental obligations to a low extent. Therefore, the likely effects of Ksi Lisims LNG would not contribute to Canada's ability to meet its environmental obligations.

#### **27.10.2. Commitments in respect of Climate Change**

An analysis of the direct effects of Ksi Lisims LNG's GHG emissions is provided within [Appendix 12](#). In addition to the analysis of the direct effects from Ksi Lisims LNG's GHG emissions, the IAA specifies that the impact assessment must take into account the extent to which effects that are likely to be caused by the carrying out of a project hinder or contribute

to Canada’s ability to meet its commitments in respect of climate change (subsection 22(i) of the IAA). ECCC will provide its assessment of Ksi Lisims LNG GHG information in its GHG Analysis.

A list of Canada’s current climate change commitments relevant to Ksi Lisims LNG is provided in Table 78.

Table 79: Canada’s current climate change commitments relevant to Ksi Lisims LNG

Climate change commitment	Description
Canada’s 2030 Emissions Reduction Plan	Under this plan, Canada must reduce its emissions by 40 to 45% of 2005 levels by 2030.  The current emissions target for 2030 is 443,000,000 t CO <sub>2</sub> e (representing a 40% reduction from the 2050 baseline for Canada’s GHG emissions).
<i>Canadian Net Zero Emissions Accountability Act</i>	This legislated commitment requires five-year emissions targets to demonstrate how Canada will reach its longer-term net-zero goal by 2050.
Draft guidance for best-in-class GHG emissions performance by oil and gas projects	Current Government of Canada guidance to Proponents of new oil and gas projects subject to the IAA, requires them to demonstrate that they will have “best-in-class” low-emissions performance.
Strategic Assessment of Climate Change	Aside from outlining the GHG and climate change information requirements, the SACC requires Proponents to discuss how their projects may impact global GHG emissions and Canada’s efforts to reduce GHG emissions, if applicable.
IMO Initiatives	The 2023 IMO GHG Strategy sets a target to reduce total annual international shipping CO <sub>2</sub> e emissions (from 2008 levels) by 20 to 30% by 2030 and 70 to 80% by 2040, with the ambition to reach net-zero by or around 2050. The Strategy also has a goal of 5 to 10% uptake of zero or near-zero GHG emission technologies, fuels, and/or energy sources by 2030.

Below is an analysis of the contribution of Ksi Lisims LNG’s likely effects on Canada’s ability to meet each of the respective commitments.

#### 27.10.2.1. Canada’s 2030 Emissions Reduction Plan

As discussed in [Appendix 12](#), Ksi Lisims LNG’s influence on this commitment was assessed for two scenarios, given the Proponents are pursuing the Base Case of electrification to minimize GHG emissions during operations, while planning for temporary on-site power generation under the Alternative Case, for up to the first five years of operations which may span across the 2030 commitment period.

##### Base Case

- If construction activities continue into 2030, these activities are predicted to emit 0.003% of Canada’s 2030 emission reduction target, inclusive of Ksi Lisims LNG commissioning.
- Electrification of operations by 2030 under the Base Case means that Ksi Lisims LNG’s net emissions would be 36,416 t CO<sub>2</sub>e. These net emissions take into account the GHG offsets committed to by the Proponents and required by the EAO’s proposed Certificate conditions. The net emissions would represent 0.008% of Canada’s 2030 emissions reduction target and are attributable to the GHG emissions from project-related marine shipping.

- Under the Base Case, Ksi Lisims LNG would hinder Canada’s ability to meet its 2030 Emissions Reduction Plan to a low extent.

#### **Alternate Case**

- If Ksi Lisims LNG operations commence in 2030, and connection to the BC Hydro electrical grid is delayed beyond 2030, there would be additional GHG emissions to commission Ksi Lisims LNG using on-site temporary power generation. Under this scenario, construction phase emissions including commissioning in 2030 would represent 0.04% of Canada’s emission reduction target.
- Operations under the Alternate Case of on-site temporary power generation would see Ksi Lisims LNG’s net emissions in 2030 rise to 1,644,384 t CO<sub>2</sub>e, representing 0.4% of Canada’s 2030 emissions reduction target. This net emission takes into account the offsets committed to by the Proponents and required under EAO’s proposed Certificate conditions.
- Under the Alternate Case, Ksi Lisims LNG would hinder Canada’s ability to meet this commitment to a moderate/high extent.

#### **27.10.2.2. Canadian Net Zero Emissions Accountability Act**

Ksi Lisims LNG will support Canada’s ability to meet this commitment with the implementation of Ksi Lisims LNG’s net-zero by 2050 plan. As provided in the Revised Application, the Proponents developed a plan to meet the requirements of the Strategic Assessment of Climate Change and demonstrate their commitment and willingness to achieve net-zero emissions in line with Canada’s 2050 target.

#### **27.10.2.3. Draft guidance for best-in-class GHG emissions performance by oil and gas projects**

The Proponents stated that Ksi Lisims LNG will be one of the lowest emission intensity LNG facilities globally based on the assumption that Ksi Lisims LNG is connected to and powered by B.C.’s renewable electricity grid. The Proponents compared Ksi Lisims LNG with two similar projects in Canada and internationally: the LNG Canada Project located near Kitimat, B.C., and the Gorgon LNG Project located in Australia. The Proponents indicated that Ksi Lisims LNG would seek to achieve a lower emissions intensity than both projects by becoming fully electrified. Furthermore, the Proponents indicated Ksi Lisims LNG would emit 3 to 5 Mt CO<sub>2</sub>e per year less than an average LNG facility in operation today, and 90 to 150 Mt CO<sub>2</sub>e less over the estimated life of Ksi Lisims LNG without accounting for offsets. As a result, the EAO notes that Ksi Lisims LNG aligns with the intent of the draft guidance for best-in-class GHG emissions performance by oil and gas projects.

#### **27.10.2.4. Strategic Assessment of Climate Change**

There is consideration under the Strategic Assessment of Climate Change of the potential impacts of Ksi Lisims LNG on global GHG emissions. The Proponents have stated that Ksi Lisims LNG is an opportunity to meet growing global natural gas demand with LNG that is produced with lower GHG emission intensity versus other global projects. The Proponents have also stated that Ksi Lisims LNG is expected to have one of the lowest GHG LNG emission profiles in the world. They also add that increased demand can be met with new supply from countries with less-stringent emissions regulations, if not met with Canadian LNG.

#### **27.10.2.5. IMO initiatives**

According to the IMO, GHG emissions from shipping in 2018 accounted for 2.9% of global anthropogenic GHG emissions and that such emissions could represent between 90% and 130% of 2008 emissions by 2050.

For the purpose of the assessment, the Proponents assumed that LNG carriers would combust marine fuel throughout Ksi Lisims LNG’s lifetime. However, if LNG carriers used LNG instead of diesel for fuel when transiting the Portland Canal, the

Proponents predicted that GHG emissions from LNG carriers could be reduced by 42%, taking into account of potential slip of non-combusted methane during the combustion process in any engine. At the terminal, the Proponents estimated that LNG carriers that combust diesel would emit 25,227 t CO<sub>2</sub>e per year while carriers that combust LNG would release 71% less GHGs with approximately 7,151 t CO<sub>2</sub>e.

When calculating GHG emissions, the Proponents assumed that tugboat engines would use marine diesel oil. Dual-fuel or LNG tugboats are also considered by the Proponents to be technically feasible, although they need to be purpose-built and may not be available in the region at the start of Ksi Lisims LNG. If these tugboats are used, they could reduce GHG emissions by 31% in transit and 34% at the terminal. The Proponents also estimated that fully electric tugboats could further reduce GHG emissions by 98% as they would not have direct GHG emissions, and the indirect emissions from BC Hydro electrical grid are expected to have a low GHG emissions intensity. The Proponents indicated that fully electric tugboats are a relatively new technology and only a few have been built. Additionally, infrastructure required to supply electricity to tugboats is not currently planned for Ksi Lisims LNG at the start of operation. Electric tugboats may become technically feasible later in operation and the Proponents will further assess its potential over time.

#### **27.10.2.6. The EAO's Conclusions**

Based on the analysis of the considerations listed above, the EAO concludes that the likely effects of Ksi Lisims LNG would hinder Canada's ability to meet its commitments in respect of climate change to a low extent under the Base Case and moderate/high extent under the Alternative Case; however, the implementation of Ksi Lisims LNG's net-zero plan should ensure that by 2050, Ksi Lisims LNG aligns with Canada's longer-term commitments in respect of climate change. Given Ksi Lisims LNG's GHG emissions, the EAO is of the view that the likely effects of Ksi Lisims LNG would not contribute to Canada's ability to meet its commitments in respect to climate change. Nevertheless, as described in [Appendix 12](#), the EAO has proposed a provincial condition that requires the Proponents to prepare a Greenhouse Gas Emissions Net-Zero Plan. This condition will work in tandem with provincial legislation that aims to address concerns regarding GHGs, such as the *Climate Change Accountability Act*, which sets out GHG emission reduction requirements for the oil and gas sector, and the New Energy Action Framework, which requires all proposed LNG facilities in or entering the environmental assessment process, including Ksi Lisims LNG, to pass an emissions test with a credible plan to be net zero by 2030.

#### **27.11. Considerations under the *Species at Risk Act***

Assessment of federally-listed species at risk in impact assessments is required under section 79 of the *Species at Risk Act*, including the identification of measures to avoid or lessen the effects. Measures identified below include those by the provincial and/or the federal government as appropriate. [Appendix 6](#) describes the potential effects of Ksi Lisims LNG on plant species at risk ([Chapter 18.8](#)), wildlife species at risk ([Section 18.7](#)), and marine species at risk ([Section 18.5](#)).

The residual effects assessment of Ksi Lisims LNG on plant species at risk include direct loss, indirect effects, direct harm from introduction of invasive plants and soil acidification and eutrophication and change in abundance. Residual effects are low to medium in magnitude, generally limited in geographic extent, and have a low to moderate uncertainty. Some of the effects may be irreversible. Residual effects to lichen species at risk from eutrophication are moderate to high in magnitude, regional in geographic extent, may be irreversible, and have a high level of uncertainty. Although plant species at risk were not identified during field surveys, they could be present in the project area. The EAO proposed a provincial condition requiring a Construction Environmental Management Plan that includes measures for mitigating effects on vegetation, as well as acidification and eutrophication monitoring.

The residual effects assessment of Ksi Lisims LNG on bird species at risk (western screech owl, northern goshawk, and marbled murrelet) are primarily a result of direct and loss of wildlife habitat and, for marbled murrelet, increase in mortality risk. The residual effects are low to medium in magnitude, limited in geographic extent (Local Assessment Area), reversible in nature, and have a low to moderate uncertainty. The EAO proposed a provincial condition requiring a

Construction Environmental Management Plan that includes measures for wildlife and wildlife habitat monitoring, reporting and mitigation, such as:

- Avoiding or reducing project-related loss or alteration of wildlife habitat features, impediments to wildlife movement, and injury or mortality of wildlife; and,
- Completing western screech owl pre-construction surveys to identify habitat and any additional mitigation measures for western screech owl.

The EAO has also proposed Key Mitigation Measures to IAAC with respect to migratory birds to:

- Carry out Ksi Lisims LNG in a manner that protects migratory birds;
- Delineate set back distances around the nest within which activity shall not occur;
- Develop a follow-up program for marbled murrelet to identify critical habitat and inform additional and appropriate mitigation; and,
- Implement a follow-up program for migratory birds and their habitat.

The residual effects of Ksi Lisims LNG on bat species at risk (little brown myotis and northern myotis) are primarily a result of direct and indirect loss of bat roosting habitat. The residual effects are low in magnitude, limited in geographic extent (Local Assessment Area), reversible in nature, and have a low uncertainty. The EAO proposed a provincial condition requiring a Construction Environmental Management Plan that includes pre-construction surveys for bat habitat features (such as roosts, hibernacula, and maternity roosts).

The residual effects of Ksi Lisims LNG on mammal species at risk (grizzly bear and wolverine) are primarily a result of direct (during construction) and indirect loss of habitat (from disturbance during operations and increase in linear disturbance). The residual effects are low to medium in magnitude, limited in geographic extent (Local Assessment Area), partially reversible in nature, and have a low uncertainty (grizzly bear) and high uncertainty (wolverine). Uncertainty is high for wolverine due to limited understanding of wolverine use of coastal areas and uncertainty around mitigation effectiveness. The EAO proposed a provincial condition requiring a Construction Environmental Management Plan that includes measures for wildlife and wildlife habitat monitoring, reporting and mitigation, such as:

- Avoiding or reducing Ksi Lisims LNG-related loss or alteration of wildlife habitat features, impediments to wildlife movement, and injury or mortality of wildlife; and,
- Grizzly bear mitigations and reporting.

The residual effects of Ksi Lisims LNG on amphibian species at risk (western toad) are primarily a result of direct and indirect loss of breeding habitat. The residual effects are low to medium in magnitude, limited in geographic extent (Local Assessment Area), partially reversible in nature, and have a low to moderate uncertainty. The EAO proposed a provincial condition requiring a Construction Environmental Management Plan that includes measures to avoid or reduce Project-related loss or alteration of wildlife habitat features, impediments to wildlife movement, and injury or mortality of wildlife.

Marine species at risk assessed for Ksi Lisims LNG include northern abalone, marine fish, marine mammals, offshore and pelagic marine mammals, and leatherback sea turtle.

- Northern abalone: residual effects are primarily a result of construction activities such as pile installation for the personnel dock, FLNG trestles and platforms, marine offloading facility, and mooring anchors, which have the potential to increase the risk of injury or mortality due to burial or crushing. The residual effects are low in magnitude, regional in geographic extent, irreversible in nature, and have a low uncertainty.



- Marine fish: residual effects are primarily a result of change in behaviour caused by sensory disturbances (moderate sensitivity to underwater noise during construction and potential for artificial lighting to increase predation) and change in injury or mortality risk due to impingement and entrainment. The residual effects are medium in magnitude, regional in geographic extent, partially irreversible in nature, and have a low uncertainty.
- Marine mammals and offshore and pelagic marine mammals: residual effects are primarily a result of noise during construction, increased risk of vessel strikes, and change in habitat. The residual effects are medium in magnitude, regional in geographic extent, partially irreversible in nature, and have a moderate uncertainty.
- Leatherback sea turtle: residual effects are primarily a result of change in behaviour caused by sensory disturbances. The residual effects are low in magnitude, regional in geographic extent, reversible in nature, and have a low uncertainty.

The EAO proposed a provincial condition requiring a Construction Environmental Management Plan that includes Marine Resource Monitoring and Management Plan and an Underwater Noise Monitoring and Management Plan. The EAO has also proposed Key Mitigation Measures to IAAC to:

- Maintain underwater peak sound pressure levels below 207 decibels within 10 metres of the pile while impact pile driving;
- Implement measures to mitigate adverse effects to marine fish and marine mammals caused by underwater noise emitted from construction;
- Manage underwater noise from construction to prevent adverse behavioural changes, injury or mortality to marine mammals;
- Require LNG vessels to navigate safely in the presence of marine mammals by reducing vessel speed, making adjustments to direction, or both, to maintain distance from marine mammals and minimize the risk of collision with marine mammal;
- Operate water intake structures in the marine environment in a manner that minimizes the risk of entrainment and impingement of fish.

## 27.12. Federal Crown's Duty to Consult and Nisga'a Treaty Obligations

This section assesses the extent to which the substituted assessment process supports Canada's ability to meet its constitutional obligations to Indigenous Peoples including the duty to consult and implementation of the Nisga'a Treaty. The impact on Indigenous Peoples that may be caused by carrying out Ksi Lisims LNG is a public interest factor to be considered in decision making by Canada, should there be a determination that adverse effects within federal jurisdiction are likely to be, to some extent, significant.

This section draws on the information provided by or about potentially affected Indigenous groups in various sections of this Report, and in particular the summary of Indigenous participation and collaboration in the assessment as summarized in [Section 6](#) and [Section 12](#) of the Assessment Report, and information, analysis and conclusions presented in [Appendix 5](#). Sections [27.5](#) to [27.7](#) of this Appendix further describe the potential effects of Ksi Lisims LNG on Indigenous Peoples from a holistic perspective, considering Indigenous Knowledge described throughout this Report.

### 27.12.1. Overview

The federal Minister of Environment and Climate Change approved the substitution of the provincial assessment process for the federal impact assessment, on the understanding that the EAO would conduct consultation with Indigenous Peoples through the substituted assessment process; however, Canada retains its duty to consult with Indigenous Peoples

and is required to make its own determination of whether the requirements under Chapter 10 of the Nisga'a Treaty have been met.

The preamble to the IAA describes the manner in which the IAA is to be implemented, including: support for coordinated action among jurisdictions; fostering reconciliation and working in partnership with Indigenous Peoples; integration of Western scientific information and Indigenous Knowledge; and ensuring transparency, efficiency and timeliness in decision-making. Consideration of any adverse impact that the effects that are likely to be caused by the carrying out of the designated project may have on the exercise of the rights of Indigenous Peoples is required both by the IAA, and to fulfill the Crown's constitutional obligation to consult with respect to these impacts.

Chapter 10 of the Nisga'a Treaty contains specific and unique obligations related to the assessment that are in addition to the requirements of the IAA.

The EAO is of the view that the substituted assessment process substantially supports Canada meeting its obligations to Indigenous Peoples as described above. Further consultation on this draft report and associated documents including draft provincial conditions will be carried out by EAO on behalf of the provincial Crown. IAAC, supported by the participation of Federal Authorities, will consult Indigenous groups on draft potential federal conditions that are designed to address both the adverse effects of Ksi Lisims LNG falling within federal jurisdiction, and the potential need to accommodate Indigenous Peoples with respect to adverse impacts of Ksi Lisims LNG on Indigenous Interests.

EAO and IAAC are pursuing a collaborative approach to consultation during the Effects Assessment phase with the aim of achieving consensus on the draft assessment findings and the draft conditions. Following a meaningful dialogue with Indigenous groups, this report and the draft potential federal conditions will be revised as appropriate, and the EAO with IAAC will endeavour to respond to any residual issues or outstanding concerns from Indigenous groups prior to the decision-making phase. The consultation record summarized in the revised assessment report, and the recommended conditions will then be used to inform both provincial and federal decisions in respect of Ksi Lisims LNG.

Information gathered during the substituted assessment will also inform Canada's determination of whether it has met the requirements under Chapter 10 of the Nisga'a Treaty. The federal Minister will issue a Project Recommendation under Chapter 10 paragraph 8(h) of the Nisga'a Treaty, alongside the decision statement required under the IAA.

Should the federal Minister or Governor in Council decide to allow Ksi Lisims LNG to proceed, federal authorizations would likely be required, and further consultations with Indigenous Peoples would be contemplated, building off the record of consultation documented in this report. Consistent with the Nisga'a Treaty, any regulatory decisions that may be taken by Federal Authorities will also take into account the Project Recommendation issued by the Minister under the Treaty.

### **27.12.2. Adequacy of Federal Crown Consultation**

The federal Crown's consultation objectives are to meet the legal duty, uphold the honour of the Crown and to help build long-term relationships based on shared reconciliation objectives. Meeting the legal duty to consult depends on the context and facts for the particular decision before the decision makers. The practice for meeting this duty is informed by government policies, best practice and evolving jurisprudence. The principles that guide the federal Crown's efforts to ensure a meaningful and responsive consultation process include:

- The process needs to reflect that the Crown has made meaningful efforts to understand Indigenous concerns, potential impacts, and identify solutions for accommodation where required;
- The process needs to afford Indigenous groups opportunities, appropriate to the level of potential impacts on rights, to learn about the Project and its potential impacts, evaluate the Project, and communicate concerns to the Crown;

- The Crown should also demonstrate that it has sought to accurately understand all issues and potential impacts on Indigenous Peoples and their rights, as raised by Indigenous groups, and respond to issues in a meaningful way, including through consideration of appropriate mitigation and accommodation measures;
- Through its consultation record, the Crown needs to demonstrate that the process remained flexible and identified means to address potential impacts on Indigenous Peoples and their rights;
- Responses to Indigenous groups need to be reasonable and meaningful, where ‘meaningfulness’ is measured by sufficiency, quality, and consistency;
- As appropriate, accommodation should be considered, and commensurate to the degree of seriousness of the potential impact on Indigenous communities and their rights;
- Responsiveness is central to both procedural and substantive aspects, and needs to be readily demonstrated and evaluated;
- Overall, the process is accessible, reasonable, flexible and fair, founded in the principles of good faith, respect and reciprocal responsibility; and respectful of the uniqueness of each Indigenous group or nation.

From a procedural perspective, the EAO considers that the substituted assessment offered sufficient opportunities and funding to all potentially impacted Indigenous groups to enable them to participate meaningfully in all phases of the process. Indigenous groups received timely information to enable them to understand Ksi Lisims LNG, the substituted assessment and consultation process, and evaluate the potential changes to the environment, health, social and economic conditions as well as the potential impacts of Ksi Lisims LNG on the rights of Indigenous Peoples.

Each Indigenous group had opportunities to:

- evaluate Ksi Lisims LNG in relation to its impacts on Indigenous Interests;
- raise concerns to the proponent, the EAO, IAAC, and by extension Federal Authorities who were participating through the Technical Advisory Committee; and
- meaningfully engage in the assessment and Crown consultation process.

In addition, the EAO sought consensus with participating Indigenous nations at each phase of the assessment and offered the opportunity to submit notifications of consent or lack of consent at the conclusion of the environmental assessment.

Provisions under Chapter 10 of the Nisga'a Treaty specify the requirements for consultation with the Nisga'a Nation in relation to an environmental assessment of a project. Canada's representatives worked collaboratively with the NLG and the Government of B.C. as part of a tripartite government approach to ensure that the Nisga'a Nation: 1) received timely notice and relevant available information on Ksi Lisims LNG and the potential adverse environmental effects; 2) were consulted regarding potential impacts of Ksi Lisims LNG on Nisga'a Nation's treaty rights and other interests; and, 3) had opportunities to participate, and provide feedback on how the Nisga'a Treaty applies to different phases of the substituted assessment process.

Substantively during consultation, the EAO and IAAC considered Indigenous Interests and sought to understand and respond to the concerns and issues of Indigenous groups that could represent potential adverse impacts on Indigenous groups and their Interests. Potential adverse impacts of Ksi Lisims LNG on Indigenous Interests, and the associated provincial conditions and federal Key Mitigation Measures to address these impacts demonstrates Crown responsiveness to issues raised during consultation with Indigenous groups. [Appendix 5](#) provides the detailed First Nation assessments and the assessment required under Paragraph 8 of the Nisga'a Treaty.

The EAO’s assessment of the impacts of Ksi Lisims LNG on Indigenous communities and their rights have been considered for each Indigenous group, including how aspects of Ksi Lisims LNG may interact with the exercise of the different rights exercised within the project area. Information made available through this process, including by Indigenous groups, the Proponents and other participants, will help to inform decisions on Ksi Lisims LNG, and any accompanying rationale for these decisions.