



Highland Solar and Energy Storage Project **Initial Project Description**

Highland BC Solar Project Limited Partnership



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Executive Summary

The purpose of this Initial Project Description (IPD) is to provide general information on the proposed Highland Solar and Energy Storage Project (“the Project”) to the British Columbia Environmental Assessment Office (BC EAO) and interested parties to determine the requirements for review of the Project under the BC *Environmental Assessment Act* (BC EAA). The IPD was prepared using the guidance provided in the BC EAO’s Early Engagement Policy document (BC EAO, 2019). In addition, the IPD and the Early Engagement Plan (Appendix 3) are used to initiate the Early Engagement Phase of the BC environmental assessment (EA) process. The documents will be available for review by Indigenous nations and other Communities of Interest to facilitate engagement and feedback received will be used to support the development of a Detailed Project Description (DPD). The DPD will form the Environmental Assessment Readiness Decision.

Project Description

Highland BC Solar Project Limited Partnership (“Highland Solar”) proposes to develop the Project for the purposes of producing clean renewable solar energy in the Thompson Okanagan region of the Southern Interior of British Columbia (BC). Highland Solar is a subsidiary of Canadian Solar Solutions Inc. Highland Solar has an Agreement-in-Principle with Lower Nicola Indian Band whose designate representative will form part of the Highland Solar Project team. This is a new project and Highland Solar proposes to construct, operate, and maintain the Project. The Project is anticipated to include approximately 150 megawatts of alternating current (ac) (MWac) power generation capacity and would include installation of solar photo-voltaic (PV) modules, battery storage system, overhead transmission lines to connect the solar array to an existing BC Hydro transmission line, and access roads. The current proposed layout area is approximately 395 hectares (ha).

The Project life will include three main phases: construction (anticipated to last approximately one year), operation and maintenance (estimated to have an operational life of 40 years), and decommissioning (anticipated to last approximately one year).

Project Location

Highland Solar respectfully acknowledges the proposed Project is located within the traditional territory of the Nlaka’pamux and Secwépemc nation peoples. The Project area is located on Crown land in the Southern Interior of BC in a fairly remote region of the Thompson-Nicola Regional District (TNRD) (Figure 1 of the IPD). The Project area is in Electoral Area I, “Blue Sky Country” of the TNRD. The closest communities are Logan Lake (2021 population 2,255), located approximately 35 km southeast driving distance from the Project, Ashcroft (2021 population 1,670) located approximately 15 km northwest driving distance of the Project area, and Spences Bridge, BC (2016 population 99) located approximately 85 km south driving distance of the Project area.

The Project area can be accessed from the south via Goldstream forest service road (FSR) off Highway 97C. The area has been previously logged and several active and deactivated FSRs exist within the Project area. To the extent practicable, existing access roads will be used and upgraded if necessary to enable their use for construction and potentially during typical maintenance and operation activities. Some of these FSRs may be upgraded and used during construction, operations and maintenance, and decommissioning of the Project. Public access to the FSRs in the area will not be hindered by operations of the Project.

Regulatory Framework and Purpose

It is anticipated the Project will be subject to review under the BC *Environmental Assessment Act* (BC EAA). In accordance with Part 4(12) and Table 7 of the *Reviewable Projects Regulation* (BC Reg. 67/2020), proposed electricity projects are reviewable under the BC EAA if it is a new power plant with a total nameplate capacity of greater than 50 MW, which is the requirement for a reviewable project as per the BC EAA *Reviewable Projects Regulation*. The purpose of the Project includes:

- Generation of a low-cost and greenhouse gas (GHG)-free, reliable, clean and renewable power source to help increase energy security within the Southern Interior region of BC;
- Help BC meet its climate goals and commitments including GHG reduction goals; and
- Advance the BC government's reconciliation objectives with Indigenous nations by creating economic and employment opportunities for regional Indigenous nations and rural communities.

The Project rationale is compliant with the BC *Clean Energy Act*, which among other things, specifies that the Province is to achieve electricity self-sufficiency with the goal of generating at least 93% of the electricity in BC from clean or renewable resources and build the infrastructure necessary to transmit that electricity. The BC *Clean Energy Act* further states that power development should encourage economic development and the creation and retention of jobs and foster the development of Indigenous nations and rural communities through the use and development of clean or renewable resources. CleanBC is the BC government's plan to lower climate-changing emissions by 40% by 2030. CleanBC includes a wide range of actions to reduce emissions, build a cleaner economy, and prepare for impacts of climate change. Being a clean energy project, the Project will be in alignment with several of the initiatives included in the CleanBC plan.

The summer peaking energy profile of the proposed Project will help the BC system cope with summer drought conditions. Recent BC extreme drought is creating water flow constraints for many small and large hydroelectric generation plants. In addition, the summer seasonal peaking profile of solar generation is complementary to the winter seasonal peaking profiles of hydro and wind power, enhancing the energy security of BC. A battery energy storage system (BESS) can extend power deliveries into dark hours to help serve evening peak loads or for emergency use. When AC is connected, the BESS

can charge from the BC grid during next day high load hours, including the extreme winter loads experienced by BC Hydro.

Project Components

The current proposed boundaries of the Project area are shown on Figure 2 of the IPD. The total Project area within the boundaries is approximately 395 ha (area of disturbance). Design and siting of Project components are in the initial design stages and will be further refined as the Project is developed. Further, Highland Solar will gather and incorporate feedback received on information provided in the IPD, including information on Project components and layout. While components are subject to change through the Project design and engagement process, it is currently expected that the system may utilize some or all the following on-site and off-site components and activities in the Project area:

- The installation of a system of solar PV modules. Each module has the potential of generating approximately 620 Watt Peak (Wp) with a total Project rated ac capacity of up to 150 MWac. The PV modules are mounted above ground on a steel single-axis tracking system array and supported by steel piles, or similar alternative, driven into the ground. The automatic tracking system slowly tilts the module array from east to west to follow to the daily solar path and achieve maximum solar exposure on module faces.
- Electrical collection conductor lines connect the modules in series. Each array in turn is connected to one of the inverter transformers which are rated at 4.2 MWac.
- The inverters convert direct current (DC) power to AC current and flow the power optionally to either or both the Project battery energy storage system (BESS) and the Project power conversion station and substation. The Project battery storage system may be optionally charged and discharged in either DC or AC power, depending on final design and configuration. Excess power generated by the Project module arrays in DC current during peak daily hours is clipped by the inverters and sent to the energy storage battery, improving the real time energy profile constantly feeding the BC system while storing excess energy for later discharge to serve peak evening or nighttime load hours.
- The Project power conversion station and substation (co-located in an area approximately 100 m x 100 m) convert power from 34.5 kV to 138 kV and connects the project to the exiting BC transmission system by overhead feeder conductors tapped into 138 kV transmission lines located on the Project site.
- The AC connected BESS that can be charged by both the solar project during daylight hours, and by the BC transmission grid during low load overnight hours. The BESS will discharge into the grid to serve evening peak electricity loads year round, or for emergency purposes, a feature known in the energy sector as “time shifting.”

Additional Project components and infrastructure could include the following:

- Overhead and underground electrical cables and fibre optic cables (length unknown at this time);
- Existing access roads will be used to maximum extent practicable and upgraded as needed. Upgrades to existing access roads, onsite connector roads and water crossings, and the development of new access roads, onsite connector roads, and water crossings to Project-related components;
- Office laydown and parking area;
- Project fencing for safety and security;
- Permanent solar meteorological sensors;
- High or Medium voltage transmission line(s) to connect the Project to the BC Hydro 138kV transmission corridor which is located directly south of the Project area (point of interconnect to be confirmed [POI] but is expected to be within the Project area);
- Offsite operations centre;
- Potential fireguard around the layout area; and
- Temporary construction laydown areas, temporary buildings, and associated facilities.

There are no other dependent projects that are needed for the proposed Project to proceed. The Project is a single and complete project with a single construction phase and no other dependent projects. Layout of Project components are considered preliminary at this stage. Configuration could change based on results of engagement and feedback obtained during the Early Engagement Phase and results of further studies during the EA phase.

Existing Environment

Previous and current use of the Project area includes forestry activity with cutblocks and active and deactivated forestry management access roads. Cutblocks have been replanted in some areas and plantation trees, mainly Lodgepole Pine, are at various stages of growth. Other uses within the vicinity of the Project area include cattle grazing, recreational use for off-road vehicle use, hiking, and hunting. There are several fishing lakes in the general area and outside of the Project area. Project area administrative and physiographic settings are provided in Table 1. Additional information about the biophysical and socio-economic conditions of the Project are provided in Section 6.0 and 7.0 of the IPD.

Table 1. Project Area administrative and physiographic setting

Classification	Description
Administrative Boundary	
Natural Resource Region	Thompson-Okanagan
Natural Resource District	Thompson Rivers
MOE Region	Thompson
Major Watershed	Thompson River

Classification	Description
Administrative Boundary	
Watershed Group	Thompson River
Regional District	Thompson Nicola Regional District
Health Authority	Interior Health Authority
Health Service Delivery Area	Thompson Cariboo Shuswap
Local Health Area	South Cariboo
Nearest Municipality	Kamloops (75 km northeast)
Nearest Town	Village of Ashcroft (15 km north) District of Logan Lake (35 km southeast)
UTM	10 U 627059E 5605709N (approx. centre)
Ecosystem Classification	
Ecodomain	Dry
Ecodivision	Semi-arid Steppe Highlands
Ecoprovince	Southern Interior
Ecoregion	Thompson-Okanagan Plateau
Ecosection	Guichon Uplands (2/3 of Project area – eastern extent) Thompson Basin (1/3 Project area – western extent)
Biogeoclimatic Zone	Montane Spruce
Subzone	Very Dry Cool
Variant	Thompson
(Code)	(MSxk2)
	Interior Douglas-fir
	Dry Cool
	Thompson
	(IDFdk1)
Elevation Range (m)	782 - 1634

The Project area overlaps two biogeoclimatic (BEC) zones. A portion of the Project area occurs in the Interior Douglas Fir, within the Dry Cool subzones and Thompson variant (IDFdk1) (DataBC, 2022). The IDF zone is characterized by warm, dry summers, cool winters, and a fairly long growing season. Open to closed, mature forests containing Douglas-fir (*Pseudotsuga menziesii*) covers much of the IDF overstory. Lodgepole Pine (*Pinus contorta*) is a common pioneer species following fire or disturbance at upper elevations. Trembling Aspen (*Populus tremuloides*) is a distributed seral species throughout the zone. The shrub layer generally contains Birch-leaved Spirea (*Spiraea betulifolia*) and Soopolallie (*Shepherdia canadensis*). The herb layer contains Pinegrass (*Calamagrostis rubescens*), Twinflower (*Linnaea borealis*), Heart-leaved Arnica (*Arnica cordifolia*), Kinnikinick (*Arctostaphylos uva-ursi*), and Showy Aster (*Aster conspicuous*), are common understory shrubs (Meidinger, et. al. 1991). A portion of the Project area occurs in the Montane Spruce Very Dry Cool Thompson variant (MSxk2) (DataBC, 2022). The MS zone is characterized by cool, cold winters, and short dry summers. Vegetation includes Subalpine Fir (*Abies lasiocarpa*), Grouseberry (*Vaccinium scoparium*), Black Huckleberry (*Gaylussacia baccata*), and Utah Honeysuckle (*Lonicera utahensis*). Lodgepole Pine are common species that replace forests following fires (Meidinger, et. al., 1991).

The mapped watercourses in the vicinity of the Project area consist of a network of drainages and named creeks, many likely ephemeral, which collect runoff from the surrounding terrain. Coldstream Creek is a tributary to the Thompson River. The mapped watercourses in the vicinity of the Project area have been altered or redirected into culverts at road crossings. Except for Coldstream Creek, the other mapped watercourses cross Highway 97C via culverts and drain into the settling pond associated with the Highland Valley Copper Mine south of the Project area.

Indigenous Interests

Highland Solar respectfully acknowledges the Project area is within the traditional territory of the Nlaka'pamux nation and Secwépemc nation peoples. The Project area is located within the Thompson Okanagan region of the Southern Interior BC, within proximity to potentially interested Indigenous nations. Indigenous nations who have been contacted about the Project during the pre-early engagement phase are discussed in Section 5.0 of the IPD.

Highland Solar is committed to meaningful engagement with Indigenous nations throughout the EA process and the life of the Project. Highland Solar has identified Indigenous nations who have a potential interest in the Project area or are potentially impacted by Project activities. Highland Solar has begun reaching out to identified Indigenous nations and is committed to building relationships to understand Indigenous interests in the Project area. Initial Project considerations and Indigenous interests that have been brought forward to Highland Solar to date include: cumulative impacts, potential impacts to wildlife and wildlife habitat, potential impacts to water and air quality, access to the area for traditional land and resource use, and potential impacts to archeological resources. The proposed approach to engagement and a summary of communications and engagement with Indigenous nations to date is described in Section 5.0 of the IPD and Appendix 3: Early Engagement Plan. Should other Indigenous nations express an Indigenous interest in the early engagement phase and are identified by BC EAO or self identification, Highland Solar will tailor future engagement to include them.

Potential Project Effects to the Biophysical and Socio-Economic Environment

An overview of potential Project effects to the biophysical and socio-economic environment, based on current design of the Project, are presented in Section 8.0 of the IPD. Solar projects and solar PV technologies and power plants do not produce air emissions or GHG emissions while in operation. Solar projects offer an alternative to generation of power from other energy sources, including fossil fuels, and reduce emissions of carbon dioxide and other GHGs. There are potential environmental and socio-economic effects which could potentially occur from the construction, operations and maintenance, and decommissioning of the Project. The Project is in the initial design stage and the potential effects of the Project will be further assessed as part of the EA Application process. Potential Project effects and potential mitigation measures are

provided in Table 11 of the IPD. The EA will also address specific mitigation measures and plans to avoid, minimize, and mitigate potential effects.

Closing

Through sharing this IPD with BC EAO and Communities of Interest, including Indigenous nations, Highland Solar is providing an early design-stage overview of the Project. The IPD has been prepared to determine the requirements for review of the Project under the BC EAA and to initiate the Early Engagement Phase of the EA process. The IPD was prepared using the guidance provided in the BC EAO's Early Engagement Policy document (BC EAO, 2019). The IPD has been prepared early in the design process prior to finalization of all Project components and layout to allow for feedback received during the Early Engagement Phase to be considered. In addition, the IPD and the Early Engagement Plan (Appendix 3) are used to initiate the Early Engagement Phase of the BC EA process. The documents will be available for review by Indigenous nations and Communities of Interest to facilitate engagement. At the conclusion of the Early Engagement Phase, BC EAO will provide Highland Solar with a Summary of Engagement which will be used to support the development of a DPD. The DPD will present a more detailed and refined Project design based on progression of design and considerations of input received during the Early Engagement Phase.

List of Abbreviations and Units

Abbreviation	Definition
AC	alternating current
AIA	Archeological Impact Assessment
AOA	Archeological Overview Assessment
BC	British Columbia
BC CDC	British Columbia Conservation Data Centre
BC EAA	British Columbia <i>Environmental Assessment Act</i>
BC EAO	British Columbia Environmental Assessment Office
BC EMLCI	British Columbia Ministry of Energy, Mines and Low Carbon Innovation
BC MFLNRORD	British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development
BC MOE	British Columbia Ministry of Environment and Climate Change Strategy
BC MOF	British Columbia Ministry of Forests
BC MOTI	British Columbia Ministry of Transportation and Infrastructure
BC WLRS	British Columbia Ministry of Water, Land and Resource Stewardship
BEC	Biogeoclimatic
BESS	battery energy storage system
BMP	best management practice
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DC	direct current
DFO	Fisheries and Oceans Canada
DPD	Detailed Project Description
EA	Environmental Assessment
EMA	<i>Environmental Management Act</i>
EPP	Environmental Protection Plan
FRPA	<i>Forest and Range Practices Act</i>
FSR	Forest Service Road
GHG	greenhouse gas
GHI	global horizontal irradiance
ha	hectare
Highland Solar	Highland BC Solar Project Limited Partnership
IDF	Interior Douglas Fir
IPD	Initial project description
kv	kilovolt
LEH	limited entry hunting
MS	Montane Spruce
MW	Megawatt
MWac	megawatts of AC power
MWp	megawatts-peak
MWh	megawatt-hours
NDT	Natural Disturbance Type
PFR	Preliminary Field Reconnaissance

Abbreviation	Definition
POI	point of interconnection
Project	Highland Solar and Energy Storage Project
PV	photo-voltaic
RAAD	Remote Access to Archaeological Data
RISC	Resources Inventory Standards Committee
ROW	right of way
SARA	<i>Species at Risk Act</i>
TNRD	Thompson-Nicola Regional District
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UWR	Ungulate Winter Range
VC	Valued Component
Wp	watts peak
WSA	<i>Water Sustainability Act</i>
WSC	Watershed Code

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1.0 Introduction and Purpose

1.1 Introduction

Highland BC Solar Project Limited Partnership ("Highland Solar") proposes to develop the Highland Solar and Energy Storage Project (the "Project") for the purposes of producing clean renewable solar energy in the Thompson Okanagan region of the Southern Interior of British Columbia (BC). Highland Solar proposes to construct, operate, and maintain the Project. The Project is anticipated to include approximately 150 megawatts of alternating current (AC) (MWac) power generation capacity and would include installation of solar photo-voltaic (PV) modules, battery storage system, overhead transmission lines to connect the solar array to an existing BC Hydro transmission line, and access roads. The current proposed layout area is approximately 395 hectares (ha).

1.2 Purpose

The purpose of this Initial Project Description (IPD) is to provide general information on the proposed Project to the British Columbia Environmental Assessment Office (BC EAO) and Communities of Interest, including Indigenous nations, to understand the Project and provide feedback to Highland Solar. It has also been prepared to determine the requirements for review of the Project under the BC *Environmental Assessment Act* (BC EAA) and to initiate the Environmental Assessment (EA) process. The IPD was prepared using the guidance provided in the BC EAO's Early Engagement Policy document (BC EAO, 2019). The IPD has been prepared early in the design process prior to finalization of all Project components and layout to allow for feedback. In addition, the IPD and the Early Engagement Plan (Appendix 2) are used to initiate the Early Engagement Phase of the BC EA process. The documents will be available for review by Indigenous nations and other Communities of Interest including organizations, government officials and regulatory agencies, interest groups, tenure holders, and the general public to facilitate engagement. Feedback received during the Early Engagement Phase will be used to support the development of a Detailed Project Description (DPD) to inform the Environmental Assessment Readiness Decision.

2.0 Project Contact Information

2.1 Key Project Contacts

Highland BC Solar Project Limited Partnership ("Highland Solar") proposes to develop, construct, and operate the Highland Solar and Energy Storage Project (the "Project") for the purposes of producing clean renewable solar energy in the Thompson Okanagan region of the Southern Interior BC. Highland Solar is a subsidiary of Canadian Solar Solutions Inc. Highland Solar has an Agreement-in-Principle with Lower Nicola Indian Band, whose designate representative will form part of the Highland Solar Project team.

Highland BC Solar Project Limited Partnership contact information:

Highland BC Solar Project Limited Partnership

545 Speedvale Avenue West
Guelph, Ontario
N1K 1E6
URL: www.highland-solar.com

Attention: Mr. David Marieno – Manager, Development Canada
Email: highlandsolar@canadiansolar.com

Attention: Mr. Ryan MacWilliams – Manager, Permitting
Email: highlandsolar@canadiansolar.com

2.2 Environmental Consultant Information

Highland Solar retained Triton Environmental Consultants Ltd. (Triton) to prepare the IPD for the Project as well as to support the engagement process for the Project.

Triton contact information:

Triton Environmental Consultants Ltd.
#1- 4600 29th Street
Vernon, BC
V1T 5B9
URL: www.triton-env.com

Attention: Ms. Kellen Smith – Project Manager
Email: highland.engagement@triton-env.com

3.0 General Project Information

3.1 Project Sector and Type

The Project sector is clean power generation using solar PV modules. PV panels convert light to electrical energy via the photovoltaic effect.

3.2 Project Location

Highland Solar respectfully acknowledges the proposed Project is located within the traditional territory of the Nlaka'pamux and Secwépemc nation peoples. The Project area is located on Crown land in the Thompson Okanagan region of the Southern Interior of BC approximately 35 km northwest of Logan Lake and 15 km south of Ashcroft, BC. The Project area is in Electoral Area I, "Blue Sky Country" of the Thompson-Nicola Regional District (TNRD) (Figure 1). More specifically, the "Project area" is within the boundaries of a BC Crown land Solar Investigative Licence (Licence No: 348654, File No: 3413137) which provided Highland Solar the opportunity to undertake necessary studies to determine the engineering, technical, economic, and environmental viability of the Project. The land area within the boundaries of the BC Crown land Investigative licence tenure includes 3,649.10 ha. The current proposed layout and development area currently being studied by Highland Solar (or "Project area" as depicted on Figure 1) consists of approximately 395 ha, which represents approximately 10% of the tenure area.

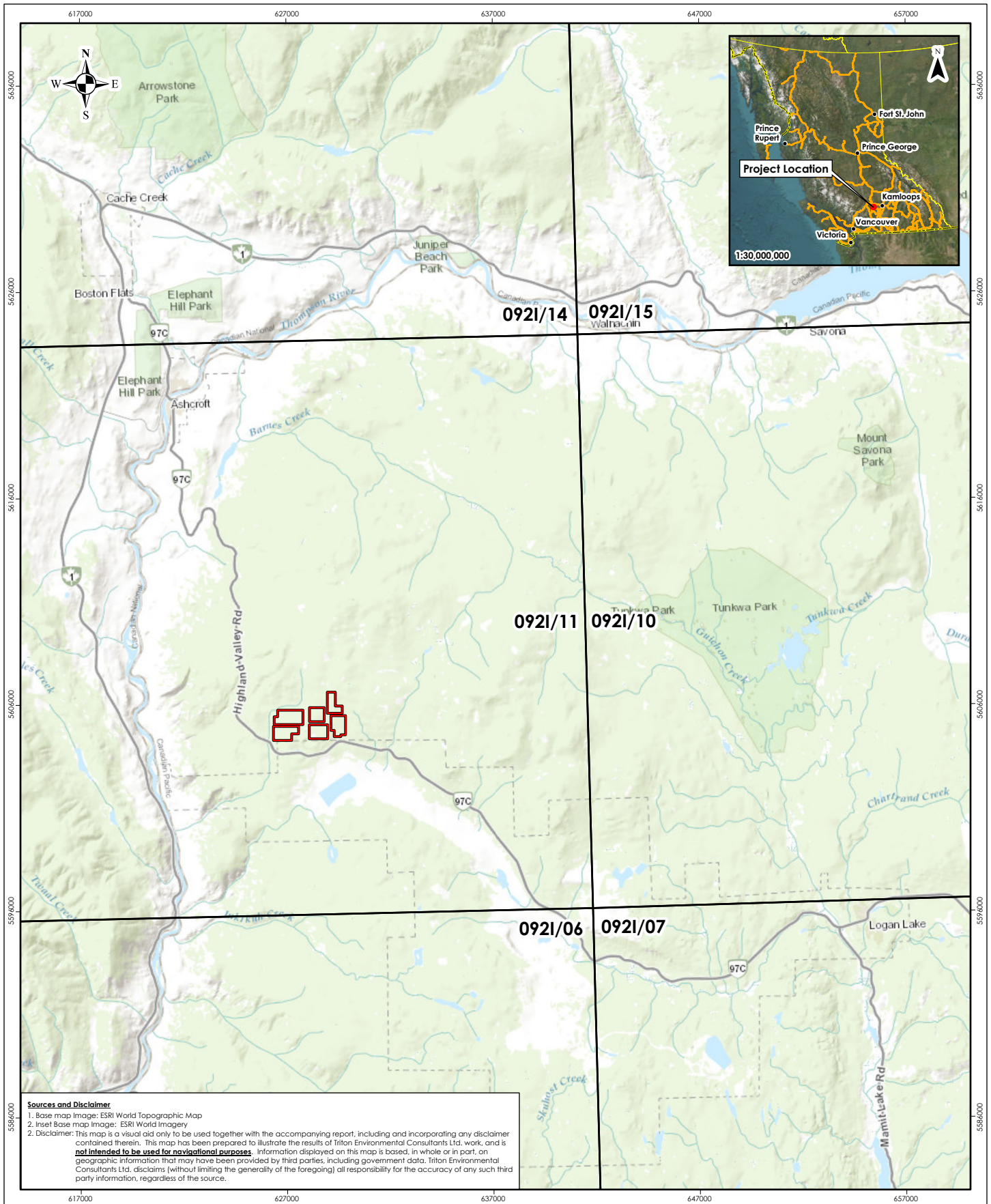
3.2.1 Access

The Project area can be accessed from the south via Goldstream forest service road (FSR) off Highway 97C. The area has been previously logged and several active and deactivated FSRs exist within the Project area. To the extent practicable, existing access roads will be used and upgraded if necessary to enable their use for construction and potentially during typical maintenance and operation activities. Some of these FSRs may be upgraded and used during construction, operations and maintenance, and decommissioning of the Project. Access to these FSRs by the general public will not be hindered by operations of the Project.

3.3 Project Purpose and Rationale

The purpose of the Project includes:

- Generation of a low-cost and greenhouse gas (GHG)-free, reliable, clean and renewable power source to help increase energy security within the Southern Interior region of BC;
- Help BC meet its climate goals and commitments including GHG reduction goals; and
- Advance the BC government's reconciliation objectives with BC Indigenous nations by creating economic and employment opportunities for regional Indigenous nations and rural communities.



Sources and Disclaimer

1. Base map Image: ESRI World Topographic Map
2. Inset Base map Image: ESRI World Imagery

3. Disclaimer: This map is a visual aid only to be used together with the accompanying report, including and incorporating any disclaimer contained therein. This map has been prepared to illustrate the results of Triton Environmental Consultants Ltd. work, and is **not intended to be used for navigational purposes**. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

Highland Solar and Energy Storage Project

Figure 1
Project Location

Legend

Project Location

GIS Technician:	GF
Project No.:	11025
Date:	Feb 03, 2023
Scale:	1:250,000
Map Projection:	UTM Zone 10 (NAD 1983)
Kilometers	



The Project rationale is compliant with the BC *Clean Energy Act*, which among other things, specifies that the Province is to achieve electricity self-sufficiency with the goal of generating at least 93% of the electricity in BC from clean or renewable resources and build the infrastructure necessary to transmit that electricity. The BC *Clean Energy Act* further states that power development should encourage economic development and the creation and retention of jobs and foster the development of Indigenous nations and rural communities through the use and development of clean or renewable resources.

3.4 Potential Project Benefits

Potential Project benefits include, but are not limited to, the following:

- Solar uniquely provides diversity of supply to the BC system in the event of drought conditions;
- The Project will increase seasonal energy security and reliability in the Thompson Okanagan region of the Southern Interior of BC;
- The Project will assist BC's plans to increase electrification and meet climate commitments including generating at least 93% of electricity from clean or renewable sources and creating jobs to foster development of Indigenous nations and rural communities through the use and development of clean energy;
- The Project represents a significant investment in new BC clean energy infrastructure for the benefit of all British Columbians;
- The Project and its battery energy storage system (BESS) will allow electricity to be made available every day of the year, in contrast to generation projects powered by intermittent resources such as wind and hydroelectric power generation;
- The Project and its BESS will supply dependable clean electricity to the BC system in both daylight and dark hours to serve electricity demand for residential and industrial users in the region, including mining and the compression of pipeline fuels;
- The Project and its BESS will extend the Project electricity delivery hours and provide power for use during dark hours or for emergency purposes;
- Solar power is summer peaking and would provide the BC system complementary generation to that provided by winter peaking wind power projects and spring peaking hydro power projects;
- Solar uniquely provides diversity of source of supply to the BC system in the event of drought conditions which may impact hydro power generation, which currently produces 85% of BC's electricity;
- The Project will improve regional energy security by mitigating potential disruptions on BC's long transmission lines from wildfires, floods, landslides, and other natural disasters;
- The Project will create construction and local long-term career opportunities in clean energy and will contribute to the regional and provincial tax base; and

- The Project will have a low visual profile and no discernable sound emissions outside of Project boundaries.

The summer peaking energy profile of the proposed Project will help the BC system cope with summer drought conditions. Recent BC extreme drought is creating water flow constraints for many small and large hydroelectric generation plants. In addition, the summer seasonal peaking profile of solar generation is complementary to the winter seasonal peaking profiles of hydro and wind power, enhancing the energy security of BC. A BESS can extend power deliveries into dark hours to help serve evening peak loads or for emergency use. When AC is connected, the BESS can charge from the BC grid during next day high load hours, including the extreme winter loads experienced by BC Hydro.

Further, the Project could provide opportunities to Indigenous nations, during each of the Project phases, and those opportunities will be greater defined through the engagement process. Opportunities could include potential employment during construction, operations and maintenance, and the decommissioning and reclamation phases. The Project may provide a setting for research opportunities in clean technology and energy storage technologies to Southern Interior technical and educational institutions. Economically, the Project will provide employment, contractor supply services, and stimulation of local businesses. It will also provide government revenues in the form of regional district, provincial, and federal taxes and other benefits.

3.5 Project Status

3.5.1 Project History

This is a new project and there are no previous proposals for the Project. The Project was first identified by BC corporation and solar power developer Sunfield Energy Inc. (Sunfield) in 2016 as a potential BC utility-scale solar development site and an application was submitted to FrontCounterBC for a solar Investigative Licence to undertake feasibility studies in the area. After a period of consultation and review for land use conflicts, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD), notified Sunfield the application was accepted for processing, and posted development plans and maps for public comment and referral notices for comment to impacted Indigenous nations, Regional Districts, and other Communities of Interest.

At the end of the public comment period and referral processes, MFLNRORD approved an Investigative Licence on March 27, 2018. In making the offer, MFLNRORD noted the proposal was consistent with government policy. It also noted no significant impacts on the environment had been identified by mandated agencies, that consultation was carried out in good faith, and the Crown's process to seek understanding of the potential issues and impacts was reasonable. Finally, that the potential for adverse effects on Aboriginal Interests had been avoided, minimized or otherwise accommodated. Sunfield installed solar monitoring instruments (pyranometers) and began feasibility studies compliant with the Project's approved Investigative Plan and within the boundaries of the BC Crown land Investigative licence tenure to confirm the commercial viability of

solar energy yields from the proposed development area. In June of 2021 the Investigative Licence tenure with the consent of MFLNRORD was assigned to and assumed by the Highland BC Solar Project Limited Partnership.

3.5.2 Existing Permits or Tenures in Place

Investigative Licence No: 348654, BC File No: 3413137. The Investigative Licence tenure area includes all unsurveyed Crown land in the vicinity of Spatsum Creek, Kamloops Division Yale District. The total land area within the Licence tenure boundaries approximately 3,649 ha. The current proposed Project area (area that will be disturbed from the proposed layout of the infrastructure) will be less than the tenure area. The current proposed Project area is expected to be approximately 395 ha, or 10% of the overall tenure area. An accurate calculation of the total footprint will be finalized during the design phases and based on results of the engagement and EA processes.

3.6 **Project Components and Related/Dependent Projects**

The current proposed boundaries of the Project area are shown on Figure 2. The layout areas will be enclosed by fence lines which are represented by the boundaries of the Project area depicted on Figure 2. The total Project area within the boundaries is approximately 395 ha (area of disturbance). Design and siting of Project components are in the initial design stages and will be further refined as the Project is developed. Further, Highland Solar will gather and incorporate feedback received on the information, including Project components and layout, provided in the IPD. While components are subject to change through the Project design and engagement process, it is currently expected that the system may utilize some or all the following on-site and off-site components and activities in the Project area:

- The installation of a system of solar PV modules. Each module has the potential of generating approximately 620 Watt Peak (Wp) with a total Project rated AC capacity of up to 150 MWac. The PV modules are mounted above ground on a steel single-axis tracking system array and supported by steel piles, or similar alternative, driven into the ground. The automatic tracking system slowly tilts the module array from east to west to follow to the daily solar path and achieve maximum solar exposure on module faces.
- Electrical collection conductor lines connect the modules in series. Each array in turn is connected to one of the inverter transformers which are rated at 4.2 MWac.
- The inverters convert direct current (DC) power to AC and flow the power optionally to either or both the Project BESS and the Project power conversion station and substation. The Project BESS may be optionally charged and discharged in either DC or AC power, depending on final design and configuration. Excess power generated by the Project module arrays in DC current during peak daily hours is clipped by the inverters and sent to the energy storage battery, improving the real time energy profile constantly feeding the BC system while storing excess energy for later discharge to serve peak evening or nighttime load hours.



Typical installation of solar PV modules



Typical BESS and solar array

- The Project power conversion station and substation (co-located in an area approximately 100 m x 100 m) convert power from 34.5 kV to 138 kV and connects the project to the existing BC transmission system by overhead feeder conductors tapped into 138 kV transmission lines located on the Project site.
- The AC connected BESS that can be charged by both the solar project during daylight hours, and by the BC transmission grid during low load overnight hours. The BESS discharges into the grid to serve evening peak electricity loads year round, or for emergency purposes, a feature known in the energy sector as “time shifting”.

Additional Project components and infrastructure could include the following:

- Overhead and underground electrical cables and fibre optic cables (length unknown at this time);
- Existing access roads will be used to maximum extent practicable and upgraded as needed. Upgrades to existing access roads, onsite connector roads and water

crossings, and the development of new access roads, onsite connector roads, and water crossings to Project-related components;

- Office laydown and parking area;
- Project fencing for safety and security;
- Permanent solar meteorological sensors;
- High or Medium voltage transmission line(s) to connect the Project to the BC Hydro 138kV transmission corridor which is located directly south of the Project area (point of interconnect [POI] to be confirmed but expected to be within the Project area);
- Offsite operations centre;
- Potential fireguard around the layout area; and
- Temporary construction laydown areas, temporary buildings, and associated facilities.

There are no other dependent projects that are needed for the proposed Project to proceed. The Project is a single and complete project with a single construction phase and no other dependent projects. Layout of Project components are considered preliminary at this stage. Configuration could change based on results of engagement and feedback obtained during the Early Engagement Phase and results of further studies during the EA phase.

3.7 Project Alternatives

3.7.1 Site Selection

Highland Solar considered multiple potential sites for development of a solar field in the Southern Interior region of BC. The Project area, among other criteria, was selected as a potential utility scale solar site in 2016 based on existing land use and characteristics and to minimize impacts to the environment. The selection criteria used to select the Project area as a potential solar site included:

- The location within BC's highest solar irradiance zone within the Southern Interior region;
- The relatively flat topography of the Project area within complex and elevated terrains;
- The general lack of material shading from terrains to the east, west, and south;
- The accessibility to the site and proximity to transmission infrastructure;
- The current use of the area as Crown land and previous disturbance from activities in the area (e.g., cutblocks, FSRs, etc.);
- The proximity of the Project to growing electric loads; and

- Confirmation of commercial global horizontal irradiance (GHI) values by long term satellite observation showing the site to have similar GHI values to Alberta solar projects proposed or under construction.

The Project is in the design stage and design or siting constraints of Project components are not entirely understood at this time. Additional alternative analysis for siting of infrastructure within the overall Project area will be conducted during the engagement process for inclusion with the DPD and further during the EA process. Highland Solar will seek to further understand existing conditions of the Project area including the biophysical, socio-economic, and human environment and culturally sensitive areas to evaluate and determine the best available technological and engineering alternatives to employ during all phases of the Project. Highland Solar will evaluate available technological means and best management practices (BMPs) during design and siting of Project infrastructure to avoid, minimize, and mitigate for unavoidable Project impacts. A full alternative analysis will be conducted during the EA phase to evaluate potential effects, risks, and uncertainties of those alternatives.

3.7.2 No-Build Alternative

The no-build alternative assumes the Project will not be built. This alternative serves as a baseline for comparison with the other Project alternatives. It is assumed the Project area would remain in similar condition to the current state. The no-build alternative does not eliminate the potential for use of the area by others.

3.8 Project Phases and Activities

The Project includes three main phases: construction, operation, and decommissioning.

3.8.1 Construction

Construction of the Project is proposed to begin in winter of 2025 and last for approximately one year, ending with Project commissioning in 2026 following construction. Construction will not begin until all permits and approvals have been received. The only known seasonal timing constraints on construction of the Project are those related to potential pre-construction BMPs (e.g., avoiding clearing vegetation during nesting season or adhering to timing windows if instream works are required) and any pauses in construction due to inclement weather. During the construction phase, the Project is expected to provide up to 200 construction jobs. Construction activities would consist of the following:

- Vegetation clearing and site preparation;
- Access road upgrading and construction if required;
- Lay down area and storage activities;
- Construction of foundation and pile driving structure supports;
- Trenching and placement of underground collector cables;
- Construction of overhead transmission line;

- Construction of substation and operations centre; and
- Project commissioning including acceptance and performance testing.

3.8.2 Operations and Maintenance

The operations and maintenance phase of the Project will include the operation of the solar modules and BESS(s) for the transfer and storage of energy and maintenance of infrastructure. The Project is expected to operate for 40 years. Long term operations and maintenance of the Project are anticipated to support approximately six full time technicians.

3.8.3 Decommissioning

The Project is expected to operate for 40 years and complete decommissioning and reclamation over a one-year period commencing in 2066. A reclamation plan would be developed prior to Project decommissioning. Decommissioning and reclamation could potentially include decommissioning of the facility and infrastructure, decommissioning and reclamation of roads, removal of watercourse crossing structures, restoration of riparian areas, and re-vegetation of affected areas with appropriate vegetation species.

3.9 Water Use

Water requirements will vary during the construction, operations and maintenance, and decommissioning phases of the Project. During construction water will be used for dust suppression as necessary on dirt FSRs, stockpiles, and disturbed or exposed work areas, and the irrigation of establishing vegetation, as necessary. Water will be used during operation and maintenance activities to support cleaning activities as well as onsite plumbing and septic, as necessary. The source of water has not been determined at this time. Water could potentially be trucked in and stored onsite in tanks, groundwater wells could be drilled to access water, or water could be drawn from a source in the Project area. Any necessary permits for water use would be acquired prior to use.

4.0 Legislative and Regulatory Context

This section of the IPD includes a discussion of thresholds for an EA under the BC EAA, relevant provincial and federal acts and regulations, permits and approvals that might be required for the Project, and how the Project aligns with other applicable government policies and strategies.

4.1 Regulatory Context

4.1.1 BC Environmental Assessment Act

According to Part 4(12) and Table 7 of the *Reviewable Projects Regulation* (BC Reg. 67/2020), proposed electricity projects are reviewable under the BC EAA if:

- It is a new power plant with a total nameplate capacity of greater than 50 MW, which is the requirement for a reviewable project as per the BC EAA Reviewable Projects Regulation

It is anticipated Highland Solar will be required to prepare an Application for an EA Certificate (Application) for submission to the BC EAO. Communities of Interest including Indigenous nations; local, provincial, and federal regulatory agencies; local governments, and public stakeholders including tenure holders. The Application will include a detailed description of baseline conditions and Valued Components (VCs) in the Project area, an assessment of likely adverse environmental effects, identification of applicable mitigation and compensation measures, and a description of regulatory agency, Indigenous nations and stakeholder engagement programs and their outcomes.

4.1.2 Canada Impact Assessment Act

The federal *Impact Assessment Act* (SC2019, c.28, s.1) outlines a process for assessing potential impacts on major projects and projects carried out on lands within federal jurisdiction, lands outside of Canada, or on types of activities considered designated projects. It is anticipated the Project will not require review under the federal *Impact Assessment Act* for the following reasons:

- The Project is proposed on BC Crown land and is not on lands within federal jurisdiction or lands outside of Canada.
- Solar facilities do not meet the definition of a “designated project” in Section 2 of the *Impact Assessment Act* as they are not listed as a “designated physical activity” in accordance with the *Physical Activities Regulations* (SOR/2019-285), pursuant to sections 109 and 188 of the *Impact Assessment Act*.

4.2 Relevant Provincial and Federal Acts/Regulations

Several provincial and federal legislative acts and regulations could potentially be applicable to construction activities to be carried out during the duration of the Project and are provided in Table 1 and detailed in the following sections.

Table 1. Relevant environmental legislation

Federal	Provincial
<i>Species at Risk Act</i>	<i>Environmental Assessment Act</i>
<i>Migratory Bird Convention Act</i>	<i>Water Sustainability Act</i>
<i>Fisheries Act</i>	<i>Wildlife Act</i>
	<i>Weed Control Act</i>
	<i>Environmental Management Act</i>
	<i>Heritage Conservation Act</i>
	<i>Clean Energy Act</i>
	<i>Forest and Range Practices Act</i>

4.3 Provincial Acts and Regulations

4.3.1 Water Sustainability Act

The BC *Water Sustainability Act* (2016) (WSA) is a provincial statute which established a framework for managing water and water resources in British Columbia. Under Section 11 of the WSA, any proposed changes in and about a stream can only take place after a Change Approval or Notification has been submitted and approved by the Ministry of Water, Lands and Resource Stewardship (WLRS). The habitat officer in each region sets the terms and conditions for works in and about a stream in accordance with Section 44 of the WSA. Instream works in each region is generally restricted to specific times of year when work may be carried out with the lowest risk to fish species, or general timing windows.

4.3.2 Wildlife Act

The BC *Wildlife Act* (1982) protects most vertebrate animals from direct harm or harassment except as allowed by regulation. Section 34 of the *Wildlife Act* prohibits possessing, taking, or destroying a bird or its egg or a nest when the nest is occupied by a bird or its eggs or the nest (occupied or otherwise) of an eagle, Peregrine Falcon (*Falco peregrinus*), Gyrfalcon (*Falco rusticolus*), Osprey (*Pandion haliaetus*), heron, or Burrowing owl (*Athene cunicularia*).

4.3.3 Weed Control Act

The BC *Weed Control Act* (2011) designates a list of invasive plants as “noxious weeds” and legislates property owners, private companies, utility companies, regional districts and municipalities, and provincial government agencies or anyone in possession of land to control and manage these species. The *Weed Control Act* currently designates 40 plant species as noxious within all regions of the province.

4.3.4 Environmental Management Act

The *Environmental Management Act* (EMA) regulates industrial and municipal waste discharge, pollution, hazardous waste, and contaminated site remediation. It provides a framework for authorization to introduce wastes into the environment, while protecting

public health and the environment. The Spill Reporting Regulations of the EMA establish a protocol for reporting the unauthorized release of substances into the environment and details reportable amounts for certain substances.

4.3.5 Heritage Conservation Act

The purpose of the *Heritage Conservation Act* is to encourage and facilitate the protection and conservation of heritage property in BC. The minister develops and maintains the Provincial heritage register and records Provincial heritage sites and objects including sites and objects of cultural value to aboriginal peoples. Archeological sites refer to places with physical evidence of human occupation or use, with a focus on sites that are protected under the *Heritage Conservation Act*.

4.3.6 Clean Energy Act

The *Clean Energy Act* outlines BC's provincial energy objectives to achieve electricity self-sufficiency by providing a framework to meet specified emissions-reduction targets by creating incentives for the reduction of GHG emissions through the implementation of various measures.

4.3.7 Forest and Range Practices Act

The *Forest and Range Practices Act* (FRPA) governs forest and range activities on public lands in BC during forest planning, road building, timber harvesting, reforestation, and livestock grazing activities. Formal legal establishment of ungulate winter range (UWR) and associated objectives were established under the FRPA.

4.4 Federal Acts and Regulations

4.4.1 Fisheries Act

The *Fisheries Act* (2019) provides protection for fish, fish habitat, and water quality and is administered by the Department of Fisheries and Oceans (DFO) and Environment Canada (EC). Section 35 of the Act prohibits serious harm (death of fish or any permanent alteration to, or destruction of, fish habitat) to fish unless Authorized by DFO. Fish habitat includes spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly to carry out life processes. A Request for Review under the *Fisheries Act* could be required if any proposed works do not follow DFO's standards and code of practice and have the potential to harm fish or fish habitat.

4.4.2 Species at Risk Act

The *Species at Risk Act* (2002) (SARA) prohibits the killing, harming, harassing, capturing, or taking of species at risk, or damaging or destroying the residence of one or more individuals; or destruction of critical habitat of a listed species. Critical habitat is generally defined as habitat required for the survival or recovery of a listed species or population. Environment and Climate Change Canada (ECCC) defines and maintains critical habitat areas. SARA established the Committee on the Status of Endangered Wildlife in

Canada (COSEWIC) as an independent body of experts responsible for assessing and identifying species at risk.

4.4.3 Migratory Birds Convention Act

The *Migratory Birds Convention Act* (1994) restricts the disturbance or destruction of migratory birds and their nests, eggs, and shelters, except in accordance with a permit. As previously mentioned, provincial general least risk windows for bird species are designed to avoid the nesting period, which is considered April 1 to August 30 for most species in the Okanagan Region (ECCC, 2022).

4.5 **Potential Permits, Approvals, and Authorizations**

A summary of key permits, approvals, or authorizations which could potentially be required for the Project as currently understood is provided in Table 2. Additional permits, approvals, or authorizations could be required by government agencies, local governments, or Indigenous nations and additional information on requirements will be sought during the engagement phase. Highland Solar will consult with regulatory agencies, the regional district, and Indigenous nations to identify requirements and prepare applications for submission. Highland Solar will develop a Permitting Plan in collaboration with the relevant agencies which will be submitted as part of the DPD for the Project.

Table 2. Potential permits, approvals, or authorizations

Regulatory Agency	Related Act/Regulation	Project Component or Activity	Permit, Approval, Authorization	Trigger
Archeology Branch	<i>Heritage Conservation Act</i>	Alteration, recovery, or destruction of archeological sites.	Heritage Inspection Permit, Site Alteration Permits	Archaeological inventory
Ministry of Water, Land and Resource Management (MWLRS)	<i>Water Sustainability Act</i>	Works in or in proximity to a watercourse.	Changes In and About a Stream Notification or Approval	Proposed works that occur in or in proximity to a watercourse (e.g., installation of culverts or watercourse crossings).
	<i>Water Sustainability Act</i>	Water use for construction, operation, and maintenance.	Water licence	Diversion, storage, or use of specific quantities of water for one or more water use purposes.
Ministry of Forests (MOF)	<i>Wildlife Act</i>	Works in or in proximity to wildlife habitat (e.g., amphibian habitat).	General Wildlife Permit	Permit for salvage of individuals if works are proposed in proximity to wildlife habitat and any wildlife (e.g., amphibians)

Regulatory Agency	Related Act/Regulation	Project Component or Activity	Permit, Approval, Authorization	Trigger
				need to be moved prior to works.
	<i>Forest Act</i> <i>Licence to Cut Regulation</i>	Timber/vegetation clearing during construction or maintenance.	Forestry Licence to Cut	Clearing of timber prior to installation of solar modules and access road maintenance/construction.
Ministry of Transportation and Infrastructure (MOTI)	<i>Transportation Act</i>	Upgrades or construction of new access roads	Industrial Access Permit	Permit for use of or construction of new roads that join onto roads controlled by MOTI if applicable.
BC Ministry of Environment Climate Change Strategy (MOE)	<i>Environmental Management Act</i>	Generation of any waste during construction or operations (e.g., domestic waste)	Waste Discharge Permit	Disposal of office and onsite waste (e.g., domestic waste)
Fisheries and Oceans Canada (DFO)	<i>Fisheries Act</i>	Works in or around fishery habitat.	Request for Project Review	Works near water which do not follow DFO's standards and codes of practice.

4.6 Land Use Plans

4.6.1 Zoning

Lands associated with the Project area are zoned RL-1 (Rural Zone) under the Thompson Nicola Regional District (TNRD) Zoning Bylaw No. 2400. Principal uses permitted in RL-1 include single family dwellings, agricultural or horticultural use, forestry practice use, processing of aggregate materials, and open land recreation. Zoning may potentially need to be amended as a solar generation facility is likely a new land use in the TNRD. The Project area is not used for agricultural purposes and the Project area is not within the Agricultural Land Reserve.

4.6.2 Old Growth Management Areas

A search of the provincial Integrated Land and Resource Registry (ILRR) online database was conducted to identify Land Use Plans that overlap with the Project area (ILRR, 2022). The Project area overlaps with portions of three legal Old Growth Management Areas (OGMAs) (Provincial IDs KAM_TKA_551, KAM_TKA_570, and KAM_TKA_583). OGMAs are areas that are recommended for legal designation to maintain existing old forests or protection of future old forest and retain associated values such as wildlife habitat and cultural uses (IRLL, 2022).

4.7 Indigenous Nations Protocols and Policies

Protocols that have been shared with Highland Solar and agreements that could facilitate meaningful engagement between the Government of BC and participating Indigenous nations are provided in the Project's Early Engagement Plan (Appendix 3). Additional protocols, permits, or policies could be shared with Highland Solar during the engagement phase.

4.8 Government Policies and Strategies

The following sections identify relevant government policies and strategies. No relevant government policies and/or strategies that the Project may not be compatible with have been identified.

4.8.1 TNRD Regional Growth Strategy (Bylaw 2409)

The TNRD Regional Growth Strategy (Bylaw 2409) (TNRD, 2013) provides a framework for a cooperative strategy for achieving a sustainable future for the region. The strategy encourages the development of clean energy projects subject to public consultation.

4.8.2 Environmental Mitigation Policy for BC

The provincial Environmental Mitigation Policy and supporting procedures including those outlined in the Procedures for Mitigating Impacts on Environmental Values (MOE, 2014) provide processes for making well-informed decisions about how to use or develop BC's natural resources. The policy will be considered when applying the mitigation hierarchy and completion of mitigation plans for the Project.

4.8.3 CleanBC

CleanBC is the government's plan to lower climate-changing emissions by 40% by 2030. CleanBC includes a wide range of actions to reduce emissions, build a cleaner economy, and prepare for impacts of climate change. Being a clean energy project, the Project will be in alignment with several of the initiatives included in the CleanBC plan including:

- Implement a 100% Clean Electricity Delivery Standard for the BC Hydro grid.
- Advance the BC government's reconciliation objectives with Indigenous nations by creating economic and employment opportunities for regional Indigenous nations and rural communities; and
- Create economic opportunities for regional Indigenous nations and rural communities in BC's low carbon energy sector.

Clean BC has published the following strategies which incorporated input from people throughout the province, including Indigenous leaders and climate experts.

4.8.3.1 Climate Preparedness and Adaptation Strategy

BC's Climate Preparedness and Adaptation Strategy outlines a broad range of actions for 2022 – 2025 to address climate impacts and build resilience in BC. The strategy strengthens BC's capacity to respond to sudden events such as wildfires, floods, and

heatwaves, while also preparing for and responding to changes that happen more slowly due to climate change. It addresses foundational needs for data, training, and capacity, and presents targeted actions that support Indigenous nations, communities, local governments, businesses, and industry.

4.8.3.2 CleanBC Roadmap to 2030

The CleanBC Roadmap to 2030 provides BC's approach to meeting the targets and transforming markets toward clean solutions. It sets out key areas of BC's economy that generate emissions or can create solutions, assesses progress in developing and deploying low- and zero carbon technologies, and sets out pathways to support innovation in sectors where low-carbon solutions are emerging.

Further, the Premier of BC laid out priorities to the Minister of Energy, Mines and Low Carbon Innovation in a mandate letter dated December 7, 2022. The Project will align and support the following objectives identified in the mandate letter:

- A sustainable, clean, secure, and fair economy that builds a clean economy that address BC's obligations to combat climate change by driving down emissions.
- Deliver on the CleanBC Roadmap to 2030 policies and programs to help ensure legislated GHG goals.
- BC's plan to work with BC Hydro to implement its Electrification Plan and to ensure the province is well positioned to electrify BC's economy, including options for Indigenous partnerships in clean energy projects.

5.0 Indigenous Nation Interests

5.1 Indigenous Nations and Community Interests

The Project area is located within the Thompson Okanagan region of the Southern Interior BC, within proximity to Indigenous nations who have a potential interest in the Project area or are potentially impacted Indigenous nations. The Project area is within the traditional territory of the Nlaka'pamux nation and Secwépemc nation peoples. The Project area is on Crown land and does not overlap with *Indian Act* reserve lands, lands subject to a Treaty, or lands subject to a land claim agreement.

Highland Solar is committed to meaningful engagement with Indigenous nations throughout the regulatory process and the life of the Project. Highland Solar has identified the Indigenous nations listed in the following sections as potentially impacted by Project activities. Highland Solar generated this list by using the provincial Consultative Areas database (Province of BC, 2022a), the search tool on the Integrated Land and Resource Registry (IRLL) to produce an Area of Interest Report (IRLL, 2022), and preliminary feedback from the BC EAO. The proposed approach to engagement and a summary of communications and engagement with Indigenous nations to date is described in Appendix 3: Early Engagement Plan. Should other Indigenous nations express an interest during the Early Engagement Phase or are identified by BC EAO or by self identification, Highland Solar will tailor future engagement to include them.

5.1.1 Nlaka'pamux Nation

The Nlaka'pamux Nation is comprised of 17 Fraser Canyon and Southern Interior Indigenous nations. The Nlaka'pamux Nation traditional territory stretches from the Fraser Canyon and Princeton in the south to Cache Creek and Kamloops in the north, and borders the territory of the Okanagan, Syilx and Secwépemc peoples (Province of BC, 2022b). Indigenous nations identified for engagement on the Project include Ashcroft Indian Band, Boothroyd Indian Band, Boston Bar First Nation, Coldwater Indian Band, Cook's Ferry Indian Band, Lower Nicola Indian Band, Lytton First Nation, Nicomen Indian Band, Nooaitch Indian Band, Oregon Jack Creek Indian Band, Shackan Indian Band, Siska Indian Band, Skuppah Indian Band, and Spuzzum First Nation.

5.1.1.1 Ashcroft Indian Band

Ashcroft Indian Band reserve lands are comprised of four land parcels totaling 1,986 ha of reserve land, centered approximately 10 km northwest of the Project area (INAC, 2022a).

5.1.1.2 Boothroyd Indian Band

Boothroyd Indian Band reserve lands are comprised of nineteen land parcels totaling 1,131 ha of reserve land, centered approximately 60 km southwest of the Project area (INAC, 2022b).

5.1.1.3 Boston Bar First Nation

Boston Bar First Nation reserve lands are comprised of twelve land parcels totaling 556 ha of reserve land, centered approximately 80 km south of the Project area (INAC, 2022c).

5.1.1.4 Coldwater Indian Band

Coldwater Indian Band reserve lands are comprised of three land parcels totaling 2,500 ha of reserve land and is centered approximately 60 km south of the Project area and 13 km southwest of Merritt, BC (INAC, 2022d).

5.1.1.5 Cook's Ferry Indian Band

Cook's Ferry Indian Band reserve lands are comprised of twenty-six land parcels totaling 3,984 ha of reserve land and is centered approximately 5 km west of the Project area near Spences Bridge, BC (INAC, 2022e).

5.1.1.6 Lower Nicola Indian Band

Lower Nicola Indian Band reserve lands are comprised of ten land parcels totaling 7,128 ha of reserve land, centered approximately 40 km south of the Project area and 10 km north of Merritt, BC (INAC, 2022f).

5.1.1.7 Lytton First Nation

Lytton First Nation reserve lands are comprised of 56 land parcels, totaling 6,005 ha of reserve land, centered approximately 44 km southwest of the Project area near the confluence of the Thompson and Fraser Rivers (INAC, 2022g).

5.1.1.8 Nicomen Indian Band

Nicomen Indian Band reserve lands are comprised of 16 land parcels totaling 1,175 ha of reserve land, centered approximately 35 km southwest of the Project area near Lytton, BC (INAC, 2022h).

5.1.1.9 Nooaitch Indian Band

Nooaitch Indian Band reserve lands are comprised of two land parcels totaling 1,693 ha, centered approximately 35 km south of the Project area, and 25 km northwest of Merritt, BC (INAC, 2022i).

5.1.1.10 Oregon Jack Creek Indian Band

Oregon Jack Creek Indian Band reserve lands are comprised of six land parcels totaling 823 ha of reserve land, centered approximately 10 km west of the Project area and 6 km west of Cache Creek, BC (INAC, 2022j).

5.1.1.11 Shackan Indian Band

Shackan Indian Band reserve lands are comprised of three land parcels totaling 3,874 ha, centered approximately 30 km south of the Project area, and 37 km northwest of Merritt, BC (INAC, 2022k).

5.1.1.12 Siska Indian Band

Siska Indian Band reserve lands are comprised of 11 land parcels totaling 358 ha of reserve land, centered approximately 80 km south of the Project area between Lytton First Nation and Boothroyd Indian Band (INAC, 2022l).

5.1.1.13 Skuppah Indian Band

Skuppah Indian Band reserve lands are comprised of eight land parcels totaling 246 ha, centered approximately 70 km south of the Project area between Lytton First Nation and Siska Indian Bands (INAC, 2022m).

5.1.1.14 Spuzzum Indian Band

Spuzzum Indian Band reserve lands are comprised of 16 land parcels totaling 648 ha of reserve land, centered approximately 80 km south of the Project area and 23 km south of Boston Bar First Nation (INAC, 2022n).

5.1.2 Secwépemc Nation

The territory of the Secwépemc people is called Secwepemcúlecw and stretches approximately 145,000 km² from the eastern Chilcotin Plateau and the Cariboo Plateau southeast through the Thompson Valley to Kamloops and Shuswap. It was originally inclusive of 32 recognized communities that have been categorized into 17 through the *Indian Act*. Indigenous nations identified for engagement on the Project include Bonaparte First Nation, Skeetchestn Indian Band, and Tk'emlúps te Secwépemc Indian Band.

5.1.2.1 Bonaparte First Nation

Bonaparte First Nation reserve lands are comprised of nine land parcels totaling 1,878 ha of reserve land, centered approximately 28 km north of the Project area (INAC, 2022o).

5.1.2.2 Skeetchestn Indian Band

Skeetchestn Indian Band reserve lands are comprised of four land parcels totaling 8,042 ha of reserve land, centered approximately 35 km northeast of the Project area between Kamloops and Cache Creek, BC (INAC, 2022p).

5.1.2.3 Tk'emlúps te Secwépemc Indian Band

Tk'emlúps te Secwépemc reserve lands are comprised of six land parcels, totaling 13,416 ha of reserve land, centered near Kamloops, BC approximately 60 km northeast of the Project area (INAC, 2022q).

5.2 *Indigenous Interests*

Indigenous interests in the Project area that have been raised to Highland Solar by Indigenous nations or groups during pre-early engagement are summarized in Table 3. These are provided in general terms and details or locations have not been provided.

The Lower Nicola Indian Band conducted a desktop review of the proposed Project area which identified areas that have traditional and cultural uses.

Highland Solar is seeking additional information from Indigenous nations that are currently being engaged or will engage with and additional information on potential Project interactions and impacts on Indigenous interests will be identified through further engagement. The Early Engagement Plan (Appendix 3) provides additional information about Indigenous nations potentially affected by or having a potential interest in the Project and sets out the Project’s engagement plan of Indigenous nations throughout the Project.

Table 3. Indigenous interests related to the Project

Indigenous Interest	Potential Issue or Concern Raised	Response/Potential Mitigation
Cumulative impacts	<p>Highland Solar heard concerns raised about indirect and direct impacts from the number of projects proposed and being built in traditional territory causing changes on the landscape - highways, forestry activities, access roads, oil and gas pipelines, mines, transmission ROWs, etc. Potential impacts to water, additional roads, cultural values, and traditional use of the area from the Project.</p> <p>Highland Solar heard concerns about the Project’s proximity to the Highland Valley Copper Mine and potential for cumulative impacts to rights and territory.</p>	<p>Continued discussions about design components through early engagement.</p> <p>Prepare management plans and implement BMPs during appropriate phases of the Project.</p>
Wildlife and wildlife habitat	<p>Highland Solar heard the Project area provides habitat for wildlife species. There is a feral horse population in the area.</p> <p>Potential impacts to wildlife include sensory disturbance and disruption to wildlife movement.</p>	<p>Continued discussions about design components that could impact wildlife through early engagement.</p> <p>Incorporate wildlife corridors into Project design to allow for movement through the Project area.</p> <p>Prepare management plans and implement BMPs during appropriate phases of the Project.</p>

Indigenous Interest	Potential Issue or Concern Raised	Response/Potential Mitigation
		<p>The Project EA will include further assessments of wildlife and wildlife habitat in the Project area.</p>
<p>Traditional land and resource use</p>	<p>Highland Solar heard concerns the Project will have a 40-year operating life and will be fenced and closed for other uses. Potential impacts to ability to continue to use the Project area for fishing, hunting, trapping, and gathering of food plants and medicines.</p> <p>Travel route for the Nlaka'pamux nation peoples in the vicinity of Project area. A plethora of traditional land uses (TLU), Remote Access to Archaeological Data (RAAD) discoveries, and culturally sensitive areas that function in traditional ways of knowing, being, and learning on the land in the vicinity of the Project area.</p> <p>Highland Solar heard concerns about Project's proximity to Highland Valley Copper Mine and potential for further restriction of use of area.</p>	<p>Continued discussions about design components that could impact use of the Project area through early engagement. Coordinate TLU studies with interested Indigenous nations to identify site-specific areas of cultural importance and inform Project design.</p> <p>Prepare management plans and implement BMPs during appropriate phases of the Project.</p>
<p>Water quality</p>	<p>Highland Solar heard concerns about potential impacts to water quality of watercourses and potential water use around the Project area. Receiving waters in the area have been historically impacted by tailings storage and operations of the Highland Valley Copper Mine which is downstream (south) of mapped watercourses in the Project area.</p>	<p>Continued discussions about design components that could impact water quality through early engagement.</p> <p>Prepare management plans and implement BMPs during appropriate phases of the Project to avoid, minimize, and mitigate potential impacts.</p> <p>The Project EA will include further assessments of baseline water quality conditions and potential implications for water use.</p>

Indigenous Interest	Potential Issue or Concern Raised	Response/Potential Mitigation
Air quality – dust	Highland Solar heard the area is dry, especially during the summer months. Concerns were raised about the potential of the Project to increase dust in the area.	Continued discussions about design components through early engagement. Prepare appropriate management plans and implement BMPs during phases of the Project.
Wildfires	Highland Solar heard concerns about potential for wildfires in the Project area. Wildfires have burned around the Project area in recent years.	Continued discussions about design components through early engagement. Implement necessary BMPs to protect the surrounding area from fires that could start from within the facility and protecting the facility from wildfires that start outside of the facility.
Archeological and heritage resources, cultural resources	Highland Solar heard concerns about potential impacts to archaeological resources in the Project area during construction of Project components. Highland Solar heard concerns that preliminary assessments indicated various cultural impacts directly and indirectly that may have adverse potential impacts on cultural resources, RAAD discoveries, and other culturally sensitive areas in the vicinity of the Project area. Highland Valley Copper Mine south of the Project has created thousands of ha of land disturbance through open strip mining and clusters of hundreds of RAAD discoveries and other culturally sensitive areas in the vicinity of the Project area have been recorded where ground disturbance has occurred and archaeological monitoring was mandated.	Continued discussions about design components through early engagement. Highland Solar is committed to continuing to engage and work with Indigenous nations to gather further information including conducting appropriate site visits, Preliminary Field Reconnaissance (PFR) assessments, archeological studies including an Archeology Overview Assessment (AOA) and Archaeological Impact Assessment (AIA) prior to development.
Indigenous rights and title	Highland Solar heard concerns that preliminary assessments indicated various cultural impacts directly and	Highland Solar is committed to working with Indigenous nations

Indigenous Interest	Potential Issue or Concern Raised	Response/Potential Mitigation
	<p>indirectly that may have adverse impacts on inherent rights and title. Requests for potential RAAD, database overview, and desktop GIS map research analysis.</p> <p>Highland Solar heard concerns about potential impacts to "Aboriginal and treaty rights" and significant outstanding concerns (undefined) due to the Project.</p>	<p>to gather further information including conducting site visits, PFRs, conducting appropriate archeological studies including AOA's and AIAs prior to development.</p>
<p>Capacity and potential agreements</p>	<p>Highland Solar heard concerns about capacity during the engagement process and received requests for applicable agreements necessary through the EA process.</p>	<p>Work with and provide support to Indigenous nations by providing options for scheduling meetings, various methods of providing Project information updates, or methods of gathering and sharing information about available capacity funding.</p>

Given the early stage of the Project design and of the EA and permitting processes of the Project, Project-specific mitigation measures are still in development. Table 11 provides a summary of potential Project impacts and potential mitigations, including potential impacts to Indigenous interests. Specific management plans will be prepared prior to Project construction which would provide mitigation measures, guidelines, and BMPs that could be implemented during construction, operation and maintenance, decommissioning and reclamation of the Project to help the Project meet necessary legislation, regulations, and policies and to reduce the potential effects on the biological and human environmental components.

5.3 Incorporating Indigenous Knowledge

Highland Solar acknowledges Indigenous peoples have a long and close relationship with the land and can provide knowledge about the local environment. The BC EAO Guide to Indigenous Knowledge in Environmental Assessments (BC EAO, 2020) provides guidance to environmental assessment participants to support the inclusion of Indigenous Knowledge in the EA process in accordance with guiding principles and requirements for confidentiality. The Government of BC recognizes inclusion of Indigenous Knowledge in the EA process is an important component in supporting the reconciliation objectives of the BC EAA including supporting the implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP, 2007) and provides Indigenous decision-makers and participants with greater knowledge and understanding of the environment where a project is proposed, potential impacts of a project, and the significance of those impacts on Indigenous nations and communities.

Highland Solar recognizes that Indigenous Knowledge informs the knowledge and experience of Indigenous participants in the environmental assessment process and can provide meaningful input as to how to conduct an environmental assessment, how to evaluate impacts, and how decisions are made by Indigenous nations. Building and maintaining relationships and open dialogue to ensure environmental assessments are effectively informed by Indigenous Knowledge spans all phases of conducting an environmental assessment.

Highland Solar recognizes in addition to the guidelines provided by BC EAO, Indigenous nations will have their own governance, rights, protocols, guidelines, policies and practices regarding sharing or using their knowledge. Highland Solar will continue to engage with Indigenous nations to learn more about the same through leadership, community representatives chosen by the nation, and knowledge holders (as appropriate and determined by the Indigenous nation), with the view of its application in the EA process. Highland Solar will work with Indigenous nations and knowledge holders collaboratively to learn how Indigenous Knowledge is considered in the EA process.

Highland Solar will seek to understand and respect Indigenous governance, rights, protocols, policies, and practices when requesting access to Indigenous Knowledge and gaining permission to use Indigenous Knowledge. Highland Solar will continue to work with Indigenous nations and knowledge holders to:

- Determine the community protocols and expectations regarding the conduct of Indigenous Knowledge studies to determine how the research is to be conducted and how information will be used;
- Work with the Indigenous nations and their designated representative to determine how permission will be obtained from a participating Indigenous nation or knowledge holders;
- Identify how and what Indigenous Knowledge may be useful for Project design, EA process, impact prediction, and mitigation;
- Determine expectations for handling, sharing, and incorporating Indigenous Knowledge studies; and
- Identify possibilities for scoping the study in a manner that may also contribute to broader goals and priorities of the Indigenous nation.

Highland Solar will continue to engage participating Indigenous nations and decision makers to identify knowledge holders as applicable through the Early Engagement Phase by regularly sharing information, what they have learned, and considering feedback to shape the development of the DPD.

6.0 Biophysical and Socio-Economic Environment

This section includes a general description of existing biological and socio-economic or human conditions in the Project area. Further engagement with the BC EAO, Indigenous nations, regulatory agencies, and other Communities of Interest will be required to determine appropriate Valued Components (VCs) and assessment methodology for potential environmental assessment work. Additional details on VCs and assessment methodology will be gathered during the Early Engagement Phase and VCs will be provided in the DPD.

6.1 Assessment Methodology

6.1.1 Desktop Constraints Analysis

A desktop background review of potential environmental constraints within the Project area was performed for aquatic and terrestrial resources using provincial and federal government databases and mapping tools, as well as relevant literature, previous studies and assessments of the Project area, and other data pertaining to wildlife and environmentally sensitive features that may be present in the Project area. The background review included searches for known occurrences of rare and/or endangered species and ecosystems within the Project area, designated wildlife critical habitats, and a search of ecosystems, plants, and wildlife species at risk that have the potential to occur, as well as available fisheries information. Databases and reports utilized in the background review and constraints analysis included the following:

- DataBC iMapBC mapping tool (Province of BC, 2022c);
- BC Conservation Data Centre's (CDC) BC Species and Ecosystems Explorer and CDC iMap mapping tool (CDC, 2023);
- Habitat Wizard mapping tool (Province of BC, 2022d); and
- BC Integrated Land and Resource Registry (ILRR) online database (BC ILRR 2022).

6.1.2 Site Visits

Two preliminary site visits to the Project area were conducted by Triton biologists in September 2021. The site visits were focused on capturing a general overview of the Project area noting presence of wildlife or wildlife habitat features (mammals, birds, amphibians) and vegetation species. The watercourses which occur within the Project area were visited. Detailed field assessments will be conducted during the EA process.

6.2 Historic and Current Use of Project Area

The historic uses of the Project area include forestry activity with cutblocks and active and deactivated forestry management access roads throughout. Cutblocks have been replanted in areas and plantation trees (mainly Lodgepole Pine) are at various stages of growth. Other uses within the vicinity of the Project area include recreational use for off-road vehicles and hiking, and hunting and access to vehicle traffic to parks and fishing lakes outside of the Project area. The area is used for cattle grazing and there was

evidence of cattle grazing (cattle prints and scat) noted during the site visits. Historic and current uses of the Project area are consistent with the major industries of the local communities.

6.3 Project area

Table 4 outlines the Project area administrative and physiographic setting.

Table 4. Project Area administrative and physiographic setting*

Classification	Description
Administrative Boundary	
Natural Resource Region	Thompson-Okanagan
Natural Resource District	Thompson Rivers
MOE Region	Thompson
Major Watershed	Thompson River
Watershed Group	Thompson River
Regional District	Thompson Nicola Regional District
Health Authority	Interior Health Authority
Health Service Delivery Area	Thompson Cariboo Shuswap
Local Health Area	South Cariboo
Nearest Municipality	Kamloops (75 km northeast)
Nearest Town	Village of Ashcroft (15 km north) District of Logan Lake (35 km east)
UTM	10 U 627059E 5605709N (approx. centre)
Ecosystem Classification	
Ecodomain	Dry
Ecodivision	Semi-arid Steppe Highlands
Ecoprovince	Southern Interior
Ecoregion	Thompson-Okanagan Plateau
Ecosection	Guichon Uplands (2/3 of Project area – eastern extent) Thompson Basin (1/3 Project area – western extent)
Biogeoclimatic Zone	Montane Spruce
Subzone	Very Dry Cool
Variant	Thompson
(Code)	(MSxk2)
	Interior Douglas-fir
	Dry Cool
	Thompson
	(IDFdk1)
Elevation Range (m)	782 - 1634

*Source: DataBC, 2022

6.4 Biophysical Environment

6.4.1 Terrestrial Resources

6.4.1.1 Biogeoclimatic Ecosystem Classification and Vegetation

The Project area overlaps two biogeoclimatic (BEC) subzones.

Interior Douglas Fir Dry Cool

A portion of the Project area occurs in the Interior Douglas Fir, within the Dry Cool subzones and Thompson variant (IDFdk1) (DataBC, 2022). The IDF zone is characterized by warm, dry summers, cool winters, and a fairly long growing season. Open to closed, mature forests containing Douglas-fir (*Pseudotsuga menziesii*) covers much of the IDF overstory. Lodgepole Pine (*Pinus contorta*) is a common pioneer species following fire or disturbance at upper elevations in the IDF zone. Trembling Aspen (*Populus tremuloides*) is a distributed seral species throughout the zone. The shrub layer generally contains Birch-leaved Spirea (*Spiraea betulifolia*) and Soopolallie (*Shepherdia canadensis*). The herb layer contains Pinegrass (*Calamagrostis rubescens*), Twinflower (*Linnaea borealis*), Heart-leaved Arnica (*Arnica cordifolia*), Kinnikinnick (*Arctostaphylos uva-ursi*), and Showy Aster (*Aster conspicuous*), are common understory shrubs (Meidinger, et. al. 1991).

Montane Spruce Very Dry Cool

A portion of the Project area occurs in the Montane Spruce Very Dry Cool Thompson variant (MSxk2) (DataBC, 2022). The MS zone is characterized by cool, cold winters, and short dry summers. Vegetation common in the MS zone includes Subalpine Fir (*Abies lasiocarpa*), Grouseberry (*Vaccinium scoparium*), Black Huckleberry (*Gaylussacia baccata*), and Utah Honeysuckle (*Lonicera utahensis*). Lodgepole Pine are common species that replace forests following fires and disturbance (Meidinger, et. al., 1991).

Portions of the Project area are in the Natural Disturbance Type (NDT) Class 3 (NDT3) and NDT Class 4 (NDT4). NDT3 ecosystems are characterized by frequent stand-initiating events and NDT4 ecosystems are characterized by frequent stand-maintaining fires.

6.4.1.2 Wildlife and Wildlife Habitat

The BEC zones that occur within the Project area support a wide range of habitat niches for a variety of wildlife species due to elevation, topographic variation, and diversity of overstory and understory vegetation. Forested areas of the IDF and MS zones provide habitat and foraging opportunities for large mammals including Black Bear (*Ursus americanus*) and ungulates including Mule Deer (*Odocoileus hemionus*), Moose (*Alces alces*), and Elk (*Cervus canadensis*). Forested areas of the IDF and MS zones also provide winter range requirements for Mule Deer including old-growth Douglas-fir stands for forage and snow interception (Meidinger, et. al. 1991).

Forests in the IDF and MS zones also support a diverse compliment of birds that feed on conifer seeds, bark-insects, and small mammals. Older trees provide cavity and nesting

opportunities for a variety of birds. Waterfowl and amphibians utilize wetland areas (Meidinger, et. al. 1991).

6.4.1.3 Rare and Endangered Wildlife

Species at risk information is available from provincial and federal sources (Table 5). Provincially, BC MOE maintains information on the BC Species and Ecosystems Explorer (BCSEE) for species in the province (CDC, 2023). Data on known species at risk occurrences are available through the BC Conservation Data Centre (BC CDC) (CDC, 2023). Federally, COSEWIC was established under Section 14 of SARA and ranks species. Schedule 1 of SARA provides the list of species at risk. SARA typically only applies to federal land and only aquatic species as defined by the federal *Fisheries Act* and migratory birds listed under the federal *Migratory Bird Act* are protected under SARA on private or provincially owned lands.

Table 5. Definitions of conservation status classifications

Regulation	Status	Definition
COSEWIC (federal)	Endangered (E)	A species facing imminent extirpation or extinction.
	Threatened (T)	A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
	Special Concern (SC)	A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
BC CDC (provincial)	Red-listed	Species, subspecies, or ecological communities considered to be Extirpated, Endangered, or Threatened.
	Blue-listed	Species, subspecies, or ecological communities considered to be of Special Concern (formerly Vulnerable).
	Yellow	Species or subspecies that is apparently secure and not at risk of extinction.

6.4.1.4 Wildlife Species at Risk

The habitat in the Project area has the potential to provide important foraging, breeding, and nesting habitat for rare and endangered wildlife. They can provide corridors to other habitats for wildlife passing through an area. The database was used to prepare a list of red- and blue-listed wildlife species which could potentially occur within the Project area. The list was compiled by filtering the tool's database to search for animal (vertebrate and invertebrate) species in the Thompson Rivers Natural Resource District; IDfdk, IDfxh, MSxk, and PPxh BEC zones (BEC zones in the vicinity of the Project area); and further refined to habitat types present in the Project area (Conifer Forest – Dry Conifer Forest, Mesic (average), Mixed Forest (deciduous/coniferous mix), and Riparian Forest. The results of the query found 53 wildlife species at risk (complete list provided in Table 1, Appendix 2) (CDC, 2023). The results returned include all species that may be in a particular geographic area but does not take habitat characteristics of a specific Project area into account. Of the species identified in the search, 20 were noted to have potential habitat conditions on the site and a higher possibility of being present and are provided in Table 6. The potential for species to occur within the Project area will be further refined following additional field survey programs and habitat assessment during the EA process.

Table 6. Red- and blue-listed wildlife species at risk with potential to occur in and around the Project area*

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale
Mammals						
American Badger	<i>Taxidea taxus</i>	Red	1-E (2018)	E	Moderate	Occur in the Okanagan, Similkameen, Thompson, and Nicola valleys typically in grassland, shrub-steppe, and open stands of Ponderosa Pine and Douglas-fir. Elevational range is 400 to 1500 m, and occasionally up to 2400 m.
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Blue	Not listed	Not listed	Moderate	Occurs in the arid grasslands, coniferous and deciduous forests in the interior of BC. Elevation ranges from sea level to 1070 m, although most occurrences are at lower elevations. Elevation could be a limiting factor.
Birds						
Barn Swallow	<i>Hirundo rustica</i>	Blue	1-T (2017)	SC	Moderate	Frequently occurs near water. Nests in barns or other buildings, under bridges, in caves or cliff crevices, or on vertical surface close to ceiling (structures not present).
Black Swift	<i>Cypseloides niger</i>	Blue	1-E (2019)	E	Moderate	Widespread range in BC but in low numbers. Breeds and nests on small ledges or in shallow crevices in steep rock faces and canyons, typically near waterfalls. Forage in a wide variety of habitats including forests.
Bobolink	<i>Dolichonyx oryzivorus</i>	Blue	1-T (2017)	T	Moderate	Scattered, limited distribution, and small population size. Breeding is localized in the main valley bottoms in the southern and central interior. Typically nests in hayfields or open riparian meadows.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale
Brewer's Sparrow, <i>breweri</i> subspecies	<i>Spizella breweri</i>	Blue	Not listed	Not listed	Moderate	In BC range extends from the southern Okanagan Valley north to Kamloops, Ashcroft, the Chilcotin River, and Riske Creek.
Flammulated Owl	<i>Psilosops flammeolus</i>	Blue	1-SC (2003)	SC	Moderate	Restricted to old, dry and higher elevation Douglas-fir and Ponderosa Pine forest zones in BC.
Great Blue Heron, <i>Herodias</i> subspecies	<i>Ardea herodias</i>	Blue	Not listed	Not listed	Moderate	Potential to use the Project area for foraging or roosting.
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Blue	1-T (2012)	T	High	Known occurrences and designated critical habitat located approximately 9 km west of the Project area adjacent to the Thompson and Nicola Rivers. Typically occur at low elevations in south-central BC. Breeds in open forested areas with grassy understory and riparian areas. Cottonwood stands at low elevations.
Northern Goshawk, <i>atricapillus</i> subspecies	<i>Accipiter gentilis atricapillus</i>	Blue	Not listed	Not listed	Moderate	Widely distributed. Breeds throughout most of mainland BC east of the Coast Ranges.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Blue	1-T	SC	Moderate	Widely distributed throughout BC. Potential to use riparian coniferous stands. Occurs in coniferous or mixed deciduous/coniferous forests.
Rough-legged Hawk	<i>Buteo lagopus</i>	Blue	Not listed	Not listed	Moderate	Winter range is restricted to low valleys of southern BC primarily in the Fraser Valley, with smaller numbers in the Thompson and Okanagan Valleys.
Rusty Blackbird	<i>Euphagus carolinus</i>	Blue	1-SC (2009)	SC	Moderate	Extensive range in BC. Nesting habitat could be limited in Project area. Typically nest in

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale
						swampy lakeshores, shrubby wetlands, black spruce bogs, and river oxbows.
Swainson's Hawk	<i>Buteo swainsoni</i>	Red	Not listed	Not listed	Moderate	Breeds mainly in the Thompson-Okanagan Plateau. Occurrences in the Douglas plateau.
White-throated Swift	<i>Aeronautes saxatalis</i>	Blue	Not listed	Not listed	Moderate	Moderately widespread throughout BC. Narrow nesting requirements on rock cliffs.
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	Blue	1-E (2006)	E	Moderate	Range extended to the Thompson River area. Breeds in coniferous mountain forests and mixed forests where Trembling Aspen is an important nesting tree.
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Red	Not listed	Not listed	Moderate	Occurs in open woodland and deciduous riparian woodland.
Amphibians and Reptiles						
Great Basin Spadefoot	<i>Spea intermontana</i>	Blue	1-T (2003)	T	Moderate	Occurrence and critical habitat mapped approximately 8 km west of Project area.
Western Rattlesnake	<i>Crotalus oreganus</i>	Blue	1-T (2005)	T	Moderate	Project area within designated critical habitat for Western Rattlesnake. Further studies required to determine if any habitat attributes are found within the Project area.
Western Skink	<i>Plestiodon skiltonianus</i>	Blue	1-SC (2005)	SC	Moderate	Found across southern BC in a wide range of habitats – dry woodland, grassland, creeks, and in forest clearings.

Search criteria:

Animals AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)

OR SARA Schedule 1 Status:True

OR COSEWIC Status:Endangered OR Threatened OR Special Concern

AND Area Of Interest: User Defined Polygon

Sort Order:Scientific Name Ascending

6.4.1.5 Known Occurrences of Wildlife Species at Risk

The CDC database and mapping tool was accessed to identify known occurrences of wildlife species at risk (an area of land and/or water where a species or ecosystem is known to occur) within and in proximity (within 10 km) to the Project area. No publicly available known occurrences were identified within the Project area (CDC, 2023). There are no documented publicly available occurrences of species at risk within the Project area, however the western extent of the Project area overlaps with a masked species at risk occurrence (CDC, 2023). Data on the species name and location of masked occurrences is withheld for the protection of the species. Lack of occurrences in this database do not necessarily mean there are no species or ecosystems at risk present; only that none have been recorded in the database. Two occurrences were identified within 5 km of the Project area (CDC, 2023) (Figure 2).

Great Basin Spadefoot Occurrence #14374; Shape ID 112025

The Great Basin Spadefoot (*Spea intermontana*) is provincially Blue-listed and is listed as a Threatened species under COSEWIC and Schedule 1-Threatened under SARA. The Great Basin Spadefoot occurrence is associated with two individuals that were observed in 2009 on the side of Kirkland Ranch Road approximately 8 km west of the Project area (CDC, 2023). Additional occurrences are further west.

Lewis's Woodpecker Occurrence #7263; Shape ID 33953

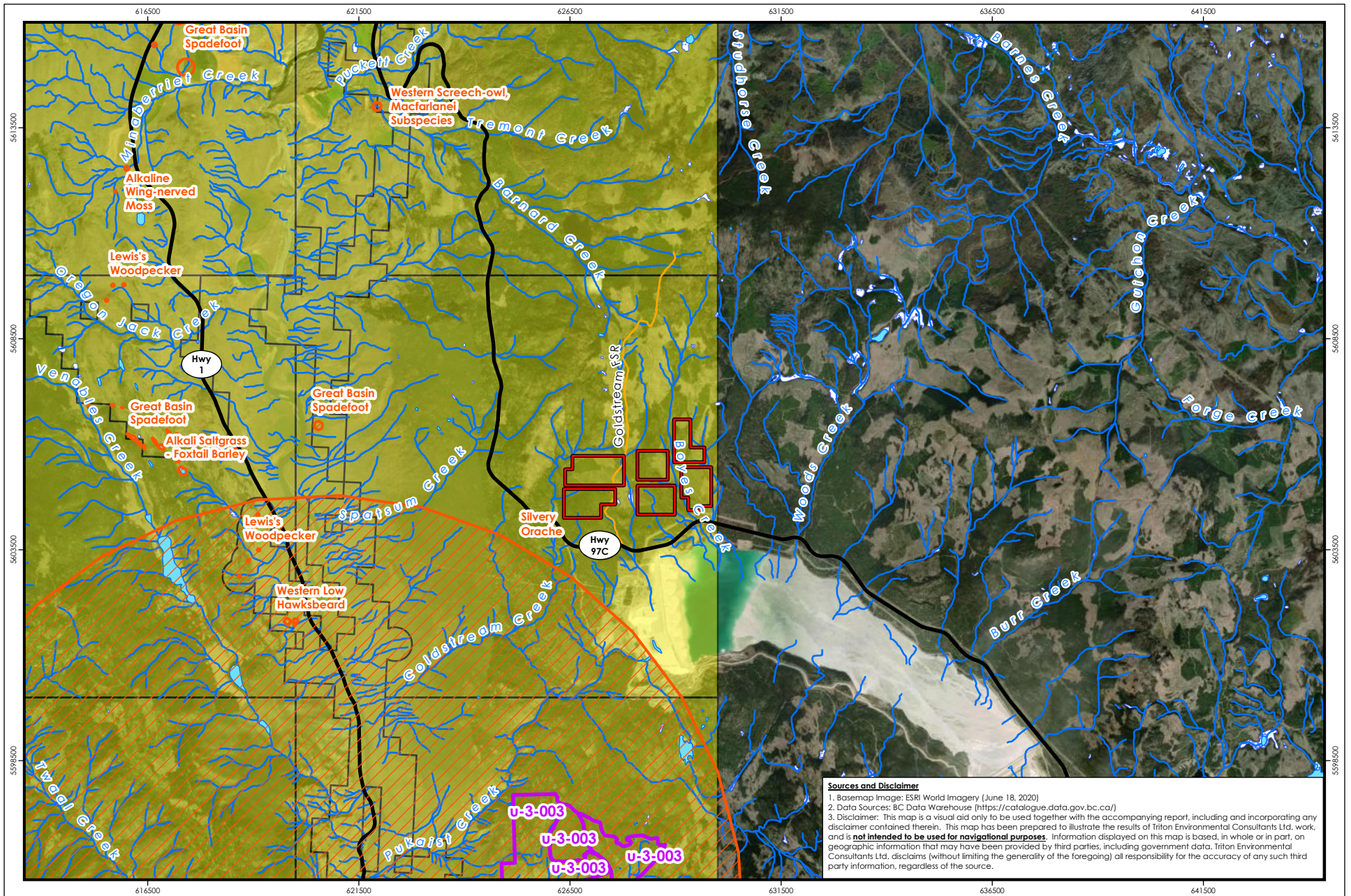
Lewis's Woodpecker (*Melanerpes lewis*) is a provincially Blue-listed species and is listed as a Threatened species under COSEWIC and Schedule 1-Threatened under SARA. The Lewis's Woodpecker occurrence is associated with six nest sites with adults observed in Ponderosa Pine trees in 2006. All nest sites are west of Highway 1 and the Thompson River and east of Venables Lake within 1.3 km west of Oregon Jack Hill (CDC, 2023). The occurrence is approximately 9 km west of the Project area.

6.4.1.6 Critical Habitat

The CDC database and mapping tool was accessed to identify designated critical habitat of wildlife species at risk within and Project area and in proximity to the Project area (within 10 km). The Project area overlaps with designated critical habitat for one species and critical habitat for three species was identified within 10 km of the Project area (Figure 2).

Western Rattlesnake – Critical Habitat ID: 71752

The Project area is situated within designated critical habitat for the federally-listed species at risk Western Rattlesnake (*Crotalus oreganus*) (Critical Habitat ID: 71752) (Province of BC, 2022). The Western Rattlesnake is provincially Blue-listed and is listed as Threatened by COSEWIC and Schedule 1-Threatened under SARA (CDC, 2023). Critical habitat occurs within the standardized 10 km UTM grid squares where the criteria for the species described in the Recovery Strategy are met (Figure 2).



Sources and Disclaimer

1. Basemap Image: ESRI World Imagery (June 18, 2020)
2. Data Sources: BC Data Warehouse (<https://catalogue.data.gov.bc.ca/>)
3. Disclaimer: This map is a visual aid only to be used together with the accompanying report, including and incorporating any disclaimer contained therein. This map has been prepared to illustrate the results of Triton Environmental Consultants Ltd. work, and is **not intended to be used for navigational purposes**. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

<p>Highland Solar and Energy Storage Project</p>		<p>Wildlife Occurrences and Habitat Areas</p> <ul style="list-style-type: none"> Species and Ecosystems at Risk Ungulate Winter Range (none present) Western Rattlesnake 		<p>File Path: G:\1.0 Projects\11025-Canadian Solar Highland EAO Project Description\11025-Canadian Solar Highland EAO Project Description.aprx</p> <p>GIS Technician: GF</p> <p>Project No: 11025</p> <p>Date: Feb 03, 2023</p> <p>Scale: 1:125,000</p> <p>Map Projection: UTM Zone 10 (NAD 1983)</p>	
<p>Figure 2 Wildlife Occurrences and Habitat Areas</p>		<p>Highway</p> <p>Road</p> <p>Watercourse</p> <p>Project Area</p> <p>Waterbody</p> <p>Wetland</p>		<p>North Arrow</p> <p>Kilometers</p> <p>0 1 2 3</p>	



Great Basin Gopher Snake – Critical Habitat ID: 30202

Designated critical habitat for the federally listed Great Basin Gopher Snake (*Pituophis catenifer deserticola*) (Critical Habitat ID: 30202) occurs approximately 5 km south of the Project area. Critical habitat occurs within the standardized 10 km UTM grid squares where the criteria for the species described in the Recover Strategy are met (CDC, 2023).

Lewis's Woodpecker Critical Habitat – various IDs

Designated critical habitat polygons for the federally-listed species at risk Lewis's Woodpecker occur approximately 6 km west of the Project area (Figure 2) (CDC, 2023). These polygons are based on species observation, habitat features, and modelling of habitat. The polygons occur along the Thompson and Nicola River valleys northwest, west, southwest, and south of the Project area. Lewis's Woodpeckers are found in dry open Ponderosa Pine or Douglas-fir forests and open grasslands with fire-maintained features, low stem densities, veteran trees, abundant wildlife trees, and rich herb and shrub layers. Mature to old riparian cottonwood stands typically adjacent to grassland, agricultural fields, shrub-steppe, or open woodland habitats also provide adequate habitat attributes. Large trees in a state of partial to advanced decay in relatively open areas for foraging are essential attributes for Lewis's Woodpeckers. Ponderosa Pine, Black Cottonwood, and Douglas Fir are the most common nesting tree species in BC (ECCC, 2017).

6.4.1.7 Ungulate Winter Range

Ungulate winter range (UWR) is defined as an area that contains habitat necessary to meet the winter habitat requirements of an ungulate species. UWR include landscapes to which ungulates move in response to snow accumulation and contains habitat that is necessary to meet the winter habitat requirements of an ungulate species, as interpreted by the MOE regional staff from scientific and management literature (BC MOE, 2021). Legal establishment of UWR and associated objectives are managed under the *Forest and Range Practices Act*. Mapped Mule Deer UWR occurs approximately 6 km south of the Project area (CDC, 2023) (Figure 2).

6.4.1.8 Vegetation Species at Risk

The CDC database was used to prepare a list of blue- and red-listed vascular and non-vascular plant species which could potentially occur within the Project area. The list was compiled by filtering the tool's database. Based on the results of the query, 11 provincially rare or at risk plant species were identified (CDC, 2023). The results of the query are provided in Table 7. The potential for species to occur within the Project area will be further refined following additional field survey programs and habitat assessment during the EA phase.

Table 7. Vegetation species at risk with potential to occur in and around the Project area

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status
Alkaline Wing-Nerved Moss	<i>Pterygoneurum kozlovii</i>	Blue	1-T (2006)	T
Columbian Carpet Moss	<i>Bryoerythrophyllum columbianum</i>	Blue	1-SC (2005)	SC
Cut-leaved Water-Parsnip	<i>Berula incisa</i>	Blue	-	-
Englemann's Spike-rush	<i>Eleocharis engelmannii</i>	Blue	-	-
Idaho Blue-eyed Grass	<i>Sisyrinchium idahoense</i> var. <i>occidentale</i>	Red	-	-
Low Hawksbeard	<i>Crepis modocensis</i> ssp. <i>modocensis</i>	Red	-	-
Nugget Moss	<i>Microbryum vlassovii</i>	Red	1-E (2009)	E
Rusty Cord-moss	<i>Entosthodon rubiginosus</i>	Blue	1-E (2006)	SC
Slender Arrow-grass	<i>Triglochin concinna</i> var. <i>debilis</i>	Blue	-	-
Slender Hawksbeard	<i>Crepis atribarba</i> ssp. <i>atribarba</i>	Blue	-	-
Tiny Tassel	<i>Crossidium seriatum</i>	Blue	1-SC (2019)	SC

6.4.1.9 Known Occurrences of Vegetation Species at Risk

The CDC database and mapping tool was accessed to identify known occurrences of vegetation species at risk within and in proximity (within 10 km) to the Project area. There are no known occurrences of terrestrial vegetation species at risk within the Project area (CDC, 2023). Two occurrences were identified within 5 km of the Project area (Figure 2).

Western Low Hawksbeard Occurrence #82473, Shape ID 82473

Occurrence associated with an observation in 2005 of three patches of Western Low Hawksbeard (*Crepis modocensis*) growing in a flat sagebrush bench 15 km due south of Spence's Bridge 300 m west of Highway 1 (CDC, 2023). Occurrence is approximately 9 km west of the Project area (Figure 2).

Silvery Orache Occurrence #3669, Shape ID 1976

Occurrence of Silvery Orache (*Atriplex argentea*) associated with an observation in 1964 between Cache Creek and Spences Bridge in the Thompson River Valley. Occurrence is inclusive of a large circular buffer area which is approximately 1 km southwest of the Project area (CDC, 2023).

6.4.1.10 Ecological Communities of Concern

The CDC database was used to prepare a list of blue- and red-listed ecological communities which could potentially occur within the Project area. Based on the results

of the query, 11 provincially ecological communities of concern were identified (CDC, 2023). The results of the query are provided in Appendix 2 (Table 2). The list will be further refined based on the results of additional field surveys conducted during the EA phase.

6.4.2 Aquatic Resources

6.4.2.1 Mapped Watercourses and Fish and Fish Habitat

General descriptions of mapped watercourses within the Project area and the surrounding area are provided in Table 8 (Province of BC, 2022b). The mapped watercourses are shown on Figure 3 (Map Labels correspond with watercourses in Table 8). The mapped watercourses in the Project area consist of a network of drainages and named creeks, many likely ephemeral, which collect runoff from the surrounding terrain. Coldstream Creek is a tributary to the Thompson River. The mapped watercourses in the vicinity of the Project area have been altered or redirected into culverts at road crossings. Except for Coldstream Creek, the other mapped watercourses cross Highway 97C via culverts and drain into the settling pond associated with the Highland Valley Copper Mine south of the Project area. Additional watercourse assessments will be conducted during the EA process.

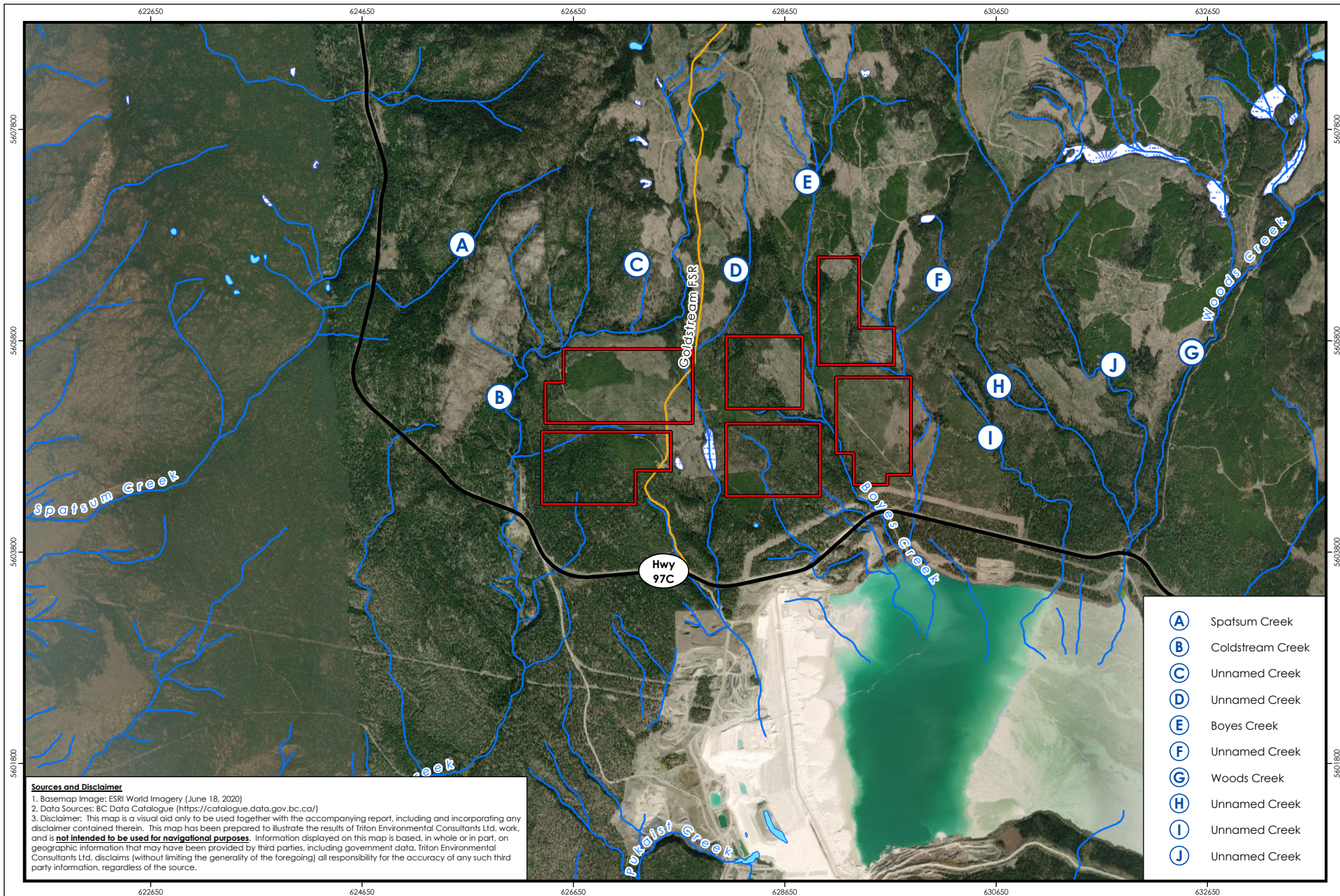
Table 8. Mapped watercourses in the vicinity of the Project area

Watercourse	Position related to Project Area	WSC	Comments
Spatsum Creek Map Label: A	Outside of Project area; approximately 2 km west	120-375300	No fish information 8.5km 1 st order Mag = 1
Coldstream Creek Map Label: B	Outside of Project area; approximately 300 m west	120-332300	No fish information 12.62km 2 nd order Mag = 2
Unnamed Tributary to Coldstream Creek Map Label: C	Outside of Project area; immediately north of Project area	120-332300-77376-	No stream or fish information Tributary to Coldstream Creek – Map Label B
Unnamed Creek Map Label: D	Within Project area	120-305300-40500	No fish information 3.66km 1 st order Mag = 1 Crosses Goldstream FSR and flows north to south along eastern edge of Project area
Boyes Creek Map Label: E	Within Project area	120-305300 - 46000	No fish information 6.2 km 1 st order Mag = 1

Watercourse	Position related to Project Area	WSC	Comments
			Flows to north to south between fencelines of the Project area
Unnamed Tributary to Boyes Creek Map Label: F	Outside of Project area; immediately east	120-305300 - 46571	No fish information Tributary to Boyes Creek – Map Label E 2.78km 1 st order Mag = 1
Woods Creek Map Label: G	Outside of Project area; approximately 2.5 km east	120-305300 – 50700	Rainbow Trout occurrences 6.46km 3 rd order Mag = 5
Unnamed Tributary to Woods Creek Map Label: H	Outside of Project area; approximately 2.2 km east	120-305300 – 50700-27800	Rainbow Trout occurrences Tributary to Woods Creek – Map Label G
Unnamed Tributary to Woods Creek Map Label: I	Outside of Project area; approximately 900 m east	120-305300-50700-02800	No fish or stream information
Unnamed Creek Map Label: J	Outside of Project area; approximately 2 km east	120-305300 – 50700-27800-0340	No fish or stream information Tributary to Woods Creek – Map Label G

6.4.2.2 Wetlands

Several mapped wetlands occur in the vicinity of the Project area. Wetland habitat is uncommon in the Southern Interior region of BC, with the number of wetlands greatly reduced from urban and rural development (MWLAP, 2004). Wetland habitat in the Thompson Okanagan can be characterized as pools that occur within hot, dry grassland and open forest habitats and are often ephemeral and dry up in the summer months. Wetland habitats provide wildlife and biodiversity values that are increased compared with surrounding habitats, support various life stages of amphibians, and provide food and shelter for other wildlife, including species of concern.



Highland Solar and Energy Storage Project Figure 3 Mapped Watercourses	Highway Road Watercourse	Project Area Waterbody Wetland	 	File Path: G:\1.0 Projects\11025-Canadian Solar Highland EAO Project Description\11025-Canadian Solar Highland EAO Project Description.aprx GIS Technician: CF Project No.: 11025 Date: Feb 03, 2023 Scale: 1:50,000 Map Projection: UTM Zone 10 (NAD 1983)	
	<p>Legend for Figure 3:</p> <ul style="list-style-type: none"> A Spatum Creek B Coldstream Creek C Unnamed Creek D Unnamed Creek E Boyes Creek F Unnamed Creek G Woods Creek H Unnamed Creek I Unnamed Creek J Unnamed Creek 				

6.5 Socio-Economic Environment

6.5.1 Local Communities and Population

The Project area is located on Crown land in a fairly remote region of the TNRD (population 132,663). The Project area is in Electoral Area I, "Blue Sky Country" of the TNRD. The TNRD includes the rural and unincorporated areas outside of BC municipalities. The closest communities are Logan Lake (2021 population 2,255), located approximately 35 km southeast driving distance from the Project, Ashcroft (2021 population 1,670) located approximately 15 km north driving distance of the Project area, and Spences Bridge, BC (2016 population 99) located approximately 85 km south driving distance of the Project area.

The Project area is in closest proximity to the Village of Ashcroft and the District of Logan Lake. The Village of Ashcroft was incorporated in 1952 and dominant industries of Ashcroft include mining, manufacturing, transportation, agriculture and ranching, and tourism. The village straddles the Thompson River. The Canada Pacific and Canadian National railways border the Thompson River and travel through Ashcroft allowing for manufacturing operations to receive and deliver materials. Mining is also a dominant industry and the Highland Valley Copper Mine, the largest open-pit copper mine in North America, is one of the largest employers for the town. The District of Logan Lake is a resource-based community and the economy has been centered on mining and ranching sectors. The primary industry of Logan Lake is mining. The town was originally built to house the employees of the Highland Valley Copper Mine in 1971 and the mine remains one of the largest employers of the town.

A small seasonal mobile home park called Coast Mountain View Mobile Park is located immediately south of Highway 97C and approximately 1 km southeast of the Project area. Additional residences (approximately 16 private lots) are located on North Road immediately across Highway 97C north of the mobile home park. These lots are approximately 800 m west of the Project area. Two private lots are located adjacent to Highway 97C approximately 2 km northeast of the Project area. A Water Licence (Water Licence No. Z121424), which is likely associated with the retreat, is approximately 1 km of the Project area on Coldstream Creek. Additional water licences and permits in the area are associated with the Highland Valley Copper Mine south of the Project area.

6.5.2 Land Use Setting

A search of the provincial ILRR online database was conducted to determine BC Land Act tenures and rights and interests that overlap the Project area (ILRR, 2022). A summary of existing permits and interests is provided below:

- Forestry cutblocks and cutting permits
- Forest Growth and Yield interests
- Trapline Areas

- Water Licenses and Groundwater Wells
- Grazing Licences, Range Units, Range Pastures, Range Developments, and Stock Ranges
- Commercial Recreation - License of Occupation
- Mineral Claims
- Sand and Gravel Quarrying Reserve
- Utility (Electric Powerline) ROWs
- Visually Sensitive Areas

Additional information regarding engagement with tenure holders is provided in the Early Engagement Plan (Appendix 3).

The Project area is located within the Wildlife Resource Management Unit 3-18 of the Thompson region. Limited entry hunting (LEH) permits are available for Moose and Mule Deer, and hunting for other mammals and upland game birds is permitted with Management unit 3-18. Two trapline tenures owned by the same individual overlap with the Project area. The trapline owner has been notified about the Project. Further engagement will occur as required during the engagement process.

6.5.3 Parks or Protected Areas

There are no provincial, federal, regional or municipal parks or protected areas that occur within the Project area. Epsom Provincial Park is the closest park and is approximately 6 km west of the Project area, north of Spences Bridge, BC. It is a day-use area that provides access to the Thompson River. The park is 74 ha in size and is accessed via Highway 1. It is operated by BC Parks and provides recreational opportunities including canoeing, fishing, hunting, and hiking (BC Parks, 2022).

Tunkwa Provincial Park is approximately 13 km east of the Project area. It is managed by BC Parks and is over 5,000 ha in size. It has two large, man-made trout-fishing lakes, Tunkwa Lake and Leighton Lake. Campgrounds are located at each lake. This park protects mid-elevation grasslands, forests, lakes, and wetlands including bogs and ponds and provides a variety of recreational opportunities including canoeing, camping, hunting, horseback riding, wildlife viewing, fishing, cross-country skiing, and snowmobiling. Access to the park is either via Savona or Logan Lake on the Tunkwa Lake Road. Portions of the park were damaged during the Tremont Creek Fire in 2021 (BC Parks, 2022). The Project would not hinder use of any parks or protected areas in the vicinity of the Project area and is not expected to be visible from the parks or protected areas.

6.6 **Archaeological Resources**

An initial search of publicly available information on potential archaeological resources in and around the Project area was performed using the Remote Access to Archaeological Data (RAAD) application maintained by the MOF Archaeology Branch.

This search was performed by Lower Nicola Indian Band and specific information including the location or type of archaeological sites are considered confidential and have not been shared with Highland Solar. Highland Valley Copper Mine is south of the Project area and has created thousands of ha of land disturbance through open pit strip mining. There are clusters of hundreds of archaeological sites that have been recorded in the RAAD database where land disturbance associated with the mine has occurred and archaeological monitoring was mandated. Highland Solar will work with Indigenous nations and groups to perform Preliminary Field Reconnaissance (PFRs) as required. Highland Solar will work with a qualified Archaeologist to perform an Archeological Overview Assessment (AOA) and Archaeological Impact Assessment (AIA) of the Project area to locate any terrestrial archeological sites that may be affected by construction and operations of the Project. The results of the AOA and AIA will be incorporated into the final design of the Project with the intent to avoid disturbance of identified archaeological resources and sites.

7.0 Preliminary Site Visits

Preliminary site visits were conducted in September of 2021 to provide a general overview of the baseline conditions of the Project area. Photographs taken during the site visits are provide in Appendix 1. Field assessments will be conducted in accordance with the Resources Information Standards Committee (RISC) standards for natural resource inventories during the EA process.

7.1 Wildlife

Wildlife observed and signs of wildlife (e.g., prints, scat, habitat features) during the initial site visits are provided in Table 9. Additional wildlife surveys during various seasons will be conducted during the EA process.

Table 9. Wildlife and signs of wildlife noted during initial site visits

Common Name	Scientific Name	Comments
Mammals		
Black Bear	<i>Ursus americanus</i>	Cub and mother observed on an access road
Chipmunk	<i>Eutamias minimus</i>	Individuals observed
Columbia Ground Squirrel	<i>Urocitellus columbianus</i>	Individuals and sign (burrows) observed
Coyote	<i>Canis latrans</i>	Signs - scat
Mule Deer	<i>Odocoileus hemionus</i>	Signs – prints and scat
Moose	<i>Alces alces</i>	Signs – scat and sheds
Birds		
Black-capped Chickadee	<i>Poecile atricapillus</i>	-
Dark-eyed Junco	<i>Junco hyemalis</i>	-

7.2 Vegetation

The majority of the Project area has been historically cleared for logging purposes. The Project area consists of areas that have been replanted with Lodgepole Pine at various growth stages. There were several wide, dry gullies and low areas noted throughout the Project area. These were heavily vegetated with large amounts of deadfall. The surrounding higher land had been cleared and were Lodgepole Pine plantations. The gullies were in a more natural state, likely due to the difficulty of logging these areas. Vegetation species observed onsite during the initial field surveys are provided in Table 10. Additional vegetation surveys during appropriate times of year (growing season when flowering species are in bloom) will be conducted during the EA process.

Table 10. Vegetation noted during the initial site visits

Common Name	Scientific Name	Comments
Tree Species		
Douglas-fir	<i>Pseudotsuga menziesii</i>	Mature Douglas-fir with wildlife cavities noted.
Lodgepole Pine	<i>Pinus contorta</i>	Areas of lodgepole pine plantation trees at various stages of growth.
Mountain Alder	<i>Alnus tenuifolia</i>	Associated with wetter areas.

Common Name	Scientific Name	Comments
Spruce spp.	<i>Picea spp.</i>	-
Trembling Aspen	<i>Populus tremuloides</i>	-
Willow spp.	<i>Salix spp.</i>	Associated with wetter areas.
Shrubs and Herbaceous Species		
Fireweed	<i>Chamerion angustifolium</i>	-
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>	-
Pine Grass	<i>Calamagrostis rubescens</i>	-
Rocky Mountain Juniper	<i>Juniperus scopulorum</i>	-
Rose spp.	<i>Rosa spp.</i>	-
Silky Lupine	<i>Lupinus sericeus</i>	-
Soopolallie	<i>Shepherdia canadensis</i>	-
Strawberry	<i>Fragaria virginiana</i>	-
Sumac		
Yarrow	<i>Achillea millefolium</i>	-

7.3 Watercourses

The mapped watercourses which occur within and in the vicinity of the current layout areas were visited during the preliminary site visit. The tributaries in the vicinity of the Project area have been altered or redirected into culverts at road crossings. Coldstream Creek, which occurs north of the layout area, is in a deep, heavily vegetated gully and runs parallel to Goldstream FSR. Watercourse "D" is associated with a dry, vegetated gully. A culvert was observed under Goldstream FSR and was dry at the time of the site visit. There were other dry gullies and low areas noted between the layout areas. The surrounding higher land had been cleared and were Lodgepole Pine plantations. The gullies were more natural, likely due to the difficulty of clearing these areas.

Boyes Creek was the only watercourse in the vicinity of layout area which had a defined channel and flow at the time of the site visit. Additional watercourse assessments will be conducted during the EA process.

7.4 Wetlands

Several mapped wetlands occur in the vicinity of the Project area. Additional wetland assessments will be conducted in the entire Project area during the EA process.

8.0 Potential Environmental and Socio-Economic Effects

This section provides an overview of potential environmental and socio-economic effects of solar projects in general and the Project. Solar projects offer an alternative to generation of power from fossil fuels and reduce emissions of carbon dioxide and other GHGs. There are potential environmental and socio-economic effects which could potentially occur from the construction, operations and maintenance, and decommissioning of the Project. The Project is in the initial design stage and the potential effects of the Project will be further assessed as part of the EA Application process. The EA will also address mitigation measures and plans to avoid, minimize, and mitigate potential effects.

8.1 Project Footprint

The current proposed Project area (area of disturbance from the current proposed layout of solar arrays) is approximately 395 ha. The area of disturbance is considered preliminary and could potentially change based on feedback received during the Early Engagement Phase and additional studies conducted during the EA process.

8.2 Cumulative Effects

The BC Cumulative Effects Framework defines cumulative effects as changes to economic, environmental, and social values caused by the combined effects of present, past, and reasonably foreseeable activities or events (Province of BC, 2021). Historic human activities in the Okanagan and Thompson Valley have had an influence on the ecosystems and natural environment of the area. Forestry activities have occurred within the area and have influenced the surrounding landscape through removal of old growth and mature trees and the construction of forestry roads which allow access to the area for other commercial and recreational uses. Other uses and influences on the environment in the area include construction and maintenance of power line ROWs, pipelines, railways, highways, and altering existing land uses through development in the surrounding communities. Wildfires, including the Tremont Creek wildfire in 2021 which burned areas north and east of the Project area including portions of Tunkwa Provincial Park, have impacted the surrounding area.

Teck's Highland Valley Copper Mine is south of Highway 97C and the Project area. The mine is Canada's largest open-pit copper and molybdenum mine and has been operational since 1983. A large tailings pond is maintained to support the operations and is immediately south of Highway 97C and the Project area. The mapped watercourses in the Project area flow into the tailings pond. Teck is proposing the HVC 2040 project which will extend the life of the operation through an extension of the existing site infrastructure (Teck, 2023). The Project is not currently associated with the Highland Valley Cooper mine; however, operation and any proposed future expansion of the mining operations would be taken into consideration. Cumulative effects will be considered further during the EA process.

8.2.1 Effects of the Environment on the Project

Environmental factors including climate change or natural hazards could lead to environmental effects on the Project's physical infrastructure. Warmer and dryer climate conditions in the summer could lead to more frequent wildfires. Higher precipitation, especially during winter months, could lead to increased flooding and other hydrological changes. Natural hazard events including wildfires and extreme weather events could interact with Project components and operations.

As previously discussed, the Project provides an opportunity to generate low-cost GHG-free, reliable, and renewable power source. The summer peaking energy profile of the proposed Project could help the BC system cope with summer drought conditions. Recent BC extreme drought is creating water flow constraints for many small and large hydroelectric generation plants. In addition, the summer seasonal peaking profile of solar generation is complementary to the winter seasonal peaking profiles of hydro and wind power, enhancing the energy security of BC. Potential effects posed by climate change and natural hazards will be further assessed further during the Project design phases and the EA process.

8.3 Potential Project Environmental Effects

Activities that have the potential to adversely affect the environment are largely associated with erosion and sediment generation during clearing and grubbing of vegetation and grading works. Erosion and sedimentation have the potential to affect downstream fish and fish habitat as well as disrupt wildlife species due to physical disturbance, habitat alteration, or destruction. The scope of the Project work that has the potential to impact the environment during construction, routine operations and maintenance, and decommissioning include, but are not limited to:

Construction:

- Clearing and grubbing of vegetation for construction Project infrastructure
- Clearing and grubbing of vegetation to allow for installation of transmission line poles;
- Erosion and sediment control management;
- Noise and sensory impacts from construction equipment and vibrations from mobile equipment pile driving during installation of solar arrays.
- Potential works in and around mapped watercourses;
- Invasive plant management;
- Roadway and drainage excavation and construction;
- Air quality impacts from combustible emissions from construction equipment;
- Waste handling and disposal; and
- Fuel handling and spills from equipment.

Operations and maintenance:

- Vegetation clearing during operation and maintenance of the solar facility;
- Vegetation clearing during maintenance of transmission right of way (ROW);
- Noise and sensory impacts from equipment and vibrations from mobile equipment during operations and maintenance;
- Disruptions to wildlife movement caused by fencing of solar infrastructure;
- Invasive plant management;
- Potential erosion and sediment runoff from washing solar panels;
- Roadway maintenance activities;
- Air quality impacts from combustible emissions from construction equipment;
- Waste handling and disposal; and
- Fuel handling and spills from equipment.

Decommissioning:

- Potential erosion and sedimentation during site grading;
- Noise and sensory impacts from construction equipment and vibrations from mobile equipment pile driving during installation of solar arrays;
- Potential works in and around mapped watercourses;
- Invasive plant management;
- Roadway and drainage excavation and construction;
- Air quality impacts from combustible emissions from construction equipment;
- Waste handling and disposal; and
- Fuel handling and spills from equipment.

8.3.1 Potential Effects to Terrestrial Resources

8.3.1.1 Wildlife and Wildlife Habitat

The Project area provides habitat for a range of wildlife. Potential effects to wildlife and wildlife habitat during the construction, operations and maintenance, and decommissioning phases include:

- Clearing and grubbing of trees to provide a footprint for the PV solar modules and additional Project infrastructure;
- Noise and sensory disturbance during construction, operations and maintenance, and decommissioning of the facility;
- Accidental mortality of wildlife due to equipment and increased traffic during construction, operations and maintenance, and decommissioning phases;
- Direct loss or change in quality, quantity of vegetation, and wildlife habitat;

- Habitat loss from development of large-scale facilities including edge effects and habitat isolation;
- Habitat fragmentation from roads and layouts;
- Displacement of individuals; and
- Disruption of wildlife movement and existing wildlife corridors in the Project area and regional landscape.

Avian Resources

Vegetation including grasses, shrubs, and trees in the Project area provide nesting and foraging habitat for birds. The proposed works will result in the clearing and grubbing of trees and taller vegetation to allow for installation of the solar array infrastructure and there will be the potential for loss of foraging and nesting habitat.

Other potential effects from solar projects include the possibility of collisions with PV equipment and transmission lines and electrocution from the substation and distribution lines. Although not well understood, utility-scale PV solar facilities may attract migrating waterfowl and shorebirds through a phenomenon known as “lake effect” whereby migrating birds perceive the reflective surfaces of solar arrays as water features and attempt to land on the panels (Multiagency Avian-Solar Collaborative Working Group, 2016). A recent study found limited evidence of attraction of aquatic birds to PV solar facilities in a variety of habitats (desert/scrub, grassland, or agricultural environments). The study found no evidence of landing, circling, or approaching the panels (Kosciuch, 2021).

8.3.1.2 Potential Effects to Vegetation Resources

Clearing and grubbing of trees and stumps would be required during construction. Low-profile vegetation, including grasses and other herbaceous species, would be retained to the extent practicable and incorporated into the Project layout to provide protection against potential erosion issues. Disturbed areas would be re-seeded as soon as practicable with a native grass and flowering herbaceous species seed mix. Vegetation including grasses and other herbaceous species would be maintained at a low profile during the operations and maintenance phases. These species would provide foraging habitat for pollinators and avian species.

8.3.2 Potential Effects to Aquatic Resources

Several mapped watercourses occur in the vicinity of the Project area. Potential effects to aquatic resources during the construction, operations and maintenance, and decommissioning phases include:

- Potential for runoff and sedimentation during vegetation clearing and grading activities;
- Direct loss of riparian and wetland habitats affecting quality of fish habitat and potential effects to downstream habitat; and

- Impacts to riparian habitat during upgrades of existing access roads or construction of new (e.g., repairs or installation of watercourse crossing structures such as culverts).

8.4 Project Emissions, Discharges, and Waste to Air and Water

Project air emissions and release of GHGs are expected to vary by stage. During the construction and decommissioning phases, air emissions and release of GHGs would come from the combustion of fossil fuels from construction equipment. The number, type, and size of equipment required during the construction, operation and maintenance, and decommissioning phases of the Project are still to be determined. Requirements on the on the type and size of equipment necessary during construction and decommissioning phases are not known at this time and an accurate estimate of direct emissions from construction equipment will be revised as the Project design progresses. Sound emissions during construction and decommissioning phases would be from construction equipment including pile driving structure supports. An accurate estimate of direct emissions to land, air, and water, including GHG emissions, can be provided as Project development and design advances.

During operations and maintenance, the Project would generate electricity without GHG or water emissions. Solar PV technologies and power plants do not produce air pollution or GHG emissions while in operation. Solar can have positive and indirect effects on the environment when solar energy replaces or reduces the use of other energy sources that potentially have larger impacts, including release of GHG emissions. GHG emissions during operations and maintenance would be limited to the occasional use of equipment to replace faulty equipment or perform other routine maintenance activities. There would be no sound emissions which would be discernable by receptors outside of the Project fenced perimeter during the operations phase. During operations and maintenance of the Project sound emissions would be limited to the occasional use of equipment to perform routine maintenance activities.

Types of waste that would potentially be generated by the Project include:

- Hazardous and non-hazardous waste (e.g., domestic waste from the site office, vehicle, and equipment maintenance wastes);
- Sewage; and
- Contaminated soil (in the event of spills or leaks from equipment working onsite during construction and maintenance).

Waste would be removed from site and disposed of at an approved facility in accordance with any applicable local, provincial, and federal regulatory requirements.

8.5 Potential Effects to Land Use and Visual Aesthetics

The construction and operation of the Project will limit the use of the Project area for other land uses. There is potential for disruption or loss of land use for other commercial (e.g., forestry, mining, trapping, outfitters, grazing, etc.) and non-commercial (e.g.,

recreational uses) activities. Additional indirect impacts to hunting could occur because of loss of wildlife habitat or use of the Project area during the construction, operations and maintenance, and decommissioning phases.

Solar projects have a low visual profile in comparison to other generation technologies such as large hydro dams and wind power projects. There is potential for disturbance to visual aesthetics due to removal of vegetation during construction of solar infrastructure. Low-profile vegetation including grasses would be retained to the extent practicable and incorporated into the layout to provide protection against potential erosion issues. Disturbed areas would be re-seeded as soon as practicable with native grass and flowering plant species seeds. Vegetation would be maintained at a low profile during the operations and maintenance phases. The Project is sited in a location where it will have little or no visual impact to Highways 97C and residential communities, including Logan Lake and Ashcroft, due to the remote location of the Project. The Project will potentially be visible during the construction, operations and maintenance, and decommissioning phases of the Project from the FSRs in the area used by commercial and recreation users. The Project may also have indirect effects to cultural and recreation values that are related to the enjoyment of scenic values of the area.

8.6 Potential Effects to Archeological Resources

Clearing and grubbing, land clearing, grading, and earthworks have the potential to remove or damage archeological resources in areas which contain or with significant potential to contain an archaeological site protected under the *Heritage Conservation Act*. An Archaeological Information Request will be submitted to the BC Archaeology Branch and AOAs and AIAs will be completed as part of the Project and a Chance Find Procedure will be prepared and implemented during construction.

8.7 Potential Socioeconomic Effects and Labour Force

The Project provides an opportunity for employment opportunities and local revenue generation for surrounding communities including Indigenous nations, communities, and businesses. During the construction phase, the Project is expected to provide up to 200 construction jobs sourced generally from the BC Southern Interior region including those supplied by contractors from Indigenous Nations and communities. Up to six full time operations and maintenance technicians would be required following Project commissioning. Accommodation and support for workers is available in local communities and commercial hotels and motels located in the nearby centres of Logan Lake (35 km east of Project area) and Ashcroft (15 km north of Project area). The Project would present a new land use to the Project area and local communities. These communities are likely to experience changes due to employment and income generation, business opportunities, and government revenues, and there could be potential effects on housing, infrastructure, and services during the Project.

An Employment Plan will be developed as the Project advances in design. To the extent possible, the Project will include and maximize local resources and provide employment

opportunities to local Indigenous nations and local rural communities during the construction, operations and maintenance, and decommissioning process.

8.8 Potential Effects to Public and Environmental Safety

No worker safety issues with respect to malfunction or accidents associated with the Project have been raised with Highland Solar from any Indigenous nations, members of the public, or other stakeholders to date. Further, Highland Solar is not aware of any special risks or hazards with respect to the construction, operations and maintenance, and decommissioning of the Project when such activities are carried out in compliance with worker safety and other regulations, policies, and safety practices which will be used in Project construction and operations. Regardless, as with any Project of this magnitude, there is the risk of injury or death to workers or contractors as a result of unintended accidents involving vehicles, machinery, or Project infrastructure. During ongoing future operations, there is also the risk of unintended and accidental injury or death of workers or members of the public involving the mishandling of high voltage equipment in a manner inconsistent with regulation, training, and operational protocols set out by the Project owner or operator. Other risks include electrical faults or arcs leading to fire risk incidents, oil spills from transformer leaks, and hydrogen off gassing and related fire risk from the BESS.

Given the early stage of the Project design and of the EA and permitting processes of the Project, potential for accidents and malfunctions to occur during construction or operations will be assessed further during the engagement and EA processes. Further assessments will include potential affects on the biophysical and human environment, and include project-specific mitigation measures and management plans including emergency response procedures to address events related to accidents and malfunctions during construction, such as spills or unauthorized releases.

8.9 Further Studies

Highland Solar is currently engaged in observation and collection of site solar irradiance data using solar monitoring instruments mounted on a solar climate monitoring station. Further, Highland Solar is conducting various technical and economic feasibility studies related to the Project. Engagement and information sharing activities are underway with various Indigenous nations and other Communities of Interest. Preliminary environmental inventories including initial desktop review and preliminary site visits have been conducted to support the IPD. Additional baseline surveys will be conducted in accordance with the RISC standards for natural resource inventories. Valued Components (VCs) will be selected based on the results of baseline studies, input from engagement activities with Indigenous nations and Communities of Interest, and government agencies. Where available, Highland Solar will seek input on baseline studies and will incorporate Indigenous knowledge, traditional use information, and additional environmental or heritage values of the Project area as provided by Indigenous nations. Archeological resource inventories will be conducted as needed including AOAs and AIAs.

8.10 Potential Mitigation Measures

Table 11 provides a summary of potential Project impacts and potential mitigations. A Project-specific Environmental Protection Plan (EPP) will be prepared prior to construction. The EPP will include specific management plans which would provide mitigation measures and best management practices to be implemented during construction, operation and maintenance, and decommissioning of the Project to help the Project meet necessary legislation, regulations, and policies and to reduce the potential effects on the biological and socio-economic or human environmental VCs. The provincial Environmental Mitigation Policy (MOE, 2014) will be considered and the selection of mitigation measures will be based upon practicality and regulatory requirements.

Table 11. Potential Project effects and potential mitigations

Environmental Component	Potential Project Effect	Potential Mitigations
Biological components		
Wildlife and wildlife habitat and terrestrial resources	<ul style="list-style-type: none"> • Direct loss or change in quality or quantity of habitat through clearing (removal of vegetation and surface grading) or displacement during construction and operation/maintenance phases. • Loss of vegetation during Project operations and maintenance. • Barrier effects – disrupt wildlife movement and/or migrations by acting as a barrier. • Habitat degradation due to changes in hydrology and water availability and quality. • Disruption caused by noise or light pollution (e.g., dust, light, noise, and vibration) especially during the construction phase. • Introduction of invasive weed species during construction and operations (movement of people and equipment through Project area). • Habitat alteration due to changes in microclimatic effects of solar panels (shadow effects could alter species composition) during the operation and maintenance phases. • Noise and sensory impacts from equipment and vibrations from mobile equipment during decommissioning and removal of Project infrastructure. 	<ul style="list-style-type: none"> • Prepare an Environmental Protection Plan (EPP) which would include best management practices (BMPs) and operational controls to implement during construction to minimize potential impacts. • Prepare and implement appropriate management plans and practices for ecosystems and species. • Minimize clearing and grubbing or disturbance to maximum extent practicable. • Site infrastructure to avoid or minimize interaction with sensitive and at-risk species or habitat. • Identify and consider potential BMPs such as planning construction activities to avoid sensitive periods for wildlife (e.g., nesting period for migratory birds). • Retain wildlife trees where possible. • Implement buffers or avoidance zones around sensitive features (e.g., important nesting or foraging areas for particular species). • Fence the layout areas to prevent wildlife from entering the facility and interacting with Project components. Leave corridors between the fenced layout areas to allow for continued movement through the surrounding area.
Avian resources	<ul style="list-style-type: none"> • Injury or mortality due to collisions with solar panels and/or transmission lines. • Loss of nesting habitat due to loss of large trees and shrubs during construction phase. 	<ul style="list-style-type: none"> • Prepare and implement appropriate management plans and practices for ecosystems and species. • Implement buffers or avoidance zones around sensitive features (e.g., important nesting or foraging areas for particular species).

Environmental Component	Potential Project Effect	Potential Mitigations
	<ul style="list-style-type: none"> • “Lake effect” – potential for water birds to mistake PV plants with large continuous arrays for waterbodies and collide with them causing injury or death. 	<ul style="list-style-type: none"> • Maintain existing low-growing vegetation (grasses and herbaceous species) during the construction phase. Reseed disturbed areas with a native seed mix to maintain low-profile vegetation under the solar arrays during operations and maintenance phase. Prepare reclamation plans which will include replanting and restoration plans following Project decommissioning.
<p>Aquatic resources, fish and fish habitat</p>	<ul style="list-style-type: none"> • Potential for runoff and sedimentation during vegetation clearing and grading activities. • Direct loss of riparian and wetland habitats affecting quality of fish habitat. • Potential impacts to riparian vegetation if watercourse crossings require upgrades or installation. 	<ul style="list-style-type: none"> • Prepare and implement appropriate management plans and practices for ecosystems and species. • Incorporate BMPs for erosion and sediment control and spill prevention and control into the EPP. • Implement buffers or avoidance zones around sensitive features (e.g., watercourses and wetlands or important breeding or foraging areas for particular species). • Adhere to regional timing windows for instream works. • Obtain necessary permit for any instream works and adhere to terms and conditions of permits.
Human Environment		
<p>Indigenous interests Traditional land and resource use of the Project area</p>	<ul style="list-style-type: none"> • Exercising Indigenous rights and traditional land use of the Project area and surrounding lands. • Potential to impact use of the Project area for traditional and resource use including the harvesting of traditional plants for food, medicinal, or ceremonial purposes. Potential impacts to presence, quantity, quality of resources used for traditional purposes. • Potential to impact or prevent access to traditional hunting or fishing areas. 	<ul style="list-style-type: none"> • Project will consider the rights and interests of Indigenous nations and peoples. • Consider and incorporate Indigenous Knowledge and traditional land and resource use in Project planning as deemed appropriate. • Continued engagement and communication with participating Indigenous nations to identify additional Indigenous interests and potential mitigation measures to protect interests (e.g. incorporating traditional plants into reclamation

Environmental Component	Potential Project Effect	Potential Mitigations
		<p>plans, avoiding sensitive areas through siting of infrastructure, or providing corridors between layout areas to allow for continued use of the area by wildlife and users of the land).</p> <ul style="list-style-type: none"> • Implement potential mitigations as discussed for potential impacts from noise, dust, water quality, wildlife and wildlife habitat, etc.
Archaeological and heritage resources	<ul style="list-style-type: none"> • Impacts (potential damage or loss) to archaeological resources due to logging, land clearing, grading, or pile driving. 	<ul style="list-style-type: none"> • Acquire proper permits and conduct appropriate archeological impact assessments and studies. • Develop and implement chance find procedures.
Land use	<ul style="list-style-type: none"> • Potential for loss or disruption of use or access for other land users including commercial (e.g., forestry, guide outfitting, trapping, mining, grazing) and non-commercial (recreational trails) users. • Changes in traffic patterns or amount on highways nearby or access roads (FSRs). • Potential for users to utilize other areas for activities. • Impacts to access for harvesting activities (e.g., hunting, trapping, fishing). 	<ul style="list-style-type: none"> • Design Project components to allow for continued travel through and use of the surrounding area via main FSRs. • Constructive early engagement with stakeholders and land users.
Visual aesthetics	<ul style="list-style-type: none"> • Visual disturbance from removal of vegetation, alteration of landscape, and installation of built features (e.g., solar arrays, battery storage facility, transmission lines, etc.). • Indirect effects to cultural, recreational, and commercial values that are related to enjoyment of scenic values. 	<ul style="list-style-type: none"> • Implement design and maintenance BMPs to address potential visual effects. • Vegetation screening to mitigate visual disturbance.
Economy and socio-community	<ul style="list-style-type: none"> • Employment, income, local revenue generation. • Changes to and/or maintenance of community and individual health and well-being. • Effects that specifically impact sub-groups within the region, including Indigenous People, women, low income, under or unemployed, disabled, seniors, and vulnerable groups. 	<ul style="list-style-type: none"> • Consider local employment policies and planning. • Consider local procurement of goods and services. • Consider local skills inventory, training, and skills development programs. • Consider targeted initiatives to address effects to specific sub-groups. • Develop Employment Plans.

Environmental Component	Potential Project Effect	Potential Mitigations
Human health and safety	<ul style="list-style-type: none"> • Risks to public and worker safety from interaction with Project infrastructure. • Worker and public health and safety. • Potential risks to workers from working in a remote location. • Increased dust concentrations from increased use of FSRs and access roads and disturbed surfaces during construction, operations and maintenance, or decommissioning phases. • Potential for Project interaction from wildfires in the area. • Potential risks to human safety including electrical faults or arcs leading to electrocution or fire risk incidents. 	<ul style="list-style-type: none"> • Develop and implement training programs and protocols. • Install fencing and signage to notify the public and land users of risks and prevent entry into facility. • Incorporate BMPs for dust control into management plans. • Consider BMPs such as fireguards to protect the public and infrastructure from potential fires from within our outside of the Project area.
Physical Environment		
Geology and soils	<ul style="list-style-type: none"> • Loss of surface soil or changes to soil profile due to vegetation removal. • Changes to soil quality. 	<ul style="list-style-type: none"> • Implement BMPs for soil erosion control. • Implement a closure and reclamation plan which incorporates soil salvage plans.
Air Quality, GHG emissions, noise, and vibration	<ul style="list-style-type: none"> • Dust emissions during construction and equipment operation can result in increases in particulate matter concentrations which can affect human health and dust deposition to vegetation and waterbodies. • Combustion emissions from equipment during construction, limited use during operations and routine maintenance, and decommissioning can result in increases in concentrations of contaminants. • Noise and vibrations from equipment or pile support installation during construction, operations and maintenance, and decommissioning. 	<ul style="list-style-type: none"> • Incorporate BMPs for dust control into management plans. • Ensure equipment is operated efficiently and limit idling when not in use. • Consider use of alternative technologies to reduce air emissions. • During operations and maintenance, the Project would generate electricity without GHG or water emissions. Solar PV technologies and power plants do not produce air pollution or GHG emissions while in operation.

9.0 Preliminary Project Schedule

Table 12 provides an overview of the preliminary Project schedule. This schedule assumes positive regulatory decisions and is subject to change.

Table 12. Preliminary Project schedule

Task Description	Expected Timing
Pre-Early Engagement with Indigenous nations and Communities of Interest about the Project prior to filing the IPD and EEP including Project emails, phone calls, and Project information meetings.	Q2 2022 – ongoing
Submit the IPD and Early Engagement Plan to BC EAO in fulfilment of requirements of BC EAA.	Q2 2023
Provide notice (letters, emails, phone calls) to Indigenous nations and other Communities of Interest including tenure holders, and local governments providing notification of IPD submission and inviting comments and feed back during the 30-day public comment period and Early Engagement Phase.	Following acceptance of IPD and start of Early Engagement Phase
BC EAO acceptance of IPD and Early Engagement Plan. Begin the formal Early Engagement Phase.	Q2 2023
Continue engagement with Communities of Interest including Indigenous nations during the Early Engagement Phase including Project emails, website updates, open houses, and information sessions	Within 90 days of IPD publication (Q3 2023)
Present Project information, review the IPD and invite feedback, and provide Project updates in virtual or in-person meetings as requested by Indigenous nations or other Communities of Interest.	During the Early Engagement Phase
Engage with provincial and federal regulatory agencies about the Project and potential regulatory requirements.	Within 90 days of IPD publication (Q3 2023)
Assist in planning and participate in BC EAO in-person open house(s) and virtual information sessions and hold additional Project open houses or information sessions as needed.	During the Early Engagement Phase
Maintain a communication and engagement log to track comments and feedback received during pre-early engagement, the public comment period, and the Early Engagement Phase.	Ongoing and during the Early Engagement Phase.
Indigenous nations notify BC EAO of intention to be a participating Indigenous nation on the Project.	Within 80 days of IPD publication
BC EAO provides the list of participating Indigenous nations and Summary of Engagement and direction on the DPD.	Q3 2023
Prepare and submit DPD to BC EAO in fulfilment of requirement of BC EAA.	Q3 2023
BC EAO provides an EA Readiness Decision with determination of commencement of EA	Q4 2023
EA commencement	Q4 2023
BC EAO provides Process Order	Q4 2023
Prepare and submit regulatory applications	Ongoing during EA process

Task Description	Expected Timing
Prepare and submit Draft Environmental Assessment Certificate Application to BC EAO	Q1 – Q4 2024
Submit Final Environmental Assessment Certificate Application following Notice Regarding Application	Q4 2024
BC EAO releases Assessment Report and recommendations	-
BC EAO releases a Certificate Decision	Q1 2025
Regulatory agencies permit application decisions	Q1 2025
Preconstruction activities and post certificate compliance and enforcement	Q4 2025
Project commissioning	One year after start of construction
Project operation and maintenance	40 years
Project decommissioning	One year

10.0 Closing

Through sharing this IPD with BC EAO and Communities of Interest, including Indigenous nations, Highland Solar is providing an early design-stage overview of the Project. The IPD has been prepared to determine the requirements for review of the Project under the BC EAA and to initiate the EA process. The IPD was prepared using the guidance provided in the BC EAO's Early Engagement Policy document (BC EAO, 2019). The IPD has been prepared early in the design process prior to finalization of all Project components and layout to allow for feedback. In addition, the IPD and the Early Engagement Plan (Appendix 3) are used to initiate the Early Engagement Phase of the BC EA process. The documents will be available for review by Indigenous nations and Communities of Interest to facilitate engagement and will be used to support the development of a DPD. The DPD will present a more refined Project design based on progression of design and considerations of input received during the Early Engagement Phase.

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APPENDIX 1

PHOTOGRAPHS



Photograph 1. Overview of Lodgepole Pine plantation in Project area. View north (September 29, 2021).



Photograph 2. Overview of a vegetated gully in the Project area. View northwest (September 29, 2021).



Photograph 3. View east of a forestry road through a section of the Lodgepole Pine plantation in Project area (September 29, 2021).



Photograph 4. Culvert across an access road in the Project area. Culvert was dry at the time of the site visit (September 29, 2021).



Photograph 5. View of a wetted section of Boyes Creek in the central portion of the Project area (September 29, 2021).



Photograph 6. Moose sign (scat) observed in the Project area (September 29, 2021).



Photograph 7. Culvert across an access road in the Project area. Culvert was dry at the time of the site visit (September 29, 2021).



Photograph 8. View of a wetted section of Boyes Creek in the central portion of the Project area (September 29, 2021).

APPENDIX 2

WILDLIFE AT RISK AND ECOLOGICAL COMMUNITIES AT RISK

Table 1. Wildlife species at risk*

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Mammals						
American Badger	<i>Taxidea taxus</i>	Red	1-E (2018)	E	Moderate	Occur in the Okanagan, Similkameen, Thompson, and Nicola valleys typically in grassland, shrub-steppe, and open stands of Ponderosa Pine and Douglas-fir. Elevational range is 400 to 1500 m, and occasionally up to 2400 m.
Bighorn Sheep	<i>Ovis canadensis</i>	Blue	Not listed	Not listed	Low	Suitable habitat including open areas with steep escape terrain are limited.
Grizzly Bear	<i>Ursus arctos</i>	Blue	1-SC	SC	Low	Project area outside of Grizzly Bear range in BC.
Mountain Goat	<i>Oreamnos americanus</i>	Blue	Not listed	Not listed	Low	No alpine/sub-alpine habitat with steep escape terrain in Project area.
Nuttall's Cottontail	<i>Sylvilagus nuttallii</i>	Blue	1-SC	SC	Low	In BC associated with shrub-steppe with Antelope-Bush and Big Sage. Sagebrush and rocky outcrops are important habitat attributes.
Preble's Shrew	<i>Sorex preblei</i>	Red	Not listed	Not listed	Low	Occur in grasslands of south Okanagan and Similkameen Valleys.
Spotted Bat	<i>Euderma maculatum</i>	Blue	1-SC (2005)	SC	Low	Low. Occurs in the southern Okanagan Valley to the Chilcotin River and Williams Lake region. Elevation range of 300 to 900 m with most occurrences below 500 m.
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Blue	Not listed	Not listed	Moderate	Occurs in the arid grasslands, coniferous and deciduous forests in the interior of BC. Elevation ranges from sea level to 1070 m, although most occurrences are at lower elevations. Elevation could be a limiting factor.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	Blue	1-SC (2009)	E	Low	Distribution in BC extends from Osoyoos Lake to Vernon in the Okanagan Valley and from Chopaka to Keremeos in the Similkameen Valley.
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	Blue	Not listed	Not listed	Low	Restricted to low elevation valleys in the dry interior of BC. In BC found at elevations of 300 – 850 m.
White-tailed Jackrabbit	<i>Lepus townsendii</i>	Red	Not listed	Not listed	Low	Mostly found in open grasslands and sagebrush plains. Considered extirpated from BC with last confirmed siting in 1981.
Wolverine, <i>luscus</i> subspecies	<i>Gulo luscus</i>	Blue	1-SC	SC	Low	Typically do not occur in dry regions of the Okanagan.
Birds						
American Avocet	<i>Recurvirostra americana</i>	Blue	Not listed	Not listed	Low	Project area is within range. Breeds and forages near freshwater ponds. Nests in grasslands areas near suitable foraging ponds which could be limited near the Project area.
American Bittern	<i>Botaurus lentiginosus</i>	Blue	Not listed	Not listed	Low	Prefer large cattail marshes throughout its range, particularly during breeding season.
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Red		NAR	Low	Migrate through the Southern Interior. Require lakes for resting and feeding.
Barn Swallow	<i>Hirundo rustica</i>	Blue	1-T (2017)	SC	Moderate	Frequently occurs near water. Nests in barns or other buildings, under bridges, in caves or cliff crevices, or on vertical surface close to ceiling (structures not present).
Black Swift	<i>Cypseloides niger</i>	Blue	1-E (2019)	E	Moderate	Widespread range in BC but in low numbers. Breeds and nests on small ledges or in shallow crevices in steep

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
						rock faces and canyons, typically near waterfalls. Forage in a wide variety of habitats including forests.
Bobolink	<i>Dolichonyx oryzivorus</i>	Blue	1-T (2017)	T	Moderate	Scattered, limited distribution, and small population size. Breeding is localized in the main valley bottoms in the southern and central interior. Typically nests in hayfields or open riparian meadows.
Brewer's Sparrow, <i>breweri</i> subspecies	<i>Spizella breweri</i>	Blue	Not listed	Not listed	Moderate	In BC range extends from the southern Okanagan Valley north to Kamloops, Ashcroft, the Chilcotin River, and Riske Creek.
Burrowing Owl	<i>Athene cunicularia</i>	Red	1-E (2003)	T	Low	Suitable habitat not found in Project area. Open grassland species.
Canyon Wren	<i>Catherpes mexicanus</i>	Blue	Not listed	Not listed	Low	Very small range in BC with bulk of population restricted to the Okanagan Valley south of Naramata. Occasional records exist as far north as Kamloops and as far west as Hedley.
Eared Grebe	<i>Podiceps nigricollis</i>	Blue	Not listed	Not listed	Low	Fairly widespread in the Southern Interior of BC. Breeds and forages in shallow lakes and ponds.
Flammulated Owl	<i>Psiloscops flammeolus</i>	Blue	1-SC (2003)	SC	Moderate	Restricted to old, dry and higher elevation Douglas-fir and Ponderosa Pine forest zones in BC.
Gray Flycatcher	<i>Empidonax wrightii</i>	Blue	Not listed	Not listed	Low	Most commonly associated with pinyon-juniper woodland. In BC exclusively uses open stands of small to medium ponderosa pine stands in extreme southern BC.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Great Blue Heron, <i>Herodias</i> subspecies	<i>Ardea herodias</i>	Blue	Not listed	Not listed	Moderate	Potential to use the Project area for foraging or roosting.
Horned Lark, <i>merrilli</i> subspecies	<i>Eremophila alpestris merrilli</i>	Blue	Not listed	Not listed	Low	Breeds at lower elevations in the Okanagan and Thompson valleys of the Southern Interior.
Lark Sparrow	<i>Chondestes grammacus</i>	Blue	Not listed	Not listed	Low	Breeds at lower elevations in the Okanagan extreme south Similkameen Valleys.
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Blue	1-T (2012)	T	High	Known occurrences and designated critical habitat located west of Project area. Typically occur at low elevations in south-central BC. Breeds in open forested areas with grassy understory and riparian areas. Cottonwood stands at low elevations.
Long-billed Curlew	<i>Numenius americanus</i>	Blue	1-SC (2005)	SC	Low	Prefer large, open grassland habitats.
Northern Goshawk, <i>atricapillus</i> subspecies	<i>Accipiter gentilis atricapillus</i>	Blue	Not listed	Not listed	Moderate	Widely distributed. Breeds throughout most of mainland BC east of the Coast Ranges.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Blue	1-T	SC	Moderate	Widely distributed throughout BC. Potential to use riparian coniferous stands. Occurs in coniferous or mixed deciduous/coniferous forests.
Peregrine Falcon, <i>anatum</i> subspecies	<i>Falco peregrinus anatum</i>	Red	1-SC (2012)	Not listed	Low	Nest on rock ledges high on steep cliffs.
Prairie Falcon	<i>Falco mexicanus</i>	Red	Not listed	Not listed	Low	Considered extirpated from much of the historic range in the south-central interior. Breeds in cliff habitats.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Rough-legged Hawk	<i>Buteo lagopus</i>	Blue	Not listed	Not listed	Moderate	Winter range is restricted to low valleys of southern BC primarily in the Fraser Valley, with smaller numbers in the Thompson and Okanagan Valleys.
Rusty Blackbird	<i>Euphagus carolinus</i>	Blue	1-SC (2009)	SC	Moderate	Extensive range in BC. Nesting habitat could be limited in Project area. Typically nest in swampy lakeshores, shrubby wetlands, black spruce bogs, and river oxbows.
Sharp-tailed Grouse, <i>columbianus</i> subspecies	<i>Tympanuchus phasianellus columbianus</i>	Blue	Not listed	Not listed	Low	Considered extirpated in the Okanagan Valley.
Short-eared Owl	<i>Asio flammeus</i>	Blue	1-SC (2012)	T	Low	Nest in grasslands, marshes, and parklands. Fraser River delta is main wintering area in BC but have been known to nest in the southern Okanagan Valley.
Swainson's Hawk	<i>Buteo swainsoni</i>	Red	Not listed	Not listed	Moderate	Breeds mainly in the Thompson-Okanagan Plateau. Occurrences in the Douglas plateau.
Western Grebe	<i>Aechmophorus occidentalis</i>	Red	1-SC (2017)	SC	Low	No large, open bodies of water occur in the Project area.
Western Screech-Owl, <i>macfarlanei</i> subspecies	<i>Megascops kennicottii macfarlanei</i>	Blue	1-T (2005)	T	Low	Restricted to moist woodlands along streams and lakes. Typically found below 600 m in the Okanagan.
White-throated Swift	<i>Aeronautes saxatalis</i>	Blue	Not listed	Not listed	Moderate	Moderately widespread throughout BC. Narrow nesting requirements on rock cliffs.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	Blue	1-E (2006)	E	Moderate	Known occurrences and designated critical habitat located west of Project area.
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Red	Not listed	Not listed	Moderate	Occurs in open woodland and deciduous riparian woodland.
Yellow-breasted Chat	<i>Icteria virens</i>	Red	1-E (2003)	E	Low	Range mostly restricted to the southern Okanagan, Similkameen Valleys and the Kootenay area near the Pend d'Oreille River.
Amphibians and Reptiles						
Blotched Tiger Salamander	<i>Ambystoma mavortium</i>	Red	1-E (2018)	E	Low	Occurs in dry areas of the Southern Interior of BC where it is associated with Ponderosa Pine, Bluebunch Wheatgrass, and Douglas-fir. Adults found near ponds and lakes.
Desert Nightsnake	<i>Hypsiglena chlorophaea</i>	Red	1-E (2003)	E	Low	Generally restricted to dry, semi-arid, low elevation grasslands and valleys in southern BC.
Gopher Snake, <i>deserticola</i> subspecies	<i>Pituophis catenifer deserticola</i>	Blue	1-T (2005)	T	Low	Prefer open and semi-open habitats typically below 700 m in elevation. Hibernacula found within fissures of rock outcrops or in talus.
Great Basin Spadefoot	<i>Spea intermontana</i>	Blue	1-T (2003)	T	Moderate	Occurrence and critical habitat mapped approximately 8 km west of Project area.
North American Racer	<i>Coluber constrictor</i>	Blue	1-SC (2006)	T	Low	Inhabit grassland and shrub-steppe ecosystems.
Northern Leopard Frog	<i>Lithobates pipiens</i>	Red	1-E (2003)	E	Low	Project area outside of known locations in BC. Occur in the Creston Valley in BC.

Common Name	Scientific Name	BC Status	SARA Status	COSEWIC Status	Potential to Occur	Rationale**
Painted Turtle - Intermountain - Rocky Mountain Population	<i>Chrysemys picta</i> pop. 2	Blue	1-SC (2007)	SC	Low	
Western Rattlesnake	<i>Crotalus oreganus</i>	Blue	1-T (2005)	T	Moderate	Project area within designated critical habitat for Western Rattlesnake. Further studies required to determine if any habitat attributes are found within the Project area.
Western Skink	<i>Plestiodon skiltonianus</i>	Blue	1-SC (2005)	SC	Moderate	Found across southern BC in a wide range of habitats – dry woodland, grassland, creeks, and in forest clearings.

Search criteria:

Animals

AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)

OR SARA Schedule 1 Status:True

OR COSEWIC Status:Endangered OR Threatened OR Special Concern

AND Area Of Interest: User Defined Polygon

Sort Order:Scientific Name Ascending

**Source of species information: CDC, 2023

Table 2. Ecological Communities at risk*

Common Name	Scientific Name	BC Status
Scrub Birch / Water Sedge	<i>Betula nana</i> / <i>Carex aquatilis</i>	Blue
Slender Sedge / Common Hook-moss	<i>Carex lasiocarpa</i> / <i>Drepanocladus aduncus</i>	Blue
Hybrid White Spruce / Horsetails / leafy mosses	<i>Picea engelmannii</i> x <i>glauca</i> / <i>Equisetum</i> spp. / <i>Mnium</i> spp.	Blue
Lodgepole Pine / Water Sedge / peat-mosses	<i>Pinus contorta</i> / <i>Carex aquatilis</i> / <i>Sphagnum</i> spp.	Blue
Douglas-fir - Ponderosa Pine / Pinegrass	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i> / <i>Calamagrostis rubescens</i>	Blue
Douglas-fir - Ponderosa Pine / Bluebunch Wheatgrass	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i>	Blue
Douglas-fir - Ponderosa Pine / Bluebunch Wheatgrass - Pinegrass	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i> / <i>Pseudoroegneria spicata</i> - <i>Calamagrostis rubescens</i>	Blue
MacCalla's Willow / Beaked Sedge	<i>Salix maccalliana</i> / <i>Carex utriculata</i>	Blue
Hard-stemmed Bulrush Deep Marsh	<i>Schoenoplectus acutus</i> Deep Marsh	Blue
Western Redcedar - Douglas-fir / Red-osier Dogwood	<i>Thuja plicata</i> - <i>Pseudotsuga menziesii</i> / <i>Cornus stolonifera</i>	Blue
Common Cattail Marsh	<i>Typha latifolia</i> Marsh	Blue

APPENDIX 3
EARLY ENGAGEMENT PLAN