Block Cave Project

Production Phase Project Description

Submitted by:

Newcrest Red Chris Mining Ltd.

Prepared by:

SLR Consulting (Canada) Ltd.

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401-8311-EN-REP-0016

February 17, 2023

Revision Record

Revision No.	Revision Date	Revision Description
0	February 17, 2023	Final for submission to Tahltan Nation and BC Environmental Assessment Office

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Executive Summary

Newcrest Red Chris Mining Limited (NRCML, or the Company) is operator of the Red Chris Mine (Red Chris). Red Chris is entirely within Tahltan Nation territory, in the Stikine watershed of northwest British Columbia, approximately 80 kilometres (km) south of Dease Lake. Site operations include a conventional drill-blast-shovel-truck open pit mine, a process plant utilizing crushing, grinding, and froth flotation to produce a mineral concentrate with payable copper, gold, and silver content, a Rock Storage Area (RSA), a Tailings Impoundment Area (TIA), ore stockpile, water management infrastructure, 23 km of mine access road that links to Highway 37, and a powerline adjacent to the access road connecting to the regional grid. There is also supporting infrastructure including an accommodation camp, maintenance and warehouse facilities, and offices. The main surface disturbance areas are associated with the RSA, TIA, and the open pit.

Red Chris operates under the authority of federal and provincial approvals and authorizations, and in accordance with the Impact Benefit Co-Management Agreement (IBCA) signed in August 2019 with the Tahltan Central Government (TCG), Iskut First Nation and the Tahltan Band. The principal provincial authorizations are Environmental Assessment Certificate (EAC) M05-02, *Mines Act* (MA) Permit M-240, and *Environmental Management Act* (EMA) Permit 105017.

Over the next few years, NRCML plans to transition the mining operation to an underground (u/g) mining method known as block cave mining. The ore to be mined via block caving is beneath the open pit, at depths where it is not economically or technically feasible to mine using open pit techniques.

The Block Cave Project (the Project) requires several years of exploration, mine planning, and pre-production underground development before underground mine production can begin. NRCML has been studying the Project since 2020, completed a Pre-Feasibility Study (PFS) in October 2021 and is now undertaking a Feasibility Study (FS), which is expected to be complete in 2023. In addition, NRCML has permitted and developed the Naghā exploration decline and recently completed permitting for the Pre-Production Phase of the Project, which consists of supporting underground development necessary to gain access to the ore zone via an access decline and a conveyor box cut and decline for ore movement.

The subject of this Project Description (PD) document is the Production Phase of the Block Cave Project. The Production Phase will include the following main activities:

- Development of additional underground infrastructure to support underground production mining;
- Hydraulic pre-conditioning of the block cave mining zone;
- Transition in mining method from open pit to block caving, with underground mine production continuing until approximately 2038 (based on a production rate of up to 15 million tonnes per annum, Mtpa);
- Potential advanced production of ore via conventional underground development[1];
- Modifications to the process plant, including expansion to raise mill throughput up to 15 Mtpa;
- Upgrades to surface infrastructure, including a new electrical substation;

[1] Please note that this advanced mining of ore is different from possible early mining of high grade pods in the East Zone contemplated by Newcrest at the time of its Market Release dated 12 October 2021.

- Increasing concentrate shipments from the mine to the port and loadout facility at Stewart; and
- Seasonal increases in camp accommodation capacity to house workers during development and construction.

Based on a mine production rate of 15 Mtpa, the Production Phase will sustain mine operation until approximately 2038, by which time the TIA will have reached its permitted capacity. Relative to the currently approved mine plan per EAC M05-02, transitioning to underground mining is expected to improve project economics, significantly reduce the quantity of potentially acid generating (PAG) waste rock that would need to be stored on surface, and reduce the mine's greenhouse gas (GHG) footprint.

The change in mining method will necessitate amendments to EAC M05-02, MA Permit M-240, and EMA Permit 105017, in addition to other permits and authorizations. This PD supports the Production Phase EAC amendment process. Subject to market and operating conditions, receipt of all necessary regulatory approvals and no unforeseen delays, NRCML intends to advance Production Phase development and construction activities and to initiate the transition to underground mining.

NRCML continues to evaluate the economics of future mining opportunities to extend the mine life beyond this application; however, this will be subject to project economics, market and operating conditions, all necessary approvals, regulatory requirements, ongoing engagement with the Tahltan Central Government, future permitting including the development of additional tailings storage capacity, and no unforeseen delays.

Potential Project Effects and Mitigation

As part of the Project FS, NRCML is carrying out a detailed assessment of the environmental and social impacts associated with the proposed change in mining method. This effort will also serve to support the EAC amendment process.

NRCML has screened the proposed Production Phase activities and has classified them according to their potential impacts on selected Valued Components (VCs). The proposed changes are anticipated to have a "strong" interaction on three main areas:

- Surface water quantity and quality;
- Groundwater quantity and quality; and
- Tahltan Nation culture.

A strong interaction is defined as one that has the potential to result in a significant impact and will form the focus of subsequent studies.

Additional areas where one or more interactions are anticipated to have a moderate interaction, which is defined as a potential for a non-significant impact, include:

- Air quality;
- Acoustics;
- Landscape and Terrain;
- Aquatic Resources;
- Vegetation and Terrestrial Ecosystems;

- Wildlife and Wildlife Habitat;
- Local Community Health and Well-being;
- Social Services and Infrastructure;
- Local economy; and
- Archaeological and Heritage resources.

During the detailed assessment of the impacts of the proposed activities, NRCML will assess the need to modify or add specific mitigation measures to the existing management plans or to develop new management plans to address specific impacts of the proposed changes, as appropriate in the context of the IBCA.

Engagement

Through the policies of its owners, NRCML is committed to proactive engagement through collaboration, education, and transparent dialogue. The Company's engagement strategy is based on carrying out early and frequent engagement with key stakeholders, notably the Tahltan Nation on whose traditional territory Red Chris is located. NRCML is committed to working collaboratively with the Tahltan Nation as well as with stakeholders, and to being transparent and inclusive with its communication and content.

NRCML undertakes engagement with the Tahltan Nation on the Block Cave Project under the auspices of the IBCA and concurrently with ongoing engagement on all aspects of Red Chris. NRMCL initiated engagement specific to block caving in early 2020, a few months after Newcrest assumed operating control of the mine. These efforts, which were influenced significantly by the COVID-19 pandemic during 2020–22, will continue indefinitely.

Key Tahltan engagement activities include the following:

- Meetings of the Project Advisory Committee (PAC) under the IBCA;
- Site tours for community leaders and members;
- Development of virtual engagement platforms;
- Regular meetings with Tahltan political leadership;
- Development of an updated Social Baseline Study;
- Meetings of the Sociocultural Committee under the IBCA;
- Establishment and meetings of the Block Cave and Early Works Technical Subcommittee of the Environmental Oversight Committee (EOC);
- Subject matter-specific engagement on an as-required basis;
- Development of a Tahltan Nation Traditional Land Use Study (TLUS);
- Kitchen Table meetings with community Elders; and
- Kinaskan Lake guide outfitter meetings.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AEP	Annual Exceedance Probability
AIR	Application Information Requirements
AOI	area of influence
AQMP	Air Quality Management Plan
BC	British Columbia
BC AAQO	British Columbia Ambient Air Quality Objectives
BC WQG	British Columbia Water Quality Guidelines
BMP	Best Management Practice
CHM	Conceptual Hydrogeological Model
Cl^-	chloride
COPC	Contaminants of Potential Concern
dmt	dry metric tonne
D-Se	dissolved selenium
EA	Environmental Assessment
EAA	*Environmental Assessment Act*
EAC	Environmental Assessment Certificate
EAO	British Columbia Environmental Assessment Office
ECCC	Environment and Climate Change Canada (formerly Environment Canada)
ECDA	Economic and Community Development Agreements
EDD	East Diversion Ditch
EMA	*Environmental Management Act*
EMC	Environmental Management Committee
EMLI	Ministry of Energy, Mines, and Low Carbon Innovation
EMP	Environmental Management Plan
EMS	Environmental Management System
EMZ	Early Mining Zone
EOC	Environmental Oversight Committee
FLNRO	Ministry of Forests, Lands and Natural Resources Operations
FNHA	First National Health Authority
FS	Feasibility Study
FY	Fiscal year

GHG	greenhouse gas
GSC	Geological Survey of Canada
H:V	ratio of height to vertical distance
ha	hectare
HSU	hydrostratigraphic units
IBA	Impact Benefit Agreements
IBCA	Impact Benefit and Co-Management Agreement
IR	Iskut Indian Reserve
IVHS	Iskut Valley Health Services
JV	joint venture
km	kilometre
km^2	square kilometres
koz	thousands of ounces
kt	thousands of tonnes
kV	kilovolt
kW	kilowatt
LHA	Local Health Area
LHD	load-haul-dump
LNG	Liquefied National Gas
LOM	life-of-mine
LRMP	Land and Resources Management Plan
LSA	Local Study Area
m	metre
MA	Mines Act
masl	metres above sea level
MB	macroblock
mgbs	metres below ground surface
MDMER	Metal and Diamond Mining Effluent Regulations
ML/ARD	metals leaching/acid rock drainage
Mm^3	million cubic metres
MMO	Major Mines Office
µm	micrometres (µm
Mt	million tonnes
Mtpa	million tonnes of ore per annum

MW	megawatt (power)
MW	monitoring well (water)
NAG	non-acid generating
NE	northeast
Newcrest	Newcrest Mining Limited
NHA	Northern Health Authority
NHSDA	Northwest Health Service Delivery Area
NRCML	Newcrest Red Chris Mining Ltd.
NRDD	North Reclaim Dam Discharge
P_{80}	80% of the material has a set diameter or smaller
PAC	Project Advisory Committee
PAG	potentially acid generating
PD	Project Description
PFS	Pre-Feasibility Study
PGA	peak ground acceleration
PHSA	Provincial Health Services Authority
PM_{10}	particulate matter with a diameter between 2.5 microns and 10 microns
$PM_{2.5}$	particulate matter with a diameter of 2.5 microns and smaller
PMA	Permitted Mine Area
RCDC	Red Chris Development Company Ltd.
RCMP	Royal Canadian Mounted Police
RDKS	Regional District of the Kitimat-Stikine
RSA	Rock Storage Area
Red Chris	Red Chris Mine
SAG	Semi-Autogenous Grinding
SAS	Stikine Airport Society
SO_4	sulfate
SAOC	Site Asset Operations Center (SAOC)
SPO	Site Performance Objectives
SRD	South Reclaim Dam
SRHC	Stikine Regional Health Centre
STP	sewage treatment plant
SWWBLM	Site-Wide Water Balance and Load Model
TBC	Tahltan Band Council

TCG	Tahltan Central Government
TH	Tahltan Health
THREAT	Tahltan Heritage, Resources and Environmental Assessment Team
TIA	Tailings Impoundment Area
TLE	Trigger level exceedances
TLUS	Tahltan Nation Land Use Study
TNDC	Tahltan Nation Development Corporation
TNHWG	Tahltan Nation Health Working Group
TRP	Trigger Response Plan
TSA	Timber Study Area
TSP	Total Particulate Matter
TSS	Total Suspended Solid
TWMA	Todagin Wildlife Management Area
VC	Valued Components
WDD	West Diversion Ditch
WSA	*Water Sustainability Act*
WSC	Water Survey of Canada

1 Introduction

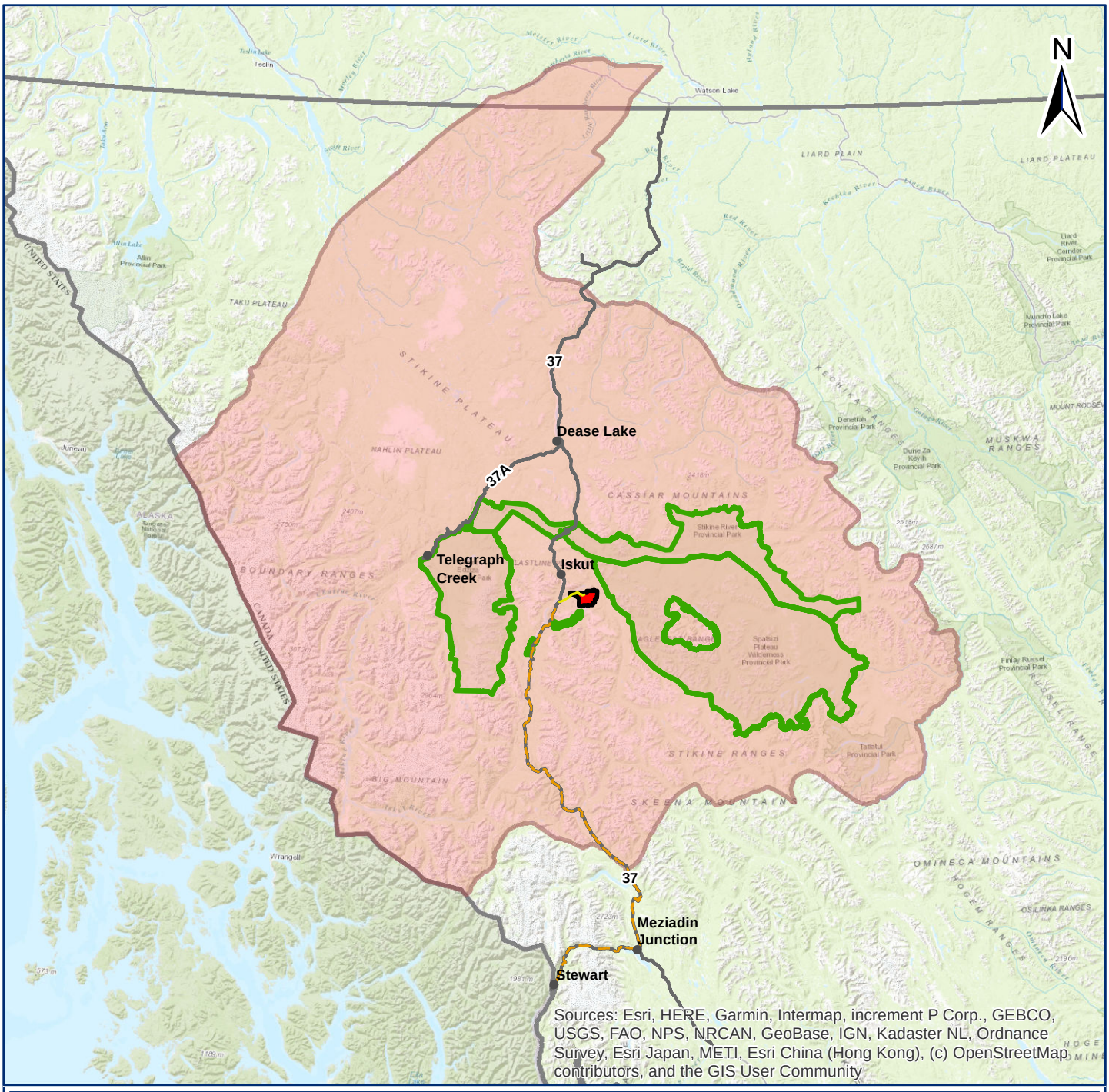
Newcrest Red Chris Mining Ltd. (NRCML), a wholly owned subsidiary of Newcrest Mining Limited (Newcrest), is the operator of the Red Chris mine (Red Chris). Red Chris is owned 70% by NRCML and 30% by the Red Chris Development Company Ltd. (RCDC) through an unincorporated joint venture. The mine has been in operation since 2015.

Red Chris is in northwest British Columbia, entirely within Tahltan Nation territory, approximately 18 kilometres (km) southeast of the village of Iskut, 80 km south of Dease Lake, 450 km north of Smithers, and 12 km east of the Stewart-Cassiar Highway 37 (Figure 1). The site is in a geographically isolated and sparsely populated area. Regional communities include Smithers, Terrace, and Stewart. The site is not located in or adjacent to any protected area. The Spatsizi Plateau Wilderness Provincial Park is to the east, Mount Edziza Provincial Park is to the west, and Todagin South Slope Provincial Park is to the south (Figure 2).

Operations at Red Chris include a conventional drill-blast-shovel-truck open pit mine, a process plant utilizing crushing, grinding and froth flotation to produce a mineral concentrate with payable copper, gold, and silver content, a mined -Rock Storage Area (RSA), a Tailings Impoundment Area (TIA), ore stockpiles, water management infrastructure, a 23 km mine access road that links to Highway 37, and a powerline adjacent to the access road. There is also supporting infrastructure including an accommodation camp, maintenance and warehouse facilities, and offices. Surface disturbance areas totaled approximately 1,826 hectares (ha) as of December 31, 2021 (NRCML 2021d). The main disturbance areas are associated with the RSA, TIA, and the open pit.

Ore production averages between 10 and 11 million tonnes per annum (Mtpa). In the fiscal year (FY) ending June 30, 2022, Red Chris produced approximately 30 thousand tonnes (kt) of copper, 60 thousand ounces (koz) of gold, and 195 koz of silver as a mineral concentrate product (Newcrest Mining Limited 2022).

The Red Chris ore body extends below the ultimate open pit shell to depths at which surface mining is not feasible. To access the deep ore, which is higher grade than the ore remaining in the open pit, NRCML proposes to transition to an underground mining operation using the method known as block caving. In 2021, NRCML completed a Pre-Feasibility Study (PFS) which demonstrated the viability of the Block Cave Project (the Project) and supported an updated statement of Reserves and Resources(Newcrest Mining Limited & Imperial Metals 2021) NRCML is currently undertaking a Feasibility Study (FS), which the Project team expects to complete later this calendar year.



Legend

- CONCENTRATE SHIPPING ROUTE
- MINE ACCESS ROAD
- HIGHWAY
- PROVINCIAL PARK / ECOLOGICAL RESERVE
- RED CHRIS PERMITTED MINE AREA
- TAHLTAN TERRITORIAL BOUNDARY

NOTES:
PARK AREAS FROM BC DATA CATALOGUE

0 25 50 100 150 Kilometers

SCALE 1:3,000,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 9N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

NEWCREST RED CHRIS MINING LTD.
RED CHRIS PROPERTY
ENVIRONMENTAL ASSESSMENT CERTIFICATE #M05 02

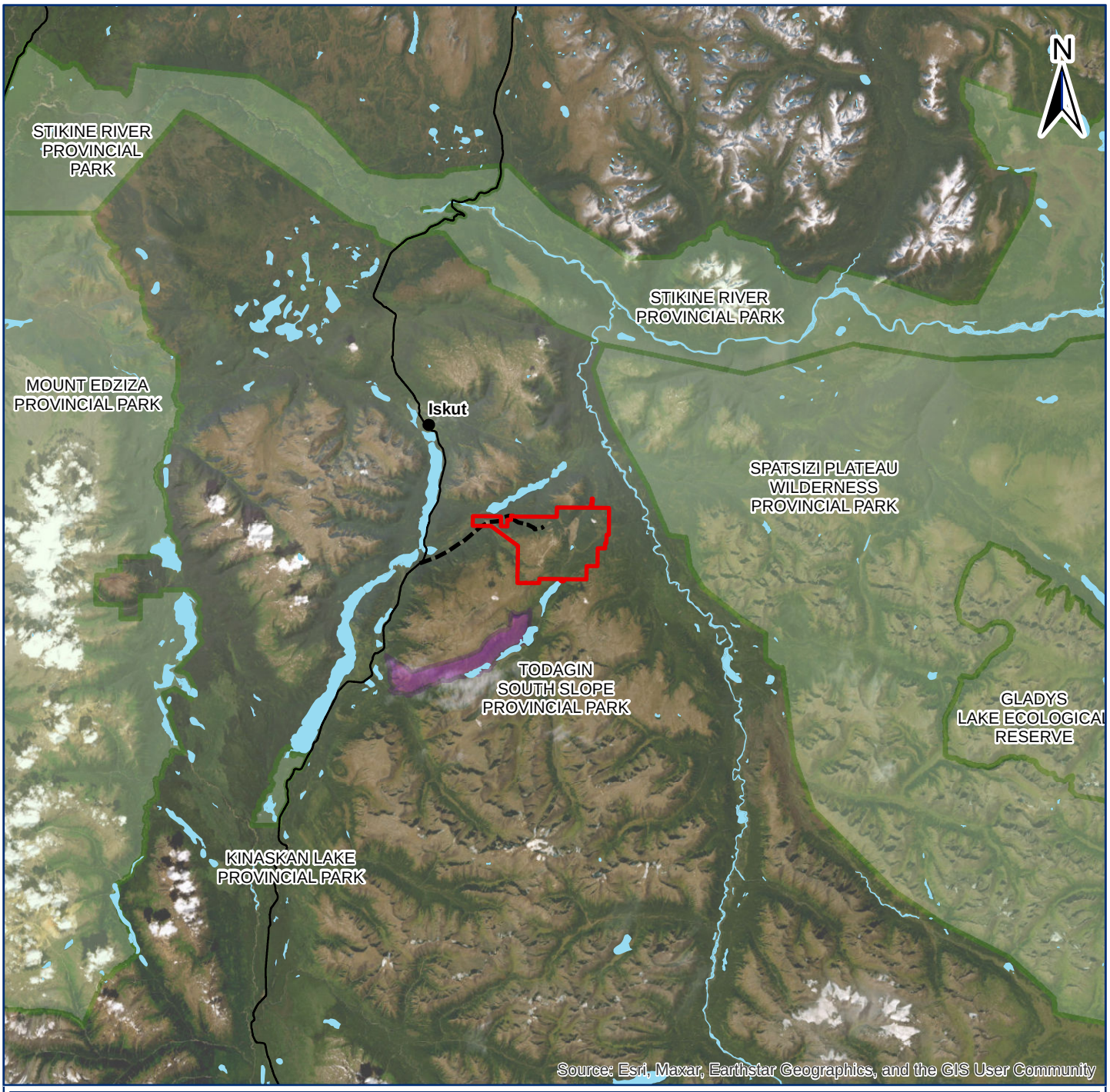
401-8311-EN-REP-0016

REGIONAL LOCATION

SLR

FIGURE NO:
1

DATE: February 6, 2023
PROJECT NO: 233.30000.00001



Legend

- ACCESS ROAD
- HIGHWAY
- RIVER, LAKE OR WETLAND
- TODAGIN SOUTH SLOPE PROVINCIAL PARK
- PROVINCIAL PARK / ECOLOGICAL RESERVE
- RED CHRIS PERMITTED MINE AREA

NOTES:
REGIONAL DATA FROM BC DATA CATALOGUE

IMAGERY - 2016, MAXAR

0 5 10 20 30 Kilometers

SCALE 1:600,000
PAGE SIZE 11 x 17
NAD 1983 UTM Zone 9N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

NEWCREST RED CHRIS MINING LTD.
RED CHRIS PROPERTY
ENVIRONMENTAL ASSESSMENT CERTIFICATE #M05 02

401-8311-EN-REP-0016

SITE LOCATION

SLR

FIGURE NO:
2

DATE: February 6, 2023

PROJECT NO: 233.30000.00001

Last Saved: December 23, 2022 12:36:42 PM by alewall

GIS PATH: C:\PROJECTS\233_30000_00001_Newcrest\1_Maps\RPT\233_30000_02_Site Location.mxd

This Project Description (PD) describes the main features of the Production Phase[2] of the Block Cave Project, including:

- Development of additional underground infrastructure to support underground production mining;
- Hydraulic pre-conditioning of the block cave mining zone;
- A transition in mining method from open pit to block caving;
- Potential advanced mining of ore via conventional underground development;[3]
- Modifications to the process plant including an expansion to raise throughput up to 15 Mtpa;
- Upgrades to surface infrastructure including a new electrical substation;
- Increased concentrate shipments by truck from the mine to the port and loadout facility at Stewart; and
- Seasonal increases in camp accommodation capacity to house workers during development and construction.

Implementation of the Block Cave Production Phase will necessitate amendments to Environmental Assessment Certificate (EAC) M05-02, *Mines Act* (MA) Permit M-240, and *Environmental Management Act* (EMA) Permit 105017, in addition to other approvals and authorizations. This PD supports the EAC amendment process under Section 32(1) of the BC *Environmental Assessment Act* (EAA), 2018.

1.1 Proponent Contact Information

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[2] "Production Phase" is defined in Section 3.1.
[3] This advanced mining of ore is different from possible early mining of high grade pods in the East Zone contemplated by Newcrest at the time of its Market Release dated 12 October 2021.

1.2 Purpose and Rationale

NRCML proposes to transition from open pit mining to underground mining to reach the higher -grade ore below the open pit shell. The change in mining method, an increase in mine production rate, and the associated changes in surface infrastructure are expected to improve project economics, reduce the quantity of potentially acid -generating (PAG) waste rock that would be stored in the RSA via traditional surface mining methods, reduce the greenhouse gas (GHG) emissions of the operations, and will entail only a limited expansion to the overall surface disturbance footprint. The Production Phase, which is the subject of this PD, is constrained by the current permitted capacity of the TIA. Future extensions to the mine's operating life are possible; contingent on favorable economics, permitting, and the development of additional tailings storage capacity.

2 Legislative and Regulatory Context

2.1 Regulatory History

2.1.1 Federal Approvals

Environment and Climate Change Canada (formerly Environment Canada) granted environmental approval for Red Chris under the Canadian *Environmental Assessment Act* (SC 1992, c.37) in May 2006. The approval was challenged in court and ultimately upheld by a Supreme Court of Canada decision on January 21, 2010.

On May 6, 2016, NRCML was granted a Schedule 2 Amendment to the Metal and Diamond Mining Effluent Regulations (MDMER SOR/2002-222) authorizing the inclusion of a portion of Trail Creek. On July 22, 2016, the mine received a *Fisheries Act* (R.S.C., 1985, c. F-14) Authorization pursuant to Section 35(2) for construction of the south dam and south reclaim dam on Trail Creek.

Federal approvals remain in force. The Block Cave Production Phase is not expected to trigger federal regulatory involvement.

2.1.2 Environmental Assessment Certificate

The BC Environmental Assessment Office (EAO) issued EAC M05-02 on August 24, 2005. To date, EAC M05-02 has been amended five times:

1 February 24, 2012: Amendment 1 amended Condition 1 of the EAC to reflect more recent language for proposed changes to the certificate and amends Condition 8 to add a requirement for compliance reporting.

2 August 19, 2016: Amendment 2 amended commitments G10, M11, and M12 of EAC M05-02 to allow design changes around the TIA and to the south dam related to water management.

3 August 15, 2019: Amendment 3 amended the EAC to be in the name of NRCML.

4 May 3, 2021: Amendment 4 amended the EAC to allow the mine to expand current camp capacity for a total of up to 800 people.

5 December 16, 2022: (Deemed) amendment 5 for the Pre-Production Phase of the Block Cave Project, following approval of NRCML's application to amend MA Permit M-240.

One additional amendment is in process:

6 Q4 2022/Q1 2023: Amendment to allow Red Chris to expand current camp occupancy up to 1,200 people along with necessary support facilities.

2.1.3 Other Permits and Authorizations

Red Chris holds multiple permits for its existing operations in addition to EAC M05-02. Table 1 presents a summary of other permits.

Table 1: Summary of Existing Permits

Ministry	Authorization	Purpose	Permit	First Issued	Notes
EMLI (BC Ministry of Energy, Mines, and Low Carbon Innovation	*Mines Act* Permit Approving Mining and Reclamation Program	Mining activities	M-240	May 2012	An amendment related to the Pre-Production Phase of the Block Cave Project is in progress.
ENV	*Environmental Management Act* Effluent Discharge Permit	Authorizes discharge to the TIA, non-point source discharges and sediment control pond discharges	105017	September 2013	Amended July 2022 as part of ENV's effectiveness review and modernization and to reflect site operations.
ENV	*Environmental Management Act* Municipal Wastewater Regulation Registration	Authorizes discharge of waste to the environment from the wastewater facility pursuant to meeting conditions and requirements of the Municipal Wastewater Regulation	106004	August 2012	Wastewater facility to service camp and office facilities.
ENV	*Environmental Management Act* Air Discharge Permit	Authorizes discharge of ash to ground and air contaminants to the air	106668	June 2013	Amended September 2022 as part of ENV's effectiveness review and modernization and to reflect site operations.
Ministry of Forests	Road Use Permit	Mine access road	S25481	June 2012	Construction and maintenance of roads and bridges.
Northern Health	Permit to Operate a Drinking Water System	Potable water system		August 2019	Permit revised August 2021 and includes a drinking water system with 2-14 connections for the mine camp water system.

2.2 Regulatory Processes

As stated in Section 3(5) of the Reviewable Project Regulations (BC Government 2020c), a project with respect to which there is a holder of an EAC who applies for an amendment under Section 32 of the Act does not constitute a reviewable project. Therefore, the proposed changes described in this document are subject to an amendment to EAC M05-02 under Section 32(1) of the BC *Environmental Assessment Act* of 2018.

Table 2 provides a list of existing Red Chris licenses, permits, and authorizations that require amendments or new permits due to the Block Cave Production Phase.

Table 2: Provincial Licenses, Permits, and Authorizations Anticipated

Regulator Agency	Provincial Legislation	Licenses, Permits, and Authorizations	Existing (No Change Required or Amendment Required) or Require New
BC Ministry of Energy, Mines, and Low Carbon Innovation	*Mines Act* (BC Government, 1996c)	*Mines Act* Permits to construct, operate, close and decommission, and reclaim a mine.	Existing, Amendment Required
BC Ministry of Environment and Climate Change Strategy	*Environmental Management Act* (BC Government 2003)	Air Discharge Permit	Existing, Amendment Required
BC Ministry of Forests	*Water Sustainability Act* (BC Government 2016)	Section 9 and 10 Approval, Water Use License	Filed, Under Review.
		Part 3 - Division 3, Wells and Groundwater Protection	Existing, Additional/Amendment Required

2.3 Impact Benefit Co-Management Agreement

NRCML is committed to the Impact Benefit Co-Management Agreement (IBCA) signed in August 2019 with the Tahltan Central Government (TCG), Iskut First Nation and the Tahltan Band for the co-management of Red Chris and will abide by its terms. This agreement effectively transferred the agreement signed with RCDC in 2015 and updated the commitments to reflect the current state of Red Chris. NRCML is committed to honouring this agreement and fully implementing the commitments contained therein, which include establishment of measures to co-manage and protect the natural and cultural heritage resources in the area of influence (AOI) of the Red Chris operations.

2.4 Proposed Timeline for EAC Amendment

As per criteria presented in the *Environmental Assessment Certificate and Exemption Order Amendment Policy* (BC Government. 2020b), the amendment is anticipated to be classified as complex, with an application review time of likely six months or longer. The following timeline is being proposed and is subject to change based on discussions with EAO and TCG:

- Q1 2023: Submission of Project Description.
- Q1-Q2 2023: Development of Application Information Requirements (AIR).
- Q1-Q3 2023: Development of Amendment Application.
- Q4 2023: Submission of Amendment Application.

3 Description of Proposed Changes

NRCML proposes to transition from open pit mining to underground mining to access higher grade ore below the open pit shell, substantially improving the economics of the operation while significantly lowering GHG emissions and reducing the amount of waste rock to be disposed of in the RSA, relative to the mining operation approved in EAC M05-02. In addition to the change in mining method, NRCML proposes to increase mine production to up to 15 Mtpa, necessitating an expansion of the process plant. The current mine disturbance footprint is presented in Figure 3. The changes described in this section are based mainly on the PFS mine design, which is being refined in the FS.

For mine planning purposes, NRCML has divided the block cave ore zone into three “macroblocks”, referred to as MB1, MB2, and MB3. The PFS and the current statement of Reserves and Resources are premised on the eventual mining of all three macroblocks (Newcrest Mining Limited & Imperial Metals, 2021). The FS and current permitting activities will be focused on mine operation until the TIA reaches its currently permitted configuration, an embankment crest elevation of 1,180 metres above sea level (masl). This corresponds to approximately 302 million tonnes (Mt) of tailings in storage for the life-of-mine (LOM) operation, (i.e., from 2015). According to the mine plan developed for the PFS, the TIA will reach its permitted capacity in approximately 2038, based on a production rate of 15 Mtpa.

NRCML may continue to operate the underground mine post-2038, which in this document is referred to as the LOM Extension Phase. Implementation of the LOM Extension Phase will be contingent on, among other things, market and operating conditions, favourable economics, all necessary approvals, including permitting, regulatory requirements and the development of additional tailings storage capacity.

LEGEND

- PRODUCTION WELL - NORTH VALLEY WELLFIELD
- PRODUCTION WELL - SOUTH VALLEY WELLFIELD

NOTES:
IMAGERY: 2021, RED CHRIS MINE

0 250 500 1,000 1,500 Meters

SCALE 1:40,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N
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EXISTING MINE SITE LAYOUT (2021)

SLR

FIGURE NO:
3

DATE: February 7, 2023
PROJECT NO: 233.30000.00001

3.1 Project Phases

Block caving requires several years of underground development before operational mining can begin. To facilitate this, NRCML is taking a phased approach to Project development, which is reflected in a staged permitting effort (Table 3). The subject of this PD document is the Production Phase.

Table 3: Block Cave Project Phases and Approximate Timelines

Phase	Scope	Permitting Status	Execution Timeline
Exploration – Phase 1	• Naghā Decline Box Cut	Permitted	Completed
Exploration – Phase 2	• Naghā Decline	Permitted	2022 to 2023
Pre-Production Phase	• Underground development including access decline, conveyor boxcut and decline, and ventilation raises. • Tailings thickener. • Camp expansion to maximum occupancy of 920 people.	Permitted	2023 to 2025
Camp Expansion	• Camp expansion to maximum occupancy of 1,200 people.	In process	2023 to 2024
Production Phase	• Underground development. • Pre-conditioning (hydraulic fracturing) of block cave ore zone. • Process plant expansion to throughput capacity of up to 15 Mtpa. • Surface infrastructure construction including substation and camp expansion to maximum occupancy of 1,500 people.	Current scope	2024 to 2027
	• Underground mine production up to a rate of 15 Mtpa		2025 to 2038[4]
	• Mine closure and post-closure monitoring.		From 2038
Potential LOM Extension Phase[5]	• Additional underground mining infrastructure development. • Additional pre-conditioning of block cave ore zone. • Continued production mining at up to 15 Mtpa. • Development of additional tailings storage capacity. • Mine closure and post-closure monitoring.	Future	From 2038

[4] Includes ore extracted as part of underground development; based on a production rate of 15 Mtpa.
[5] Implementation of the LOM Extension Phase will be contingent on, among other things, market and operating conditions, favourable economics, all necessary approvals, including permitting, regulatory requirements and the development of additional tailings storage capacity.

Relative to the project definition on which EAC M05-02 and its amendments are premised, the Production Phase maintains the operating life of Red Chris at approximately 25 years from 2015, while increasing the total tonnage of ore processed from 277 to 302 Mt and significantly reducing total tonnage of waste rock to be trucked to the RSA.

The potential LOM Extension Phase fits the definition of a reasonably foreseeable future development (BC Government 2020b). For the purposes of the Production Phase EAC amendment process, NRCML proposes to assess the effects of the LOM Extension Phase in the context of an analysis of cumulative impacts.

3.2 Red Chris Mine Life Cycle

The Production Phase can be split into four stages: construction, production, closure, and post-closure. The construction stage, which will include continuing underground development and construction of facilities both underground and on surface, will take approximately three years and will be followed by approximately twelve years of predominantly block cave mining production. For several years there will be an overlap in open-pit mining with underground construction and mining operations, during which time the process plant will be fed with a combination of open pit ore and/or ore stockpiled on surface, and underground ore. After this transition period and as underground mine production increases, surface mining will be suspended and during most of the Production Phase the underground mine will supply all the process plant feed. Underground mining will continue until the TIA embankment crest elevation reaches its permitted limit of 1,180 masl, by which time approximately 302 Mt of tailings will be in storage. This is estimated to occur in 2038 (based on a production rate of 15 Mtpa).

Additional ore reserves will remain unmined at the end of the Production Phase. Eventual mining and processing of this material, termed the LOM Extension Phase, will necessitate the permitting and development of additional tailings storage capacity.

The current (PFS) underground mine design is premised on development of the block cave extraction and undercut layers (Section 3.3.3) at elevations of 500 masl and 525 masl, respectively. This is approximately 1,000 metres below the ground surface (mbgs) on the plateau where the mine, RSA, and process plant facilities are located. As part of the FS, it is possible that the mining design refinement will result in shallower development of block caving initially in the Production Phase, with deeper development deferred to a later date. For the purposes of this Project Description and assessing impacts to VCs in the context of the Production Phase EAC amendment process, block cave development with the extraction layer at 500 masl is assumed.

3.3 Production Phase Components and Activities

Block caving is an efficient means of extracting ore at depth. The method involves undercutting the ore zone, creating an artificial cave. The rock mass above the cave cannot support itself and collapses. Ore production occurs on an extraction level beneath the undercut where drawbells are used to funnel the fragmented ore to mobile mining equipment. The collapse progresses upward through the ore body, eventually causing surface subsidence in the form of sinkholes. The efficiency of the method comes from the use of gravity and ground stresses rather than chemical and mechanical means to fragment the ore, and the use of gravity rather than equipment to move and collect ore.

Because the ore body is accessed from below, block cave mining requires a considerable amount of deep underground development and infrastructure prior to the commencement of production. Block cave projects thus typically consist of a lengthy pre-production development period followed by a period of steady-state production when little additional infrastructure construction or mine development is required. The Block Cave Project follows this pattern with mine accesses and underground infrastructure being developed over several years prior to ore production from the block cave.

3.3.1 Pre-Conditioning

Seismicity and damaging seismic events can be a significant hazard associated with cave mining. Hydraulic pre-conditioning has been proven to effectively control these hazards by limiting the potential seismic energy build-up in the rock mass to be mined. NRCML has designed a hydraulic pre-conditioning program for Red Chris to introduce rock mass fractures at approximately a four-metre spacing throughout the ore body and underground infrastructure areas.

The principal objectives of the hydraulic pre-conditioning program are to:

- Reduce the seismicity and hazards associated with large and damaging seismic events across the block cave working areas and associated infrastructure to improve the safety for personnel and reduce potential business disruption.
- Assist with cave propagation by ensuring a steady rate of cave growth and production ramp up.
- Improve primary fragmentation. The reduction of the dimension of oversize material at drawpoints improves safety and reduces hang-ups, which affect productivity.
- Maximize resource recovery by promoting caving.

NRCML assessed several options for pre-conditioning and concluded that hydraulic pre-conditioning using surface drillholes minimises key environmental, logistic, and schedule disadvantages associated with underground drillholes, while providing comparable safety and economic outcomes. Newcrest completed a successful full-scale field trial of surface-based pre-conditioning at their Cadia East Mine in Australia and NRCML will apply this experience at Red Chris.

Hydraulic pre-conditioning is the process of pumping high pressure/high flow water through pre-developed drill holes to a targeted volume of rock to weaken the rock mass. The water is concentrated and isolated at a specific location along the drill hole by hydraulic or mechanical packers. Once initiated, fractures will propagate radially in the direction of the maximum principal stress and grow at a rate proportional to the rate of water pumped at constant pressure. It is important to note that pre-conditioning is a physical process that does not entail the use of any chemical additives to the water pumped into the rock mass. NRCML estimates that the water consumed per hole will be on the order of 15,000 m^3, so the total water consumption for pre-conditioning for the Production Phase will be less than 100,000 m^3, or approximately 1% of the maximum annual amount of groundwater to be drawn from the deep aquifer as makeup water for the process plant (Section 3.5.2).

NRCML has designed the pre-conditioning program to maximize drill efficiency by orienting the pre-condition holes parallel to the minimum stress direction. Current planning indicates that pre-conditioning the rock masses for the Production Phase can be accomplished via drill holes located in the immediate periphery of the open pit. NRCML plans to pre-condition portion of the rock mass early in the Production Phase, prior to development of the large chambers and undercut/extraction layers; and to pre-condition the remainder of the rock mass later in the Production Phase, before developing the undercut and extraction levels for that portion of the ore body.

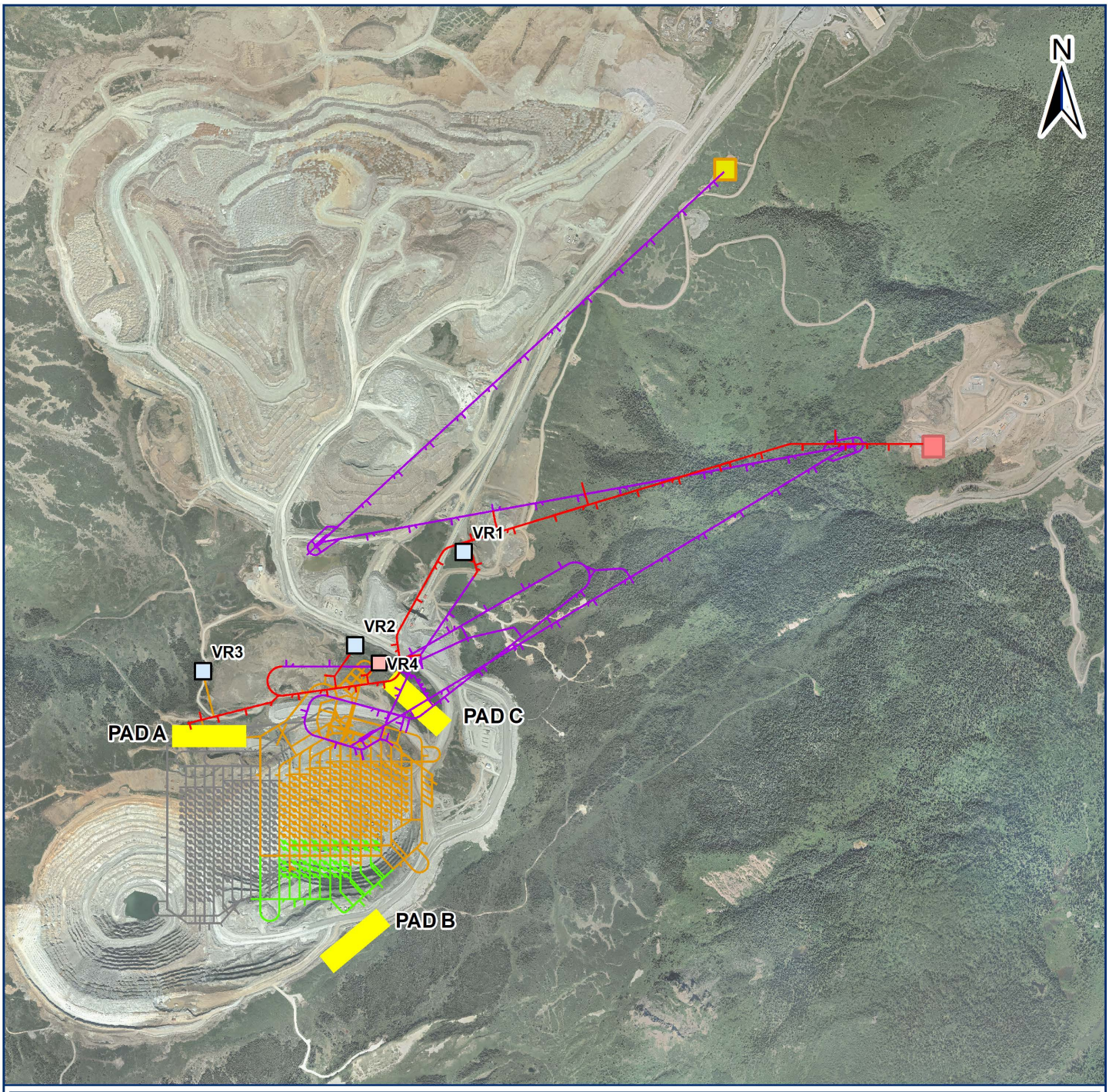
Pre-conditioning of the Production Phase zone is expected to take approximately two months.

3.3.2 Underground Development

NRCML initiated underground development for exploration purposes in 2021 by permitting and developing the Naghā box cut and decline. The Naghā decline will support continuing efforts to define the target ore body and will be used to facilitate development of the recently permitted Pre-production Phase underground infrastructure, including an access decline and conveyor box cut and decline. These declines will be used during the Production Phase for primary access to the undercut and extraction levels and for transporting crushed ore to the process plant.

A plan view showing the layout of the underground workings is presented in Figure 4 and Figure 5 shows an isometric view of the underground development. The components already permitted, or currently undergoing permitting, are shown in grey for clarity. The major underground components that make up this project description are coloured according to the legend and described in this section.

Key elements of additional underground development in the Production Phase are large chambers (maintenance shop, dewatering and crusher chambers) and extraction/undercut levels. NRCML will initiate development of the large chambers and extraction/undercut levels once access to the development zones is possible (via the access decline permitted as part of the Pre-Production Phase) and once the necessary Production Phase approvals are in place.



LEGEND

- VENTILATION RAISE - PERMITTED
- VENTILATION RAISE - PRODUCTION PHASE
- NAGHÃ DECLINE
- PRE-PRODUCTION PHASE DEVELOPMENT
- MB1 AND PRODUCTION PHASE INFRASTRUCTURE
- MB2
- MB3 AND LOM EXTENSION INFRASTRUCTURE
- CONVEYOR BOX CUT
- NAGHÃ BOX CUT
- PRE-CONDITIONING DRILL PADS

NOTES:
IMAGERY: 2021, RED CHRIS MINE

0 125 250 500 750 Meters

SCALE 1:20,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N
THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

NEWCREST RED CHRIS MINING LTD.
RED CHRIS PROPERTY
ENVIRONMENTAL ASSESSMENT CERTIFICATE #M05 02

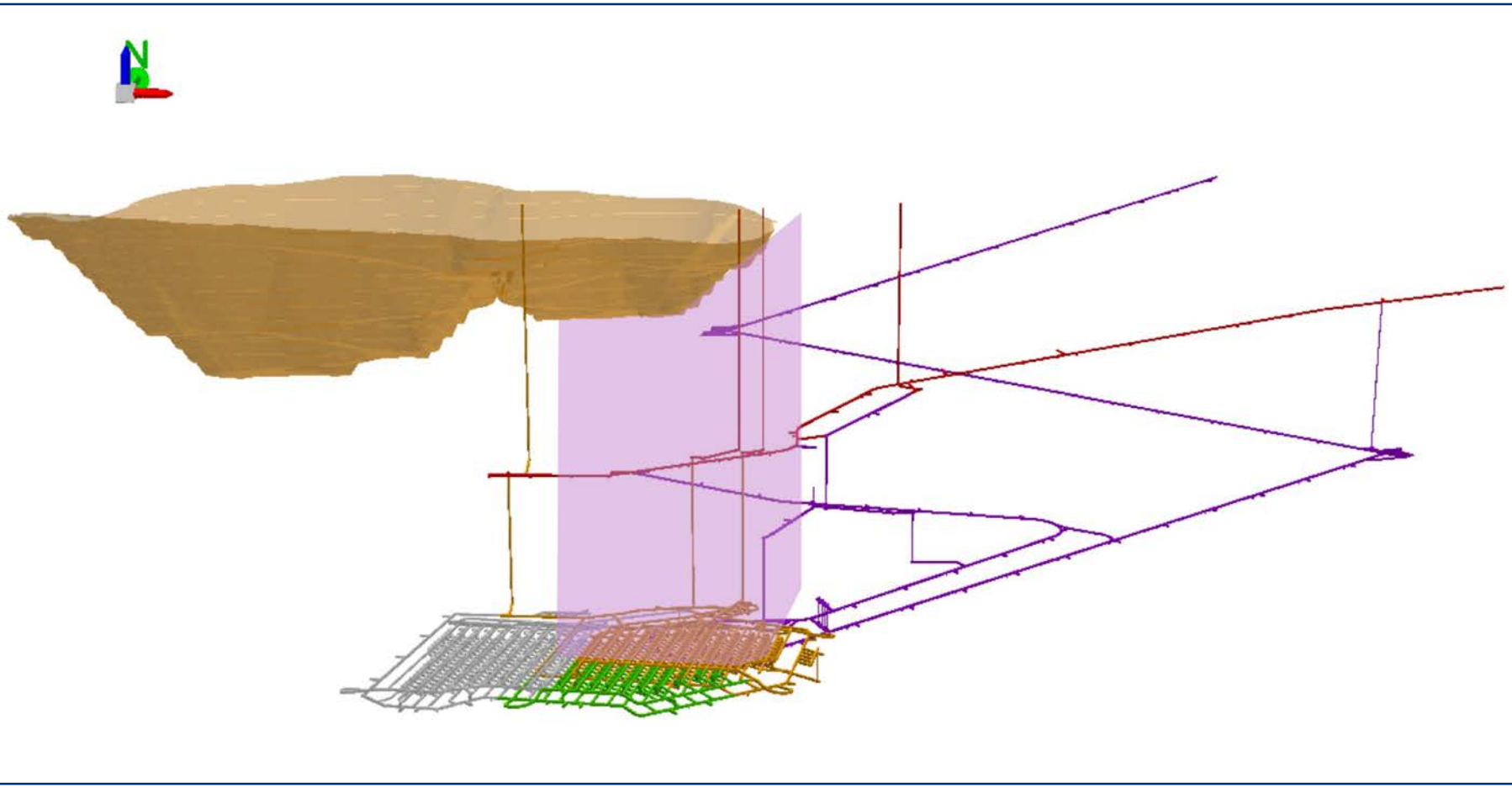
401-8311-EN-REP-0016

BLOCK CAVE UNDERGROUND DEVELOPMENT PLAN VIEW

SLR

FIGURE NO:
4

DATE: February 17, 2023
PROJECT NO: 233.30000.00001



LEGEND

- NAGHĀ DECLINE
- PRE-PRODUCTION PHASE DEVELOPMENT
- MB1 AND PRODUCTION PHASE INFRASTRUCTURE
- MB2
- MB3 AND LOM EXTENSION INFRASTRUCTURE
- PIT
- MOBILIZED ZONE

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ISOMETRIC OF PROJECT UNDERGROUND MINE DESIGN

SLR

FIGURE NO:
5

DATE: February 7, 2023

PROJECT NO: 233.30000.00001

3.3.3 Production Mining

The March 2021 resource model was used to develop the mineral resource estimates that support the design of the block cave mine. The block cave was designed with the GEOVIA PCBC™ software suite, which is considered the industry standard for block cave production planning and scheduling. Undercut and extraction level designs are discussed in more detail below.

Figure 6 shows the proposed layout of the underground development for block caving, and the predicted (modelled) extents of the surface expressions of the subsidence zones, for the Production Phase and the LOM Extension Phase. Figure 7 shows the corresponding section view. Haulage loops, tipples, and a crusher will be constructed off-footprint to the north of the Production Phase u/g development and will be used for the Production and LOM Extension phases. The main level accesses, ventilation, and maintenance infrastructure are also located off-footprint to the north.

Production Phase operations will be limited by the permitted TIA embankment crest elevation, which is equivalent to a total mine production of approximately 300 Mt. For several years there will be an overlap in open pit mining with underground construction and mining operations, during which time the process plant will be fed with a combination of open pit ore, ore stockpiled on surface, and underground ore. After this transition period and as underground mine production increases, surface mining will be suspended, and during most of the Production Phase the underground mine will supply all the process plant feed. Underground mining will continue until the TIA embankment crest elevation reaches its permitted limit of 1,180 masl, by which time approximately 300 Mt of tailings will be in storage (Table 4).

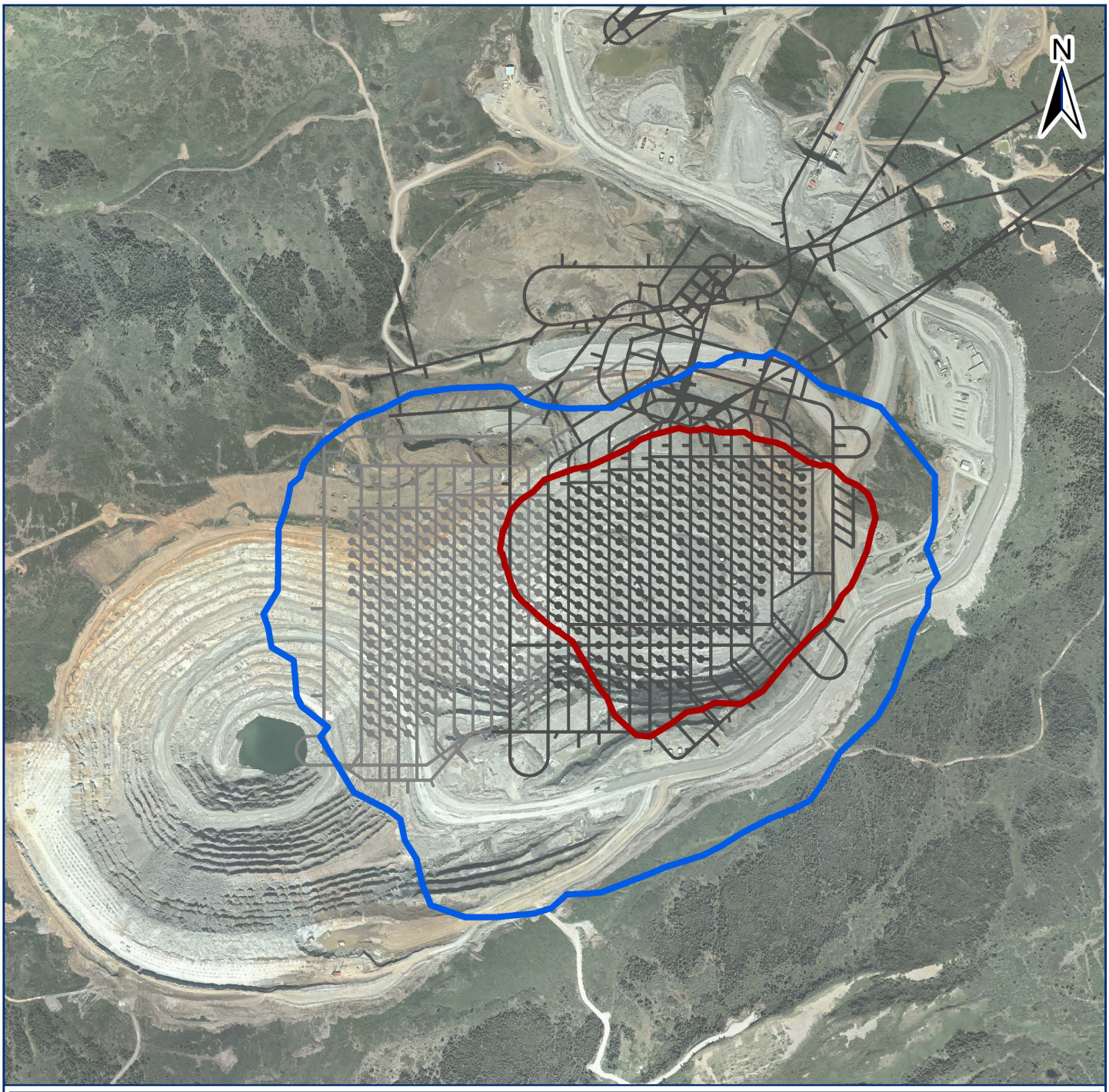
Table 4: Production Metrics by Project Phase (Life-of-Mine)

Phase	Approximate Ore Tonnage
Surface Mining	
• Open pit ore and stockpiles to mill	132 Mt
Production Phase (u/g)	
• Block cave Underground mining	168 Mt
LOM total to 2038 (Surface Mining and Production Phase)	**300 Mt**

NRCML may elect to access ore prior to block cave production mining via more traditional UG mining methods and would serve to limit or eliminate any potential gap between open pit mine production and block cave production. Any accelerated production would come from within the block cave footprint as shown on Figure 6.

There is a ramp-up period for the Production Phase during which drawpoints will be developed and the cave front will grow extending across the footprint. Following ramp-up there is a period of steady-state production where all drawpoints are open and the cave front has progressed to the maximum extent. New drawpoints will be developed as mining advances to maintain steady-state production.

NRCML may continue to operate the underground mine post-2038, which would be considered in an LOM Extension Phase application. The LOM Extension Phase would necessitate that development of additional tailings storage capacity. Further, implementation of the LOM Extension Phase will be contingent on, among other things, market and operating conditions, favourable economics, all necessary approvals, including permitting, and regulatory requirements.



LEGEND

- PRODUCTION PHASE SUBSIDENCE ZONE
- LOM EXTENSION SUBSIDENCE ZONE
- UNDERGROUND PRODUCTION PHASE
- UNDERGROUND LOM EXTENSION

0 75 150 300 450 Meters

SCALE 1:10,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N

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SUBSIDENCE ZONE PLAN VIEW

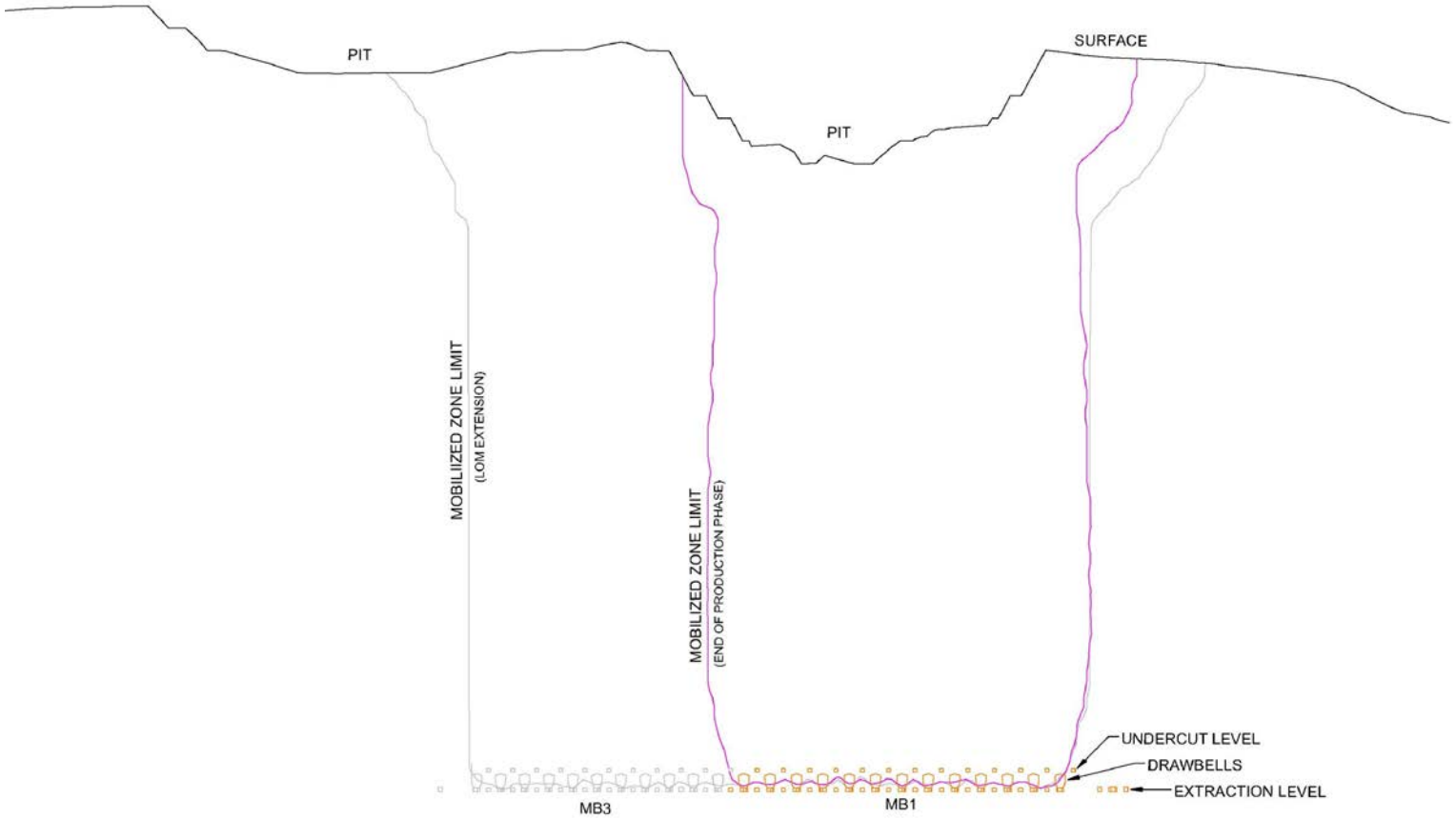
NOTES:
IMAGERY: 2021, RED CHRIS MINE

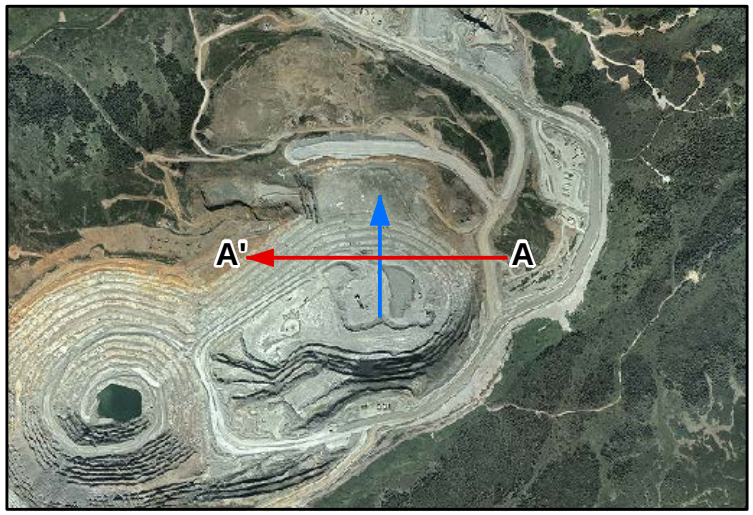
SLR

FIGURE NO:
6

DATE: February 17, 2023

PROJECT NO: 233.30000.00001





NOTES:

MOBILIZATION ZONE LIMITS ARE APPROXIMATE

IMAGERY: 2021, RED CHRIS MINE

Legend

SECTION A - A'

DIRECTION OF SECTION VIEW

0 200 400

1:5000

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401-8311-EN-REP-0016

BLOCK CAVE SECTION VIEW

SLR

FIGURE NO:
7

DATE: February 17, 2023

PROJECT NO: 233.30000.00001

3.3.3.1 Extraction Level

All production drawpoints are housed on the extraction level along with all LOM infrastructure. Based on the PFS design, the extraction level and LOM infrastructure will be developed at approximately 1,000 metres below ground surface.

The access point and infrastructure are located to the north. An access drive will be developed around the footprint perimeter to provide ventilation and equipment access to working areas. The level will be graded toward the south, allowing all water to collect in sumps away from LOM infrastructure. Concrete roadways will be poured in all extraction level developments to maintain comfortable operating conditions and reduce equipment wear.

Extraction drives will be developed in a north-south orientation on 32 m spacings. Drawpoints are designed following an 'El Teniente' layout with a 60-degree turn-out angle, and 5.4 m wide x 4.6 m high drives. This results in drawbell spacings of 32 m x 20 m.

3.3.3.2 Undercut Level

The undercut level serves as a starter level where the ore body is fragmented using longhole retreat drill and blast techniques. Longhole blasting from this level serves to connect the blasted drawbells below to the unblasted ore body above. Once a sufficient ore body span is undercut, known as the critical hydraulic radius, the caving process initiates. The undercutting process continues resulting in cave propagation across and upward into the ore body.

The undercut level will be constructed 25 m above the extraction level to accommodate the high undercut and drawbell design. Like the extraction level, the undercut level will have a perimeter drive to aid in ventilation and be graded toward the south with sumps to collect water.

The timing of undercutting in relation to drawpoint and drawbell construction is key to successful cave initiation. NRCML will use a post-undercut strategy where drawbell construction leads the undercut front.

3.3.3.3 Materials Handling System

A single crusher is designed to service the Block Cave Project and will be located to the northeast of the footprint, and outside of the effects of mining-induced abutment stress. Load-haul-dumps (LHDs) will be used to extract ore from the drawpoints and tram it to a central tipple with five dump locations.

Ore that is dumped into the tipples will be stored in a run-of-mine bin. From there it will pass through a grizzle and rockbreaker and into the crusher. The crushed ore will then be stored in a crushed ore bin before being fed by the apron feeder onto the decline conveyor. Ore will be transported to surface with additional transfer stations located at intermediate levels. The conveyor will be backmounted with a minimum clearance of 3.7 m to permit vehicle access.

3.3.3.4 Ventilation System

The ventilation system was designed to meet the requirements outlined in the *Health, Safety, and Reclamation Code for Mines in British Columbia*, and modelled using Ventsim™. The primary ventilation consists of four raises to surface and lateral connections[6]. Additional ventilation transfer drifts and underground raise extensions will be required to distribute fresh air across the production area and support operations. Lateral openings will be constructed using a typical drill and blast technique like that used for the undercut and extraction development. The use of raise bores will be considered for required secondary vertical openings. The main components of the ventilation system are identified in Figure 5.

3.3.3.5 Underground Water Management

Precipitation (rain and snowmelt) flowing through the caved mass plus water used in the mining process will constitute most of the water to be collected in the underground mining area. The underground water management system has been developed based on model estimates. The planned water management capacity will range from 200 m^3/hour during initial development to 1,500 m^3/hour during peak production. This maximum rate allows for a 24-hour peak surge of a 1-in-50-year precipitation event. On average, hydrogeologic and water balance modelling indicates that the block cave zone will generate approximately 2.5 million cubic metres (Mm^3) of groundwater annually to be pumped from the mine. This is a small flow relative to the amount of water cycling between the process plant and the TIA (Section 3.5.2) and will not have a major influence on the overall site water balance.

Mine water will be collected in perimeter drive sumps, as noted above, and pumped to the main mine pump station. This station is located near the conveyor transfer station below the extraction level. The mine pump station will pump water to the process plant via a rising main that will be located within the conveyor decline.

3.3.3.6 Mine Equipment

The mobile equipment required for the bulk of the development and cave establishment activities and production will include development drills, cablebolters, shotcrete sprayers and transmixers, longhole drills, load-haul-dumps (LHDs), trucks and other equipment. For the purposes of the PFS, FS and the Project's environmental review, all equipment will be diesel-powered, and the mine ventilation system will be designed accordingly.

Equipment will be replaced as required based on useful life and the remaining development and/or production requirements. The FS incorporates an analysis of electric mobile equipment for future consideration; use of an all-electric mobile equipment fleet underground would bring about additional reductions in GHG emissions which will already be lower for block caving than for surface mining (Section 3.6.6).

3.3.4 Process Plant Expansion

On average, underground ore will be harder and of a higher grade than open pit ore, necessitating modifications to the process plant. The Block Cave Project has identified process plant upgrades that are necessary to process the harder ore and to accomplish the planned throughput rate increase up to 15 Mtpa.

[6] Development of three of the vent raises (VR1, VR2 and VR3) and lateral connections has been previously permitted. The fourth vent raise (VR4) is part of the Production Phase.

Additional grinding equipment will be added to the process circuit, which will coarsen the ore from the current design where 80% of the material has a particle diameter (P_{80}) of 150 micrometres (µm) or smaller, to P_{80} of 200 µm or smaller. New flotation technology will be used to maintain recovery with the coarser grind size.

The following equipment will be installed or altered to support the Block Cave Project:

- New coarse ore stockpile and reclaim system.
- Single-stage Semi-Autogenous Grinding (SAG) mill with pebble mill.
- Expanded regrind circuit using vertical stirred mill (HIGmill) technology. This will replace the existing primary re-grind ball mill and make room for expanded cleaner circuit.
- Modifications to the discharge end of the SAG mills to allow a coarser grind size.
- Expanded rougher flotation circuit using StackCell® technology.
- Coarse particle flotation technology (HydroFloat®) will be used to mitigate effects of coarser grind.
- Addition of a cleaner Jameson Cell.
- Increased concentrate dewatering capacity through duplicating the existing concentrate thickener and filtration equipment.

Modifications to the process plant will entail a limited increase in its disturbance footprint .

3.3.5 Tailings Impoundment Area

Under the terms of MA Permit M-240, development of the North, Northeast, and South dams of the TIA is limited to an embankment crest elevation of 1,180 masl. The permitted TIA will provide storage for approximately 302 Mt of tailings, which is sufficient to support Production Phase operations to approximately 2038 (based on a production rate of 15 Mtpa). Production Phase activities will involve minor changes to the operation of the TIA, which are summarized in Section 3.6.2.

Additional tailings storage capacity will be required in the case of development of the LOM Extension Phase (Table 3).

3.3.6 Rock Storage Area

The RSA was designed and permitted to facilitate the storage of open pit waste for the LOM mine development originally approved under EAC M05-02. There will be a decrease in the amount of waste rock generated with the change to block cave mining as compared to that for the open pit mine plan. Accordingly, the existing RSA design provides more than sufficient capacity to store Production Phase waste rock.

The RSA is divided in two main areas for the separate storage of low -grade ore and waste rock, as shown in Figure 3.

Topsoil removal to facilitate the Production Phase will be limited to 180 ha of additional land required for water management facilities, access, ancillary services, facilities, and other infrastructure. This topsoil will be stockpiled in existing piles and replaced as per the *Five Year Mine Plan* and *Reclamation Plan* (RCDC 2018).

3.3.7 Power Supply Infrastructure Expansion

Red Chris sources electrical power from BC Hydro via the Northwest Transmission Line. The current contract with BC Hydro sets the authorized demand at 55 megawatts (MW) at 0.95 power factor or better, and current site demand typically fluctuates around 48 MW. Emergency power requirements for critical systems are provided by two 1.27 MW diesel generators for the operations areas, and one 500 kilowatt (kW) diesel generator for the camp.

The preliminary load list indicates that the total site load requirements during the Production Phase will increase to approximately 120 MW; mainly due to the process plant expansion and operation of the crushed ore conveyor. The existing 287 kilovolt (kV) substation will have increased capacity with the addition of a third 287 kV/25 kV transformer. NRCML will also construct a new mine substation dedicated to the underground area. Emergency power requirements in the form of two 1.2 MW diesel generators will be provided at the mine substation at the conveyor portal.

3.3.8 Camp Expansion

NRCML has applied to amend EAC M05-02 to authorize an expansion of the accommodations camp in 2023 to a maximum occupancy of 1,200, including an expansion of ancillary services including power, potable water, and wastewater treatment. Production Phase development and construction activities will necessitate a further temporary expansion of the camp to accommodate up to 1,500 workers. The ancillary services included as part of the 2023 camp expansion will serve the additional personnel required for the Production Phase.

As development and construction activities are completed and the transition from surface mining to underground mining winds down, camp occupancy will drop, likely reaching approximately 800 people for the remainder of the Production Phase.

3.3.9 Haul and Site Roads

There will be new haul roads and site roads to allow access to the various locations, including the RSA, Conveyor Portal area, Naghā decline, ventilation pads, and reclaim dams at the TIA. Service roads will also be constructed alongside pipelines and diversion ditches. The required new roads include:

- Haul road from the Naghā decline area to deliver waste rock to the RSA and ore to the existing surface primary crusher. The preferred route traverses up the hillside above the Naghā portal, directly to the primary surface crusher.
- Service road along the east diversion ditch to provide access to the new northeast (NE) dam and to allow regular maintenance and inspection of the ditch itself. A pipe bench will be incorporated for the tailings pipeline and pumping system to the NE dam.
- Service road along the northwest and western diversion ditches for inspecting, maintaining, and clearing the ditches.
- Service roads with pipeline benches to each of the north and south reclaim dams. The roads will make partial use of the existing service roads in the area and will be extended to reach the dams. The roads will also be used for construction of the dams.

Existing roadways around the process plant will be modified and re-graded to suit the new facilities, with some of the existing roads requiring widening and resurfacing. Where pipes cross under roads, culverts will be used to facilitate installation and maintenance.

3.3.10 Concentrate Handling

Flotation concentrate containing payable copper, gold, and silver is filtered and temporarily stored in the concentrate storage shed at the mine before being trucked to Stewart. At the marine terminal, concentrate is transferred into a warehouse for storage, handling, and loading via conveyor and spout into export vessels.

Red Chris has had a Terminal Services Agreement in place with Stewart Bulk Terminals since 2013 and the term of this agreement is for the LOM. Stewart Bulk Terminals is a privately-owned facility not subject to underlying lease agreements with the government port authorities and is the most commercially and logistically suitable port for Red Chris concentrates.

The current transport route, which follows Hwy 37 south to Meziadin Junction and Hwy 37A to Stewart (Figure 1), will continue to be used during the Production Phase. Concentrate production will increase owing to the transition to underground mining (higher grade ore) and the process plant expansion (higher throughput). This will result in an increase in truck traffic along highways 37 and 37A between Red Chris and Stewart.

The original EAC Application provided an estimate of 12 truckloads of concentrate per day, based on an average annual concentrate production of 166,000 dry metric tonnes (DMT) during the first five years of an eighteen-year LOM. Red Chris produced 116,751 dmt of concentrate in 2018 and 140,158 dmt in 2019, equivalent to an average of eight to nine truckloads per day over the two-year period.

During the Production Phase, based on the current production forecast, trucking will increase to as many as 29 truckloads per day in 2033, representing an increase of a factor of approximately three, vis-à-vis the production during 2018 and 2019.

3.3.11 Ancillary Infrastructure Upgrades

New infrastructure and upgrades to existing infrastructure required to accomplish the Block Cave Project as described are listed below:

- Communications systems upgrades: Communications infrastructure will be installed underground to connect fixed equipment, people, mobile equipment, and monitoring devices.
- Fuel storage and distribution upgrades: The existing diesel fuel and propane infrastructure will be maintained for contractor and ongoing surface fueling needs. A new diesel fuel depot and new propane tanks will be located near the ventilation raises to service underground needs. Diesel will be transferred underground from this new facility. Propane will be used to heat the fresh air for the underground ventilation system.
- Site Asset Operations Center: A Site Asset Operations Center (SAOC) shall be constructed, comprising managerial offices as well as an operational control center to manage daily and emergency operations. The SAOC will have the ability to support the potential utilisation of autonomous and semi-autonomous mine operations.
- Mine dry facility: A mine dry facility capable of accommodating 500 miners will be constructed near the existing mine accommodation or Naghā decline to support mining operations. The overall facility will include a centrally located- common area that will accommodate the offices, lamp room, dispatch room, and additional mine rescue space to augment the existing mine rescue facilities at the existing Accommodation Block.

- Shotcrete and concrete batch plants: Shotcrete/concrete batch plants will be constructed near the portals and will deliver shotcrete and concrete to be trucked underground using the declines using transmixers. Cement silos will be installed to store approximately seven days' worth of underground requirements. A temporary batch plant will be required during construction of surface facilities. This will be located near the process plant and will have capacity to supply concrete to a fleet of transmixers.
- Temporary construction facilities, including laydown areas: There is a general laydown area designated for the Project that will be shared between other projects and contractors working on the Mine site. The design allows for laydown areas that will accommodate materials and equipment for construction. If space is not available for modules, there is potential for modules to be stored off-site and transported to site when required.
- Site roads: Will allow access to the RSA, conveyor portal, exploration access portal, ventilation shafts, reclaim dams at the TIA, tailings lines, NE dam at the TIA, and to the revised runoff diversion ditches around the TIA.

3.4 Closure Phase

The primary objective of the reclamation plan remains consistent with MA Permit M-240, which is to return, where practicable, all areas disturbed by mining operations to their natural pre-mining land use and capability, focusing on the restoration of wildlife habitat. The approach for the Block Cave Project is consistent with the site operation approach to date as identified in The *Five Year Mine Plan* and *Reclamation Plan* (RCDC 2018), which is to minimize disturbance and allow for progressive reclamation during the LOM.

3.4.1 Closure Strategy

The mine plan prepared by NRCML minimizes disturbance and allows for progressive reclamation during the LOM by:

- Fully incorporating the *Metal Leaching/Acid Rock Drainage (ML/ARD) Prediction and Prevention Plan*, 400-0000-EN-0016 with the mining plan;
- Protecting watercourses through a detailed *Water Management Plan* 400-0000-EN-PLA-0015;
- Effectively salvaging, stockpiling, and replacing surface soils, including immediately replacing soils in their final locations whenever possible; ensuring that as many of the native species as possible are present on the reclaimed sites;
- Implementing rehabilitation that is focused on planting and seeding native species, consistent with the target ecosystem;
- Ensuring that the final configuration and topography of mine wastes are consistent with the end land use objective of wildlife habitat; and
- Striving to re-create natural ecosystems by providing the appropriate soils and vegetation, which will put these ecosystems on a self-sustaining path.

Many activities in the current plan require more in-depth study and analysis. NRCML has developed a Reclamation Research Program, as laid out in the *Reclamation Research Plan*, 400-0000-EN-PLA-0009 (NRCML 2022o), intended to inform the final *Reclamation and Closure Plan* and other related Project commitments and requirements.

The Reclamation Research Program is an iterative process that will include stand-alone studies and initiatives designed to reduce uncertainty and refine reclamation objectives, practices, and procedures. The status and outcomes of each of these studies will be summarized in the *NRCML Annual Mines Act Reclamation and Environmental Management Act Annual Report* (2020a) and the *Five Year Mine Plan and Reclamation Plan* (RCDC 2018) for the given year or mine phase.

3.4.2 Closure Components and Activities

This section summarizes key aspects of closure planning for the Production Phase. The Block Cave Project will entail limited changes with respect to the current approved plan.

- Cave and Subsidence Zone:
  - The cave will be allowed to flood. It is expected that it would take approximately 70 years for the cave lake to reach equilibrium.
  - A barrier will be installed with a 200 m buffer around the impacted area to restrict access by wildlife and humans.
  - Suitable vegetation will be included to provide visual screening.
- RSA:
  - The currently approved- closure option for the RSA involves re-sloping the pile to an average slope of 3.5 H:V (ratio of height to vertical distance) as well as the placement of an engineered store and release cover to reduce infiltration and aid in revegetation.
  - There are no material changes from the RSA closure plan to the open pit mine plan, as the RSA footprint is unchanged due to underground mining.
- TIA:
  - A wet cover 2 m deep over the portion of the TIA containing PAG material, as currently required by the MA Permit M-240.
  - The North and South Dams will be isolated by a beach of NAG tailings. The NE Dam will no longer operate as a water retaining- structure due to a drop in water level.
  - Diversion ditches will be decommissioned at closure to allow runoff to enter the TIA and facilitate maintenance of the wet cover.
  - The North and South Reclaim dams will remain operational to capture seepage from the TIA for several decades after closure, during which time seepage will require treatment prior to discharge. After this period, treatment of seepage is not expected to be required.
- Underground infrastructure and openings:
  - Recyclable and re-useable infrastructure will be removed from underground.
  - Dewatering activities will cease, and openings will be allowed to fill with water.

- Openings to underground mine:
  - Ventilation infrastructure will be removed from raises.
  - A hydrostatic plug will be constructed at the Naghā decline opening to prevent contact water from exiting the mine.
  - The conveyor decline will be closed with a waste rock plug and secured to prevent inadvertent access. Requirements for stabilization works around the portals and boxcut will be incorporated into the design.
  - The four ventilation raises will be secured with concrete caps anchored to bedrock.
  - Service boreholes will be grouted.
- Surface Infrastructure:
  - Surface infrastructure will be decommissioned and removed from site as per the *Five Year Mine Plan and Reclamation Plan* (RCDC 2018).
- Water Management:
  - A closure-specific water treatment plant to treat seepage and cave lake water following the filling of the cave immediately upon end of production will be constructed and operated. Currently, membrane water treatment technology is envisioned to remove sulfate and selenium upon closure; however, further investigation will be completed to ensure use of best available technology.

Water treatment and discharge requirements can be broadly split into two stages:

- Stage 1 will last approximately 100 years from the end of production until the cave fills with water. Seepage from the North and South Reclaim dams will be treated during this stage until it meets discharge requirements.
- Stage 2 will start once the subsidence zone is flooded, forming a lake. Water from the cave lake will be pumped to the TIA and treated during wet periods when overflows are possible. It is expected that reclaim dam seepage water will meet discharge requirements and will not require treatment.

Approximately 478 ha of disturbed land has been excluded from reclamation, including the power line, portions of road systems and pipelines to the TIA. These structures must remain in place to access and service the proposed water treatment facility. The pit and block cave subsidence zone will be allowed to fill with water at closure; thus, the high walls and catch benches will be exempt from reclamation as well.

3.5 Land and Water Use

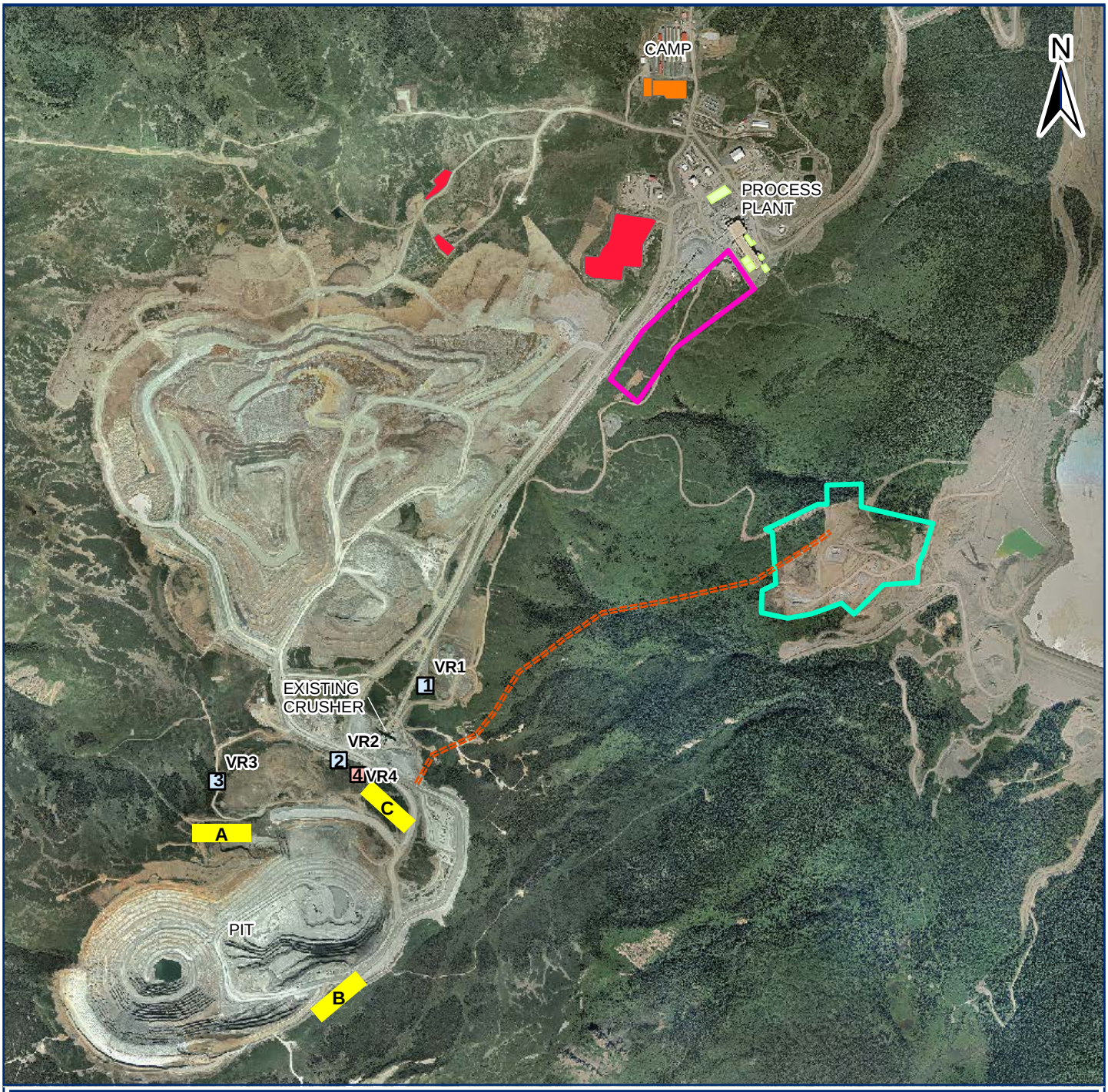
This section describes land and water use requirements to support the Block Cave Production Phase.

3.5.1 Land Use

The Red Chris permitted area is located within the Traditional Territory of the Tahltan Nation and there are no overlapping land claims from other First Nations.

NRCML holds the following surface tenure issued by the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) under the *Land Act* (BC Government 1996a): Right-of-way tenure Number 6408389; over 68.95 ha of un-surveyed Crown land in the vicinity of Jackson Creek, Coyote Creek, Ealue Lake, and a portion of District Lot 2977, on which a portion of the Red Chris power line is located. This tenure was issued on July 14, 2018, and has an expiry date of July 14, 2024.

At the end of 2020, NRCML reported a surface disturbance area of 1,826 ha including 165 ha for the open pit, 398 ha for the RSA and ore stockpiles and 783 ha for the TIA (NRCML 2021d) Based on the PFS, it is estimated that an additional 225 ha of land will need to be cleared or altered to support mining and processing activities. The additional disturbance area lies entirely within the existing mining permit boundary. Figure 8 shows the additional disturbance areas associated with the Block Cave Project.



LEGEND

- VENTILATION RAISE - PERMITTED
- VENTILATION RAISE - PRODUCTION PHASE
- NEW HAUL ROAD
- CAMP EXPANSION
- CONVEYOR DECLINE PORTAL AREA
- EXPANDED NAGHA PORTAL AREA
- FUTURE LAYDOWN
- PLANT EXPANSION AREA
- PRE-CONDITIONING DRILL PADS

NOTES:

FACILITY LAYOUT IS APPROXIMATE AND SUBJECT TO CHANGE.

IMAGERY: 2021, RED CHRIS MINE

0 125 250 500 750 Meters

SCALE 1:25,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N

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NEWCREST RED CHRIS MINING LTD.
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401-8311-EN-REP-0016

PRODUCTION PHASE SURFACE DISTURBANCE AREA

SLR

FIGURE NO:
8

DATE: February 17, 2023

PROJECT NO: 233.30000.00001

By design, the rock mass above the undercut and extraction layers will result in the development of a subsidence zone at surface. The PFS incorporated and the FS will incorporate modelling to predict the growth and ultimate extent of the subsidence zone through the Production Phase and the potential LOM Extension Phase. Figures 6 and 7 show plan and section views, respectively, with the modelled subsidence extents at the end of the Production and potential LOM Extension phases. The subsidence zone is predicted to lie almost entirely within the footprint of the open pit.

3.5.2 Water Use

Red Chris currently processes up to 11 Mtpa of ore. Most of the water used in the process plant is recycled from the TIA with makeup water sourced from 13 groundwater wells in the deep aquifer, nine in the North Valley Wellfield, and four in the South Valley Wellfield, at a rate of 8 Mm^3/y to 9 Mm^3/y. NRCML proposes to increase mill throughput for the Production Phase to 13.6 Mtpa and up to 15 Mtpa . Additional water use requirements to support the higher milling rate will be met principally through ongoing initiatives to improve water management in the TIA (Section 3.5.2.2).

NRCML expects that the volume of fresh water for industrial use that is currently being pumped will not increase beyond 9.1 Mm^3/y during the Production Phase. In March 2021, during the three-year phase-in period for the *Water Sustainability Act* (WSA) (BC Government 2016), NRCML submitted water license applications for the extraction of up to 25,000 m^3/d (approximately 9.1 Mm^3/y) of groundwater from existing production wells to supply the process plant during the Production Phase.

The camp sources its water from shallow aquifer wells in the vicinity of the camp on the plateau. The temporary increase in camp occupancy from 1,200 to 1,500 people will generate a proportional increase in domestic use of water in the camp.

The water management strategy proposes flooding of the underground workings during the Closure Phase for the formation of the cave lake in the long term. The current strategy for the closure of the TIA also involves the establishment of a permanent water cover. The cave lake and the TIA water cover would represent the main water retaining features during the Post-Closure Phase.

3.5.2.1 Water Management

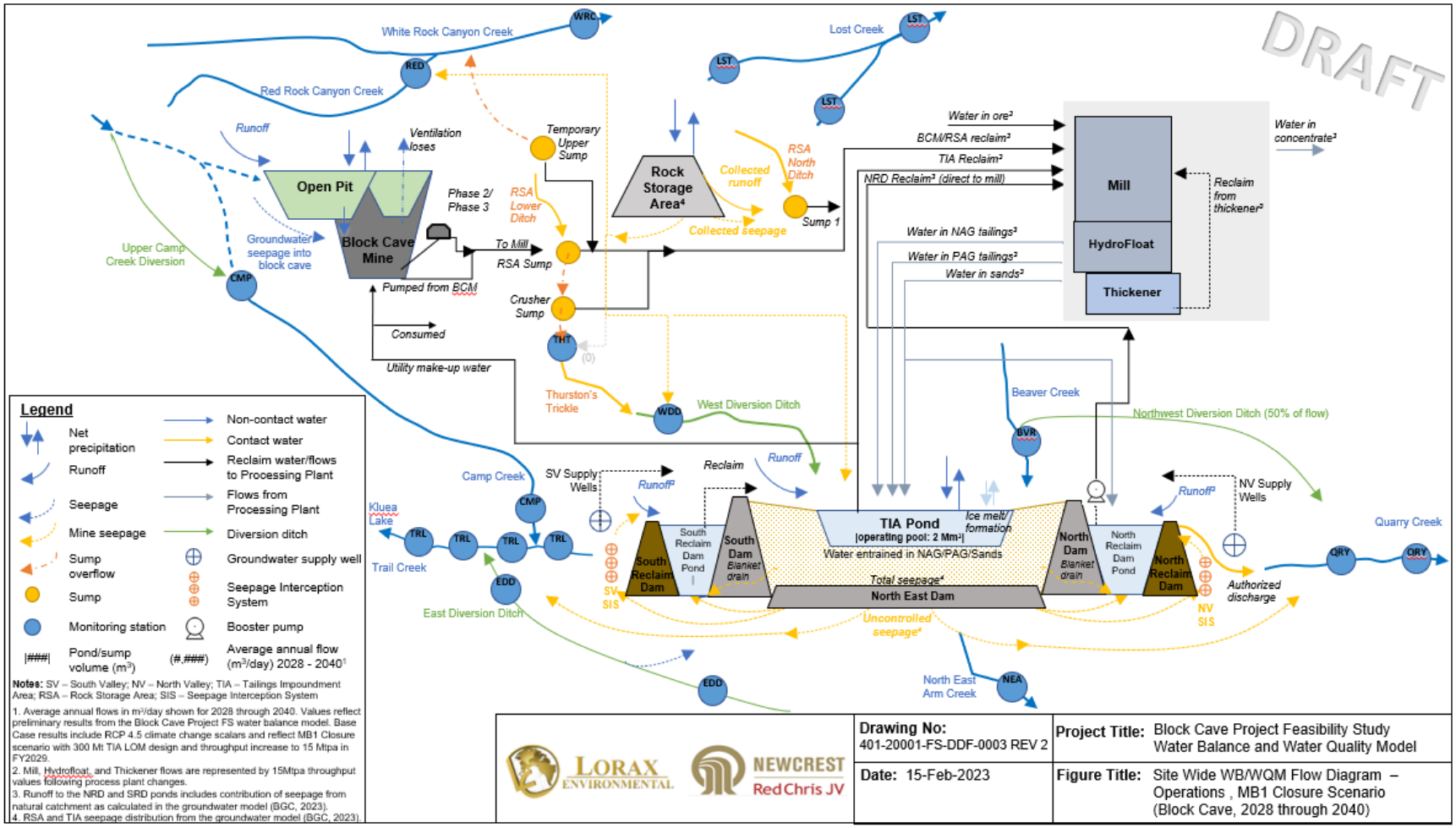
The Red Chris operation's approach to water management is based on the separation of non-contact water—which is routed away from the industrial facilities via diversion channels—and contact water which is collected and used in the process plant and/or stored in the TIA. The Block Cave Project will not change water management practices in any fundamental way. Overall, there will be only a marginal increase in the amount of contact water to be managed during the Production Phase because the increase in the site disturbance footprint will be limited.

The transition from open pit mining to underground mining implies that contact water generated within the open pit boundaries will merge with groundwater inflows into the cave, resulting into combined flow that will be collected at the block cave extraction level and pumped to surface. The subsidence zone that would develop during the Production Phase is anticipated to be wholly contained within the footprint of the permitted open pit.

3.5.2.2 Water Balance

Figure 9 shows a schematic of the Red Chris water balance. The site water balance is dominated by the water flows associated with flotation tailings discharged to the tailings thickener (to be installed) and TIA, and the water recycled from the thickener and TIA to the process plant. The main losses of water from the system are evaporation from ponded water and wet beaches in the TIA, water taken up into permanent storage in the pores of the tailings, and uncaptured seepage from the TIA. NRCML sources process plant makeup water from groundwater wells in the deep aquifer, as previously described.

Figure 9: Site Wide WB/WQM Flow Diagram



Independent of the Production Phase EAC amendment process, NRCML is undertaking a series of measures to optimize tailings deposition and water management in and around the TIA, with a key objective to limit seepage from the facility. Part of this effort involves reducing the amount of water entering the TIA pond through installation of the tailings thickener (overflow from the thickener will be recycled directly to the process plant, bypassing the TIA pond). NRCML is also implementing a system to pump groundwater from the North Valley Wellfield to the process plant via the TIA booster pumps, bypassing the TIA pond.

Contact water from the open pit, which is collected and transferred to the process plant, constitutes a relatively small input to the water balance. As the block cave mine will be a deeper excavation, it will collect more groundwater than the open pit, but this will not materially alter the overall site water balance or water management plan.

The FS includes a study to update the water balance prepared for the PFS. For an ore processing rate of 15 Mtpa, NRCML estimates that average process water requirements will be approximately 54.9 Mm^3/y during the Production Phase. Most of this demand will be met by water recycled from the tailings thickener and the TIA. Makeup water from the North Valley Wellfield and South Valley Wellfield will provide up to 9.1 Mm^3/y as described above, while water pumped from the block cave mine and RSA will average approximately 2.5 Mm^3/y (Table 5).

Table 5: Process Plant Water Balance, Production Phase at 15 Mtpa

Process Plant Water Demand and Supply	
Water Demand, including underground utility water demand	54.9 Mm^3/year
Water Sources	
1. Tailings thickener overflow recycled to process plant	31.0 Mm^3/year
2. Block cave mine dewatering, reclaim from RSA	2.5 Mm^3/year
3. Water recycled from TIA pond	12.4-17.6 Mm^3/year
4. Makeup water from deep aquifer	3.8-9.0 Mm^3/year
Total	**54.9 Mm^3/year**

3.6 Emissions, Discharges, and Waste

This section presents the anticipated emissions and discharges associated with the Block Cave Project. Associated potential effects and mitigation measures are discussed in Section 7.

3.6.1 Waste Rock

The transition in the mining method from open pit to block caving will significantly reduce the total production of waste rock compared to the mine plan presented in the original EAC application. The areal extent of the RSA will remain unchanged, given that most of the surface development has already taken place, and its final height will be lower. At the end of 2021, the RSA had a footprint of 279 ha and contained 134 Mt of waste rock. Block Cave mining is projected to produce approximately 4 Mt of waste rock in total, with the Production Phase producing 3.2 Mt of waste rock, including 2.9 Mt of PAG material and 0.3 Mt of non-acid generating (NAG) material. Block caving allows for targeted mining operations, significantly reducing waste rock production relative to the project as currently permitted.

There is ample capacity in the RSA under current approvals for disposal of the PAG material. NAG material will primarily be used for construction purposes.

The RSA includes the temporary storage of low-grade ore. The RSA stored approximately 19 Mt of low grade- ore at the end of 2021. The process plant will continue processing low grade ore stored on surface at the end of open pit mining during the Production Phase.

3.6.2 Tailings

Block Cave Project development will entail minor changes to the TIA. Tailings storage is permit-limited by a final tailings embankment crest elevation of 1,180 masl, which is equivalent to a total (LOM) tailings storage of approximately 302 Mt. Production Phase operation will be constrained by the current limit for the embankment crest elevation, and the TIA will continue to operate as authorized, with the following potential changes:

- The tailings deposition rate will increase in line with the proposed increase in mill throughput from 11 Mtpa to up to 15 Mtpa. This will necessitate an update to NRCML's Tailings Deposition Plan.
- NRCML will install a tailings thickener (permitted as part of the Pre-Production Phase), which will affect the site water balance and tailings deposition planning.
- Tailings rheology may change as the process plant modifications will lead to a coarser grind (Section 3.3.4). This has no major environmental implications but may affect deposition planning.
- Tailings geochemistry will change as the deep ore to be mined by block caving is, on average, lower in pyrite, a key contributor to acid-rock drainage (ARD) generation potential.

NRCML has updated its tailings deposition model, water balance model and water quality model to reflect these changes. The EAC Amendment Application will address the potential environmental effects of these changes.

3.6.3 Hazardous Waste

Chemicals and hazardous materials storage, handling, and disposal are managed on site according to the *Chemicals and Hazardous Materials and Storage and Waste Handling Plan* 400-4000-EN-PLA-0002 (NRCML 2022c). Material changes to the *Chemicals and Hazardous Materials and Storage and Waste Handling Plan* 400-4000-EN-PLA-0002 (NRCML 2022c) are not anticipated for the Block Cave Project; increases in site activity during construction that result in increases in waste production on site would be adaptively managed.

3.6.4 Solid Waste and Domestic Sewage

The existing waste management facilities include a general waste collection area, incinerator, burn pit, and sewage treatment system. An EAC amendment application for a Camp Expansion is currently underway, with an expected review date in Q4 2022. The Camp Expansion Amendment includes expansion of existing site services, including a second incinerator and an expanded sewage treatment plant (STP). The STP will include advanced technology allowing for beneficial use of treated effluent, which will be piped to the TIA via the process plant. The current and expanded facilities proposed as part of the Camp Expansion Amendment will serve the Block Cave Project needs. An on-site landfill does not currently exist and is not included in the Block Cave Project. Waste that is not incinerated will continue to be collected and shipped off site for recycling or disposal.

Material changes to the *Non-Hazardous Waste Management Plan* 400-4000-EN-PLA-0001 (NRCML 2022n) are not anticipated for the Project; increases in site activity during construction that result in increases in waste production would be adaptively managed.

3.6.5 Water Management

Development of the Block Cave Project will not fundamentally alter the site's water management objectives and processes. Rainfall and snowmelt generating runoff are separated into contact and non-contact water streams, which are managed separately. Non-contact water will continue to be diverted around the mine site using diversion channels where possible. Contact water will be collected and directed to the process plant; any contact water to be discharged will be treated prior to release under terms of EMA Permit 105017. The existing and planned diversion channels to support the permitted open pit mine plan meet the needs of the Block Cave Project.

Groundwater modelling suggests that the post-mining volume will fill with water and become a pit lake post-closure, as has previously been permitted for the closure of the pit. The groundwater model results suggest that the block cave mine will not contribute additional groundwater flow to the receiving environment post-closure, including after the void has filled with water.

3.6.6 Air Emissions

The transition from open pit to block cave mining is expected to reduce long term dust generation and GHG emissions. Studies to quantify and project future GHG emissions and dust generation related to block cave mining are within the scope of the FS and anticipated to be completed in 2023, with results included in the EAC amendment submission.

NRCML expects that Production Phase activities will result in a temporary increase in GHG emissions during the period of concurrent open pit mining and block cave-related surface construction and underground development. GHG emissions are expected to be significantly lower compared to current operations once open pit mining and construction activities cease. Block caving will approximately double electrical energy consumption, owing to the operation of a conveyor to transport ore from below the block cave to the process plant, and higher energy consumption in the process plant due to harder ore (which increases energy consumption for comminution) and higher mill throughput (Section 3.3.7). However, the indirect (Scope 2) GHG emissions associated with electrical energy are relatively low, as grid power supply is dominantly hydroelectric. Direct (Scope 1) GHG emissions, which are currently associated mainly with diesel used to power mobile equipment in the open pit, will drop substantially for the underground mining operation.

Preliminary calculations carried out for the PFS indicated that Red Chris GHG emissions intensity (calculated as kilograms carbon dioxide equivalent per tonne of ore milled, kg CO_{2e}/t-milled) would drop by about 50% during the Production Phase relative to the current operation, whereas annual GHG emissions (tonnes CO_{2e}) would drop by about 30% for a block cave mine production rate of 15 Mtpa, relative to an open pit operation producing 11 Mtpa. While these figures are preliminary and need to be updated as part of the FS, they indicate that the transition to block caving can be expected to reduce the Red Chris GHG footprint significantly.

Fugitive dust emissions associated with project construction, operation, and decommissioning are expected from mobile equipment combustion exhaust, block cave ventilation raises, and increased traffic on unpaved roadways. As the mine operation transitions to an underground operation, NRCML expects that fugitive dust emissions will decrease resulting in a local improvement to air quality.

Air emissions and fugitive dust is currently managed through the existing *Air Quality Management Plan 400-0000-EN-PLA-001* (AQMP) (NRCML 2022b) and through EMA Permit 106668. Both permits will be updated to include the Block Cave Project sources and new mitigation measures. Newcrest has a corporate climate change policy that includes a global target of reducing GHG emissions' intensity by 30% by 2030.

3.6.7 Noise and Vibration

Noise and vibration are expected to increase during the construction period due to an increase in mobile equipment use. A *Construction Environmental Management Plan* (CEMP) specific to the Production Phase construction will be developed which will include mitigations to reduce noise impacts such as limiting the hours of major construction activities to between 07:00 and 22:00, fitting equipment with mufflers or silencers, and using preventive maintenance programs. Acoustical screening using existing on-site barriers to shield receptors from construction equipment noise will be used where appropriate.

Noise and vibration associated with mining and processing operations are expected to be reduced during the operational period of the Block Cave Project compared to the current open pit mine operations. Open pit drilling and blasting activities will no longer be required.

Ore transport on surface and waste rock haulage will be reduced and completed by smaller equipment. These reductions are partially offset by increases in noise and vibrations associated with the addition of a SAG mill, and the operation of primary ventilation fans on the ventilation raises. NRCML aims to limit the impact of these increases through the purchase of low noise- equipment and vehicles and the use of preventive maintenance programs.

3.7 Alternative Means of Carrying out the Project

The Red Chris ore body is a vertical porphyry ore body that extends to over 1,000 m below surface and increases in grade with depth. A substantially larger open pit mine would be required to access the deep, higher-grade ore using surface mining techniques. The ratio of waste rock to ore moved, known as strip ratio, would increase to such an extent that the mine would no longer be economically viable. Moreover, there would be a substantial increase in surface disturbance associated with pit pushbacks, and the need for a much larger RSA facility to store the waste. Other detrimental environmental impacts would be an increase in the intensity of GHG emissions, increased dust generation, and higher consumables usage.

Since 2005, when the EAC was granted, the mineral resource reserve has expanded in depth. The geometry, grade profile, and vertical extent of the deposit are well suited to bulk underground mining methods. NRCML completed a preliminary economic evaluation to assess the potential profitability of the resource for three bulk underground mining methods: sub-level open stoping, sub-level caving, and block caving. The lower operating cost of block caving allows lower grade ore to be economically mined maximising resource extraction and ensuring the minimisation of resource sterilisation compared with other potential methods. This results in a longer life operation providing employment, revenue, and other opportunities to local communities.

The benefits of block cave mining compared to an open pit mining include:

- A significant reduction in LOM waste rock generation when compared to the permitted open pit approach.
- Access to deep ore that would not be economically feasible to mine via open pit methods.

- A significant reduction in the operation's GHG footprint compared to open pit mining.
- A more sustainable/resource efficient- way to mine deep mineralized ore along with improved resource extraction.

The benefits of block cave mining compared to alternative underground methods include:

- Maximize value of the ore body by enabling a higher extraction of the resource, achieved through lower operating costs;
- A higher production rate, bringing the project value forward; and
- The potential to extend the life of the operation.

3.8 Effects of the Environment on the Project

Red Chris is in an area of low historical seismicity, and most of the seismicity in the region is concentrated along or on the Pacific coast.

Given the modest increase in disturbance footprint associated with block caving, the likelihood of wildfires impacting the Red Chris project remains essentially unchanged through the Production Phase. Underground operations may be affected by poor air quality associated with major regional fires due to visibility and health hazards, but the overall operational impacts would be minimal.

The water balance model for the Block Cave Project was run for different climatic conditions to test the sensitivity to climate change. The results of the sensitivity analysis indicate that the most significant effect of climate change on the Block Cave Project would be on evaporation, which could influence the time required for the cave lake to reach equilibrium and affect the ability to maintain TIA water cover during post-closure. The water balance model also assessed the effect of extreme rainfall and snowmelt events to inform the design of the underground dewatering system.

3.9 Public and Environmental Safety

3.9.1 Traffic

Increased traffic along the Highway 37 corridor connecting Dease Lake to Smithers and Terrace is expected during the Project construction activities. Concentrate production will increase during the Production Phase owing to the higher-grade ore to be mined underground and the process plant expansion (Section 3.3.10). NRCML expects that during the Production Phase, an annual average of 18 and up to 30 truckloads of concentrate will be hauled from Red Chris to Stewart daily, via Meziadin Junction. NRCML is completing a traffic study within the FS scope to investigate the effects of these changes on local and regional traffic.

3.9.2 Tailings

Development of the Block Cave Project is peripherally related to ongoing efforts to improve water management in and around the TIA (Sections 3.5.2 and 3.6.2), but direct interaction with the TIA is limited. The main effects will be associated with the increase in process plant throughput, which will necessitate an update to tailings deposition planning. NRCML will continue to manage the TIA according to the conditions of EAC M05-02, MA Permit M-240, EMA Permit 105017 and the applicable Project owners' corporate policies.

4 Current Environmental and Social Context

Environmental and social baseline programs were completed in support of the original Environmental Assessment (EA) and permit applications to construct and operate Red Chris. Since then, NRCML has continued to collect environmental monitoring and social data. A summary of these programs, management plans, and resulting data are provided in the *Mines Act Annual Reclamation and Environmental Management Act* Report for 2021 (NRCML 2022l).

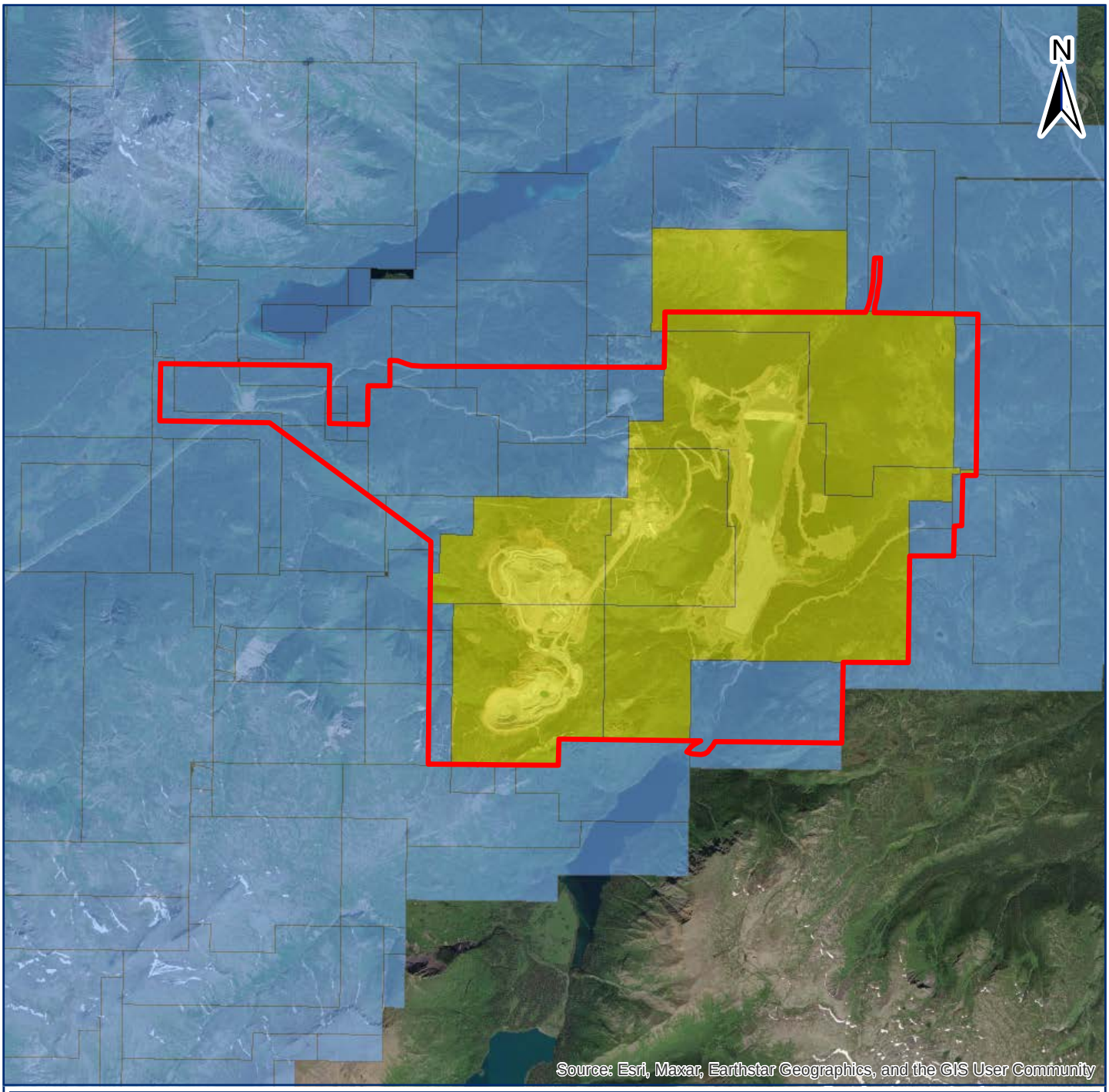
Environmental and social data collection programs to support the Block Cave Project commenced in 2021 during the PFS and are continuing through development of the FS. These studies inform Project design and impact assessment.

4.1 Land Use Planning and Tenure

Red Chris operates in accordance with provincial and federal land use plans. There are no relevant municipal plans for this area.

Red Chris is made up of the main and south claim groups in the Liard Mining Division, consisting of 77 mineral tenures covering a total area of 23,142 ha. The main tenures, for the purposes of the LOM plan, are five mining leases issued on June 20, 2012, for a term of 30 years with an expiry date of June 20, 2042. Red Chris PMA under MA Permit M-240 covers a surface area of 6768.8 ha. These leases, as well as the surrounding permit and claim boundaries, are presented in Figure 10. All mineral tenures are issued in accordance with the *Mineral Tenure Act* of BC (BC Government 1996b).

Red Chris falls within the area covered in the Cassiar Iskut Stikine Land and Resource Management Plan (LRMP; BC Government 2000). Exploration and development for minerals and energy, including development of road access, are acceptable activities throughout the plan area outside of protected areas, subject to regulations of statutes. The mine also overlaps the Todagin Zone, which includes Todagin Plateau and Tsatia Mountain, and the eastern boundary extends to the treeline of the Klappan drainage. The management intent for the Todagin Zone is to integrate management for Stone's sheep and other wildlife, recreational activities, and mineral exploration, mine development, and reclamation. The Cassiar Iskut-Stikine LRMP recognizes the mineral and energy resource potential within the Todagin Zone, and the potential of Red Chris to provide significant local and economic benefits.



LEGEND

- RED CHRIS PERMITTED MINE AREA
- MINERAL CLAIM BOUNDARY
- MINERAL LEASE BOUNDARY

NOTES:
BOUNDARIES FROM BC DATA CATALOGUE

0 0.5 1 2 3 Kilometers

SCALE 1:100,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N

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401-8311-EN-REP-0016

MINING PERMIT, MINING LEASES AND MINERAL CLAIMS BOUNDARIES

SLR

FIGURE NO:
10

DATE: February 16, 2023

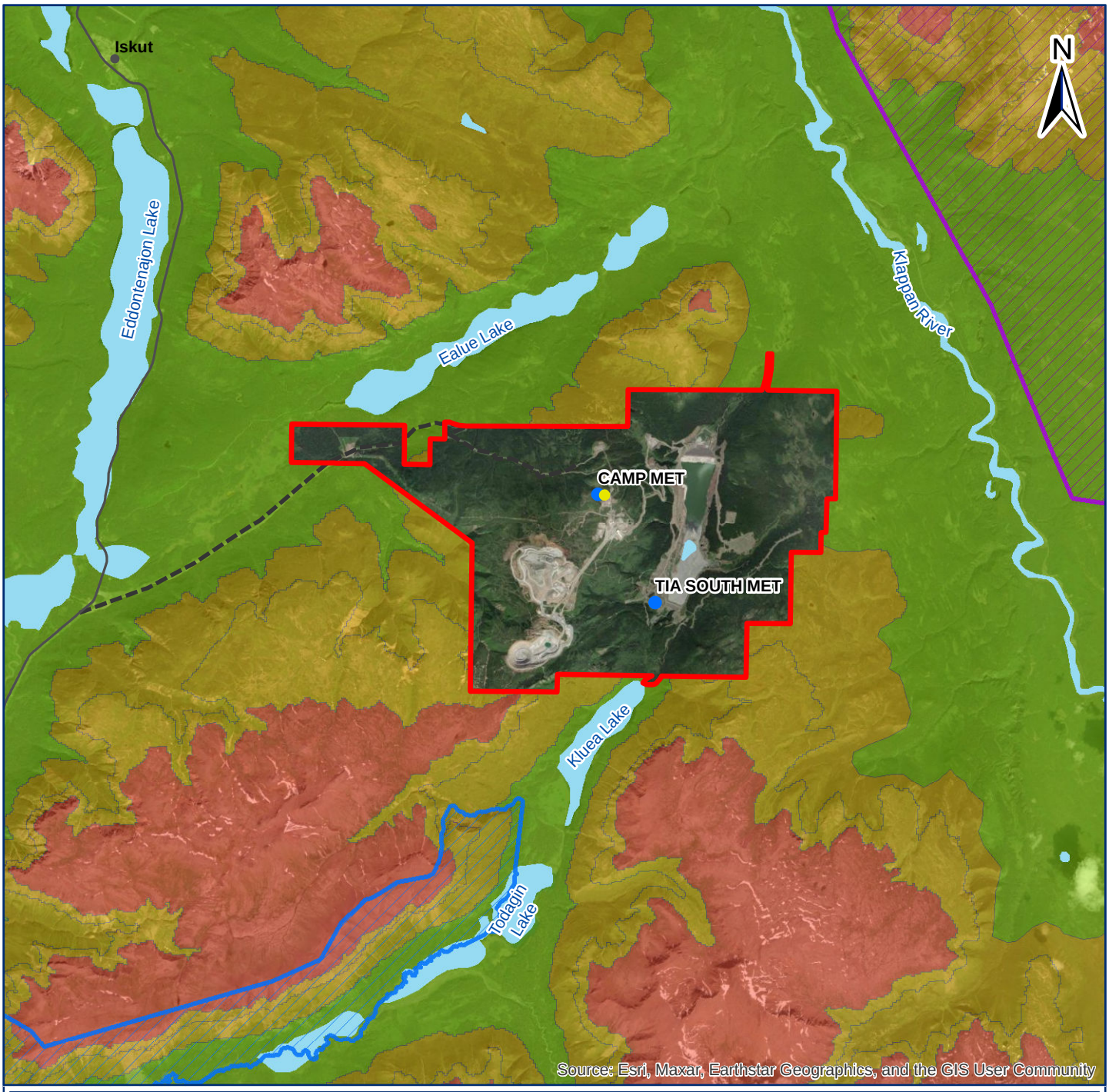
PROJECT NO: 233.30000.00001

4.2 Environmental Context

The Red Chris property is situated on the Todagin Plateau at an elevation of 1,500 masl southeast of Ealue Lake and north of Kluea Lake in northwest BC, approximately 18 km southeast of Iskut, and 80 km south of Dease Lake. The site is in mountainous terrain within the Klappan Range, which is a sub-range of the Skeena Mountains. The Spatsizi Plateau Wilderness Provincial Park is to the east, Mount Edziza Provincial Park is to the west, and Todagin South Slope Provincial Park is to the south. There are many mountains, plateaus, and terraces in the region that are intertwined with rivers, lakes, and wetlands.

Red Chris is located within Stikinia terrane in the Intermontane Belt of the Canadian Cordillera. Northern Stikinia hosts several mineral deposits of economic interest and is dominated by early Mesozoic island-arc volcanic strata and related intrusions, overlying a basement of metamorphosed and strongly deformed Late Paleozoic rocks known as Stikine Assemblage. Bedrock exposure is scarce over most of the plateau, which is covered by a thin layer of till, and is found mainly in creeks and steep-sided gullies cut into the plateau or along ridge crests. At lower elevations, valleys and depressions have a thicker cover of surficial deposits including glaciofluvial and possibly glaciolacustrine sediments.

The mine site lies mostly in the Spruce-Willow-Birch (SWB) zone, within the Southern Boreal Plateau Ecosection, of the Northern Mountains and Plateaus Ecoregion, in the Northern Boreal Mountains Ecoprovince (Demarchi et al. 1990 in RCDC 2004 [October]). Higher elevations fall within the Boreal Altai Fescue Alpine (BAFA) zone, while the Boreal White and Black Spruce (BWBS) zone occurs at lower elevations in the valleys to the north and west of the Todagin Upland (see Figure 11). Wildlife species include grizzly bear, black bear, Stone's sheep, mountain goat, wolverine, hoary marmot, moose, grey wolf, and (to a limited extent) woodland caribou. Stone's sheep are identified as a high management interest as they have a high population density relative to other populations elsewhere in northwest BC.



LEGEND

- AIR QUALITY MONITORING STATION
- METEOROLOGICAL STATIONS
- HIGHWAY 37
- ACCESS ROAD
- RED CHRIS PERMITTED MINE AREA
- SPATSIZI PLATEAU WILDERNESS PROVINCIAL PARK
- TODAGIN SOUTH SLOPE PROVINCIAL PARK
- RIVER, LAKE OR WETLAND
- BOREAL ALTAI FESCUE ALPINE
- BOREAL WHITE AND BLACK SPRUCE
- SPRUCE -- WILLOW -- BIRCH

NOTES:
BOUNDARIES FROM BC DATA CATALOGUE

0 0.5 1 2 3 Kilometers
SCALE 1:150,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N
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RED CHRIS PROPERTY
ENVIRONMENTAL ASSESSMENT CERTIFICATE #M05 02

401-8311-EN-REP-0016

TERRESTRIAL ENVIRONMENT CONTEXT

SLR

FIGURE NO:
11

DATE: February 6, 2023
PROJECT NO: 233.30000.00001

4.2.1 Climate and Air Quality

The climate at the mine is characterized by moderate total annual precipitation (approximately 640 mm at 1,500 masl) and cyclic variations in temperature with extreme lows of −40°C in the winter and high temperatures occasionally reaching 30°C in the summer. On average, the summer months have experienced the lowest maximum wind speeds and the greatest occur from fall through spring. Rainfall tends to occur from April to October, with April and October being shoulder seasons, and hence a mix of both snow and rain.

July and August typically experience the greatest monthly rainfall. Snow survey data indicate that the mine area snowpack has very high densities, consistently equivalent to settled snow or wind-packed snow. The snowpack starts accumulating in October and is fully depleted between May and June, with the trend of higher elevations being the last to lose all snowpack.

NRCML operates meteorological monitoring stations that measure wind speed and direction, temperature, relative humidity, precipitation, and solar net radiation. The NRCML climate network was expanded in 2021 and now includes four meteorological stations which are identified on Figure 11, three precipitation stations, and seven co-located snow survey points at various locations on the site.

NRCML has implemented their AQMP for the site that characterizes air emission sources, provides best management practices, and outlines monitoring and documentation requirements to improve air quality management at the mine. NRCML undertakes ambient air quality monitoring using continuous particulate matter monitoring equipment installed in 2019. The air quality monitoring program has registered few exceedances to Air Quality Objectives, believed to be the results of dry conditions, high winds, and lack of snow cover.

4.2.2 Noise and Vibration

Noise studies have not been undertaken at the site due to the remote location of the mine and the absence of communities within 10 km of the mine site. Noise information in support of the original EAC application was based on secondary information from similar open-pit mines in remote areas, which suggest that noise levels could reach up to 55 dBA within 1 km from the mine site. As mentioned above, there are no communities in the immediate vicinity of Red Chris.

4.2.3 Landscape and Terrain

Landscape and terrain have been well studied and documented to support previous developments at the Red Chris Mine.

The surficial geology in the vicinity of the Red Chris property is characterized by a barren upland plateau consisting of pockets of organic soils, an undulating weathered bedrock surface, and occasional moderately steep rock exposures. The perimeter of the plateau is surrounded by predominately moderate to gentle U-shaped valleys, which have been gullied by glacial and post-glacial fluvial processes.

Gully erosion is a common slope process within the PMA. Gullies were noted along the north facing slopes above Coyote Creek and Ealue Lake, the east and northwest facing slopes above the tailings storage facility and the east facing slopes above the Klappan River.

Slope mass movements (landslides) were noted on the southeast facing slopes above Kluea Lake, located south and east of the open pit and directly southeast of the plant site area. Small landslides were noted on the east facing slopes above the Klappan River, in addition to slides with larger curvilinear or scalloped scarps.

Red Chris is located within the northern BC source zone in the GSC-R seismic source zonal models developed by the Geological Survey of Canada (GSC) for the updated National Building Code of Canada (Government of Canada 2015b). The site is located within an area of low historical seismicity, and most of the seismicity in the region is concentrated along or on the Pacific coast.

The soil present in the mine area can be generally classified as brown-colored Brunisols, bright orange-red Podzols, Luvisols, and Gleysols. The reddish-brown soils tend to be associated with well-drained upper mineral soil horizons that were found in sandy and gravelly surficial deposits and in upper and crest slope positions. In lower and toe slope positions, or in alluvial (fluvial) deposits, organic matter tends to accumulate at the surface, resulting in darker brown to black colors. Soils that are suitable for reclamation have been stripped and salvaged from the Red Chris Project area and stockpiled in designated locations.

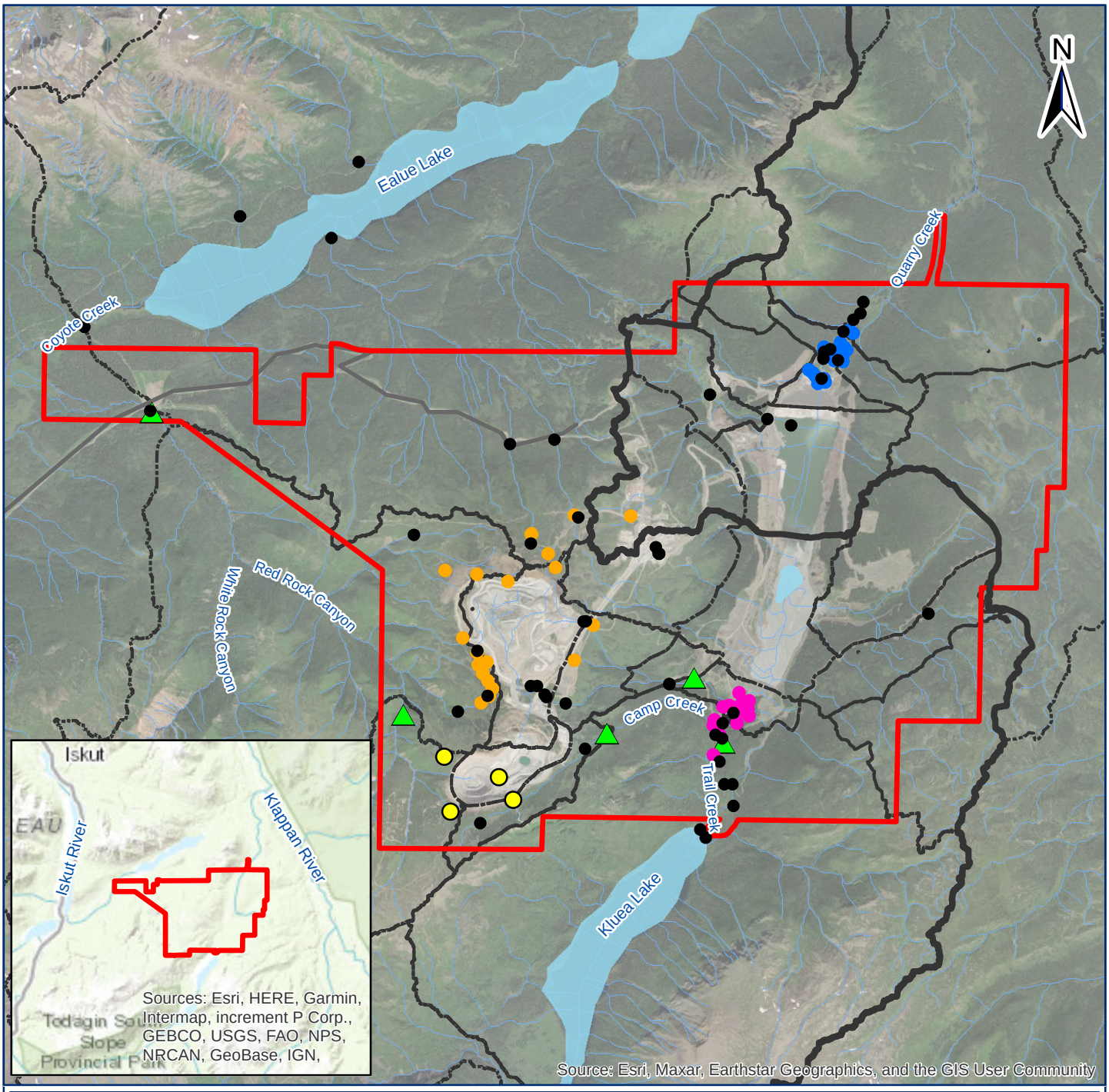
4.2.4 Surface and Groundwater Quantity

The mine site is on the Todagin Plateau, which is a gently sloping terrace on the boundary of two regional watersheds: the Klappan and Iskut rivers (see Figure 12).

There are many small drainages within the PMA and thus an abundance of small ephemeral creek systems. Some creeks discharge into or start in small wetlands, typically smaller than about 10 ha, which are often located adjacent to lakes or along creek systems. The mine site area catchment, including Quarry Creek, White Rock Creek, and Trail Creek are all minor tributaries of the Stikine River. The TIA straddles the upper reaches of the Trail Creek and Quarry Creek catchments. There are engineered ditches, namely the East Diversion Ditch (EDD), that directs non-contact flow away from the TIA. Contact water is directed toward the TIA, most notably via the West Diversion Ditch (WDD).

NRCML operates a network of 17 active hydrologic monitoring stations throughout the project area, including in downgradient receiving streams (Figure 12).

The North Valley and South Valley pumping wells located in the TIA valley extract groundwater from the deep aquifer (Section 3.5.2). This water, along with the water collected from the South Dam Seepage Interception System, is directed to the process plant by way of the booster pumps and used as make-up water. Monitoring of groundwater levels around the TIA show moderate effects of pumping groundwater in the North and South Valley aquifers (NRCML 2020a). Deep monitoring wells in the vicinity of the open pit on the plateau have also been installed to support the characterization of the groundwater regime in the area planned for block caving.



LEGEND

- OPEN PIT MONITORING WELLS
- HYDROMETRIC MONITORING STATION
- SURFACE WATER MONITORING LOCATION
- NORTH TIA GROUNDWATER MONITORING WELL
- RSA GROUNDWATER MONITORING WELL
- SOUTH TIA GROUNDWATER MONITORING WELL
- MAJOR WATERSHED DIVISION
- ACCESS ROAD
- RED CHRIS PERMITTED MINE AREA
- RIVER, LAKE OR WETLAND
- LOCAL WATERSHED

NOTES:
WATERSHED BOUNDARIES FROM BC DATA CATALOGUE

0 0.5 1 2 3 Kilometers

SCALE 1:80,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY AND SHOULD NOT BE USED FOR NAVIGATION

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AQUATIC ENVIRONMENT CONTEXT

SLR

FIGURE NO:
12

DATE: February 6, 2023

PROJECT NO: 233.30000.00001

4.2.5 Surface and Groundwater Quality

Water sampling programs are designed to characterize surface water quality on the mine site and in the receiving environment and to comply with legal requirements. The site is governed by EMA Permit 105017, which was most recently amended in July 2022. The amended permit identifies three authorized discharges including (1) discharge of tailings to the TIA, (2) non-point source discharges to ground from the TIA and RSA, and (3) discharge of non-contact water from sediment control ponds.

The amended permit also sets out receiving water quality objectives in Quarry Creek and Trail Creek, and outlines requirements for several environmental management plans. EMA Permit 105017 will need to be amended for the Production Phase (to account for a higher tailings deposition rate from the expanded process plant), although the Project will not result in fundamental changes to the site water balance or to water management practices (Section 3.5.2, Section 3.6.5).

The NRCML surface water quality monitoring program incorporates approximately 70 sampling locations, including potential downgradient receiving streams as well as control sites (Figure 12). Sampling sites were selected to include both stations that are required under EMA Permit 105017, as well as other stations that are located to improve understanding of the aquatic environment or to improve monitoring of the effects of the NRCML operations.

The Surface Water Quality monitoring program covers the following main areas:

- Mine Site;
- Quarry Creek Watershed;
- Trail Creek Watershed;
- Ealue Lake Watershed;
- Klappan River Watershed; and
- Kluea Lake.

Groundwater quality at Red Chris is monitored under EMA Permit 105017. Groundwater quality data is collected from monitoring wells in each of the following areas at the Red Chris Mine, as shown in Figure 12:

- North Dam Area;
- South Dam Area; and
- Rock Storage Area.

NRCML has installed additional deep monitoring wells in the vicinity of the open pit on the plateau (Figure 12) to supplement existing data and support the hydrogeological modelling of the block cave.

4.2.6 Aquatic Resources

Rainbow trout (*Oncorhynchus mykiss*) is the only fish species that has been documented in the area where the Red Chris Mine is located. The closest populations of other fish species are in the Klappan River, approximately 13 km downstream and to the northeast of the mine site (see Figure 12).

A natural barrier is present in the Iskut River, approximately 50 km upstream of the confluence with the main stem of the Stikine River. This natural barrier prevents the migration of anadromous salmon.

Known populations of rainbow trout and smaller populations of bull trout (*Salvelinus confluentus*) are present in higher gradient streams. Rainbow trout are present throughout the upper Iskut River and Lakes Chain (Schell 1999, 2001).

The annual Aquatic Effects Monitoring Program monitors surface water, sediments, periphyton, macrophyte, and invertebrate tissue chemistry, algal biomass, and benthic invertebrate community metrics to evaluate whether mine-related changes in the aquatic environment that may be occurring.

Benthic invertebrates reside in or on the sediment within the benthic zone of rivers, streams, or lakes, and are an indicator of environmental quality; thus, NRCML monitors benthic invertebrates from Kluea, Todagin, and Ealue Lakes. Baseline data was sampled in 2012 and 2015 in Kluea Lake. Monitoring is ongoing as part of mine operations, with data currently available from 2016, 2017, 2018, and 2019.

4.2.7 Vegetation and Terrestrial Ecosystems

Red Chris lies mostly in the Spruce-Willow-Birch zone, within the Southern Boreal Plateau Ecosection, of the Northern Mountains and Plateaus Ecoregion, in the Northern Boreal Mountains Ecoprovince (Demarchi et al. 1990 in RCDC 2004). At higher elevations, the mine area consists of alpine tundra. Along the valley bottom, the area is classified as boreal forests with wetland complexes (see Figure 11).

The pre-construction vegetation studies did not identify provincially-listed rare ecosystems; however, two wetland types (calcareous fen and alkaline wetlands) were historically observed within the study area used for the original EAC application. These wetland types are associated with unique hydrogeology and associated assemblage of plant species.

Pre-construction studies completed in 2004 for the Red Chris development noted:

- No nationally listed species were present;
- 12 provincially rare vascular plants were observed within the study area but outside the NRCML permit boundary;
    - Eight of which have been revised to “least risk”;
    - Two species have been upgraded to “extirpated, endangered or threatened”, including *Draba glabella*, a vascular plant, and *Allocetraria madreporiformis*, a lichen; and
    - Two species have been revised to an “unknown” status, the *Draba alpina* and the *Luzula nivalis.*

NRCML actively manages invasive species as per their Vegetation and Invasive Species Management Plan 400-0000-EN-PLA-0007 (NRCML 2022x), which incorporates Best Management Practices (BMPs). In 2021, two invasive regulated species, sow-thistle and scentless chamomile, were found in the laydown and along the access road.

The land located within the NRCML permit boundary is used by the Tahltan Nation for plant and berry harvesting, hunting, and trapping. Plants may have a particular cultural importance due to their nutritional or medicinal properties or other cultural benefits. Species of importance to the Tahltan Nation communities include, but are not limited to:

- Blueberry (*Vaccinium* spp.);
- Caribou lichen (*Cladonia rangiferina*);
- Devil’s club (*Oplopanax horridus*);

- Labrador tea (*Rhododendron groenlandicum*); and
- Soapberry (*Shepherdia canadensis*).

NRCML conducts a Land Disturbance Request review prior to any planned activity, which includes the identification, characterization, and/or delineation of culturally important plants.

4.2.8 Wildlife and Wildlife Habitat

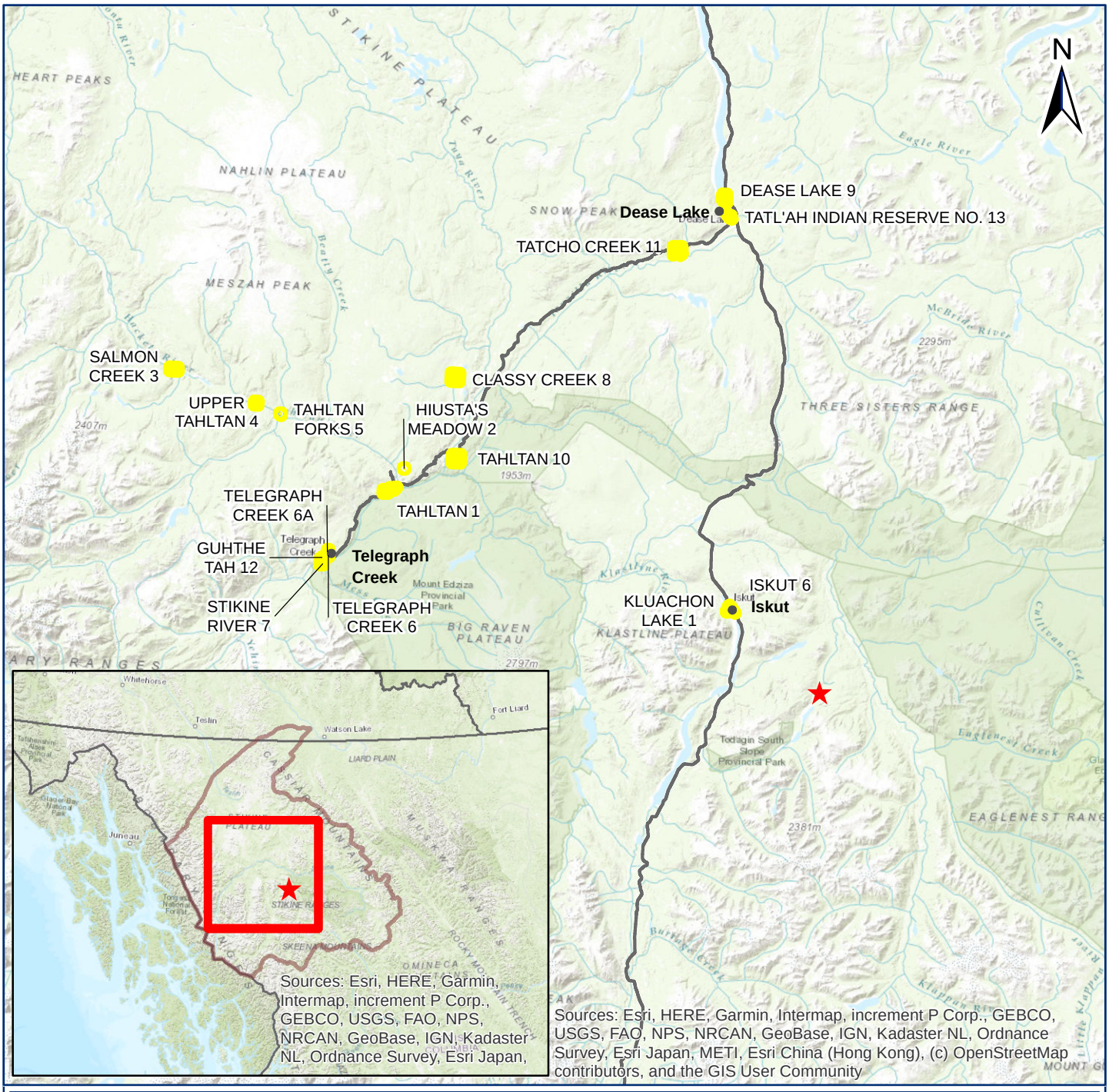
Red Chris is not immediately adjacent to any federal, provincial, regional parks, wilderness or conservancy areas, ecological reserves, or protected areas. The closest protected area is the Todagin South Slope Provincial Park located approximately 4 kms to the SW of the Permitted Mine Area (see Figure 3).

The Red Chris property is in the Todagin Plateau, which is well known for its high wildlife values, specifically its Stone's sheep (*Ovis dalli stonei*) population. The area is home to some of the largest concentrations of Stone sheep in the world, with the sheep population on the Todagin Upland Plateau numbering approximately 200 sheep over a 20 to 30-year period. Prior to the mid-1990s, wildlife study activity in the area was limited to aerial surveys focusing on mountain ungulates, especially sheep, but also with some emphasis on mountain goats. Wildlife studies have also identified numerous other species and species groups of potential interest, including small mammals, other ungulates, large carnivores, various furbearers, raptors, shorebirds, waterfowl, and migratory songbirds. A total of 133 vertebrate wildlife species have been documented in the Local Study Area (LSA) since 2003.

Since pre-construction assessments associated with the Red Chris development, the area surrounding the mine property has been formally designated as the Todagin Wildlife Management Area (TWMA). The TWMA is protected under the Todagin South Slope Protected Area plan, as part of the Cassiar Iskut Stikine Land and Resource Management Plan. The Todagin South Slope, identified in Figure 1 and Figure 13, is one of fourteen Protected Areas within the 5.2 million ha of northwestern BC that make up the Cassiar Iskut Stikine LRMP area. Red Chris is located approximately 5 km north of the Todagin South Slope and is exempt from the plan.

Evidence to date indicates that the construction and operation of Red Chris has not significantly altered the population of Stone's sheep on the plateau. Mountain goats are located on the plateaus and mountain blocks in areas of steep escape terrain and forage plant communities. Mineral licks are important to both species, with several in the Red Chris Project area.

Red Chris has a Wildlife Management Plan 400-0000-EN-PLA-0003 (NRCML 2020b) that is designed to minimize the potential negative impacts of mining activities to wildlife, to address the commitments listed in the project certification documents, and to ensure Provincial management agencies and the Tahltan Nation are involved with and informed of the wildlife management process.



LEGEND

- RED CHRIS MINE
- HIGHWAY
- RESERVE LOCATION
- TAHLTAN TERRITORIAL BOUNDARY

NOTES:

RESERVE INFORMATION FROM BC DATA CATALOG

0 5 10 20 30 Kilometers

SCALE 1:1,000,000
PAGE SIZE 8.5x11
NAD 1983 UTM Zone 9N

THIS MAP IS FOR CONCEPTUAL PURPOSES ONLY
AND SHOULD NOT BE USED FOR NAVIGATION

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RESERVES UNDER GOVERNANCE OF THE TAHLTAN AND ISKUT BANDS IN PROXIMITY TO RED CHRIS MINE

SLR

FIGURE NO:
13

DATE: February 6, 2023

PROJECT NO: 233.30000.00001

4.3 Social and Economic Context

This section discusses the socio-economic and health conditions within the Red Chris Project Region. Included in this discussion are existing data that supports the current understanding of the human environment conditions. The nearest potentially sensitive receptors to the mine are four seasonal cabins along with several hunting cabins located approximately 3.5 km north of the camp, along the shore of Ealue Lake. In addition to the cabins, the area surrounding the mine is used seasonally for hunting/gathering. The nearest community is the Village of Iskut, located 18 km northwest of the mine.

4.3.1 Social Context

Red Chris is located within the Regional District of the Kitimat-Stikine (RDKS). The RDKS has a population of approximately 37,367 people and spans an area of 104,465 square kilometers (km^2) (RDKS 2020). With a population of 13,663, Terrace is both the largest community within the RDKS and is its administrative center. The RDKS is divided into six Electoral Areas (Area A, B, C, D, E, and F), and five municipalities (City of Terrace, District of Kitimat, District of New Hazelton, Village of Hazelton, and District of Stewart). Red Chris is situated within RDKS Electoral Area D and is solely within the territory of the Tahltan Nation. The Tahltan Nation comprises three principal communities: Iskut, Dease Lake, and Telegraph Creek. The RDKS boundaries bisect the Tahltan communities, with Iskut and Telegraph Creek located within Electoral Area D and Dease Lake within Electoral Area F.
For ease of reference, “Tahltan Territory” is also used to refer to the Project Region inclusive of RDKS Electoral Areas D and F. Within Tahltan Territory, 67.5% of the population identifies as Indigenous.

4.3.2 Tahltan Nation Communities

The three principal Tahltan Nation communities located within the Red Chris area are Telegraph Creek (Tlēgō’in /Tlegohin), Iskut (Łuwechōn / Łuwe Chōn), and Dease Lake (Tatl’ah). Red Chris is located approximately 20 km, 105 km, and 215 km by road south from Iskut, Dease Lake, and Telegraph Creek, respectively. There are three reserves located close to Dease Lake and thirteen reserves near Telegraph Creek. There are culturally significant villages, assembly sites, campsites, and trails throughout the Tahltan Nation Territory such as the Tahltan Village; a historic site located at the junction of the Tahltan and Stikine Rivers that is also the ancestral summer dwelling place for the Tahltan Nation. The Tahltan Nation has retained ancestral property rights, resource management practices, and stewardship throughout the Territory since time immemorial.

Dease Lake, home to the TCG offices, is located on Highway 37, 83 km north of Iskut and 234 km south of the Alaska Highway. Dease Lake is the largest settlement on Highway 37 and is the service and government centre for the residents of the region. Today, Dease Lake continues to be a hub for mining, tourism, and recreation. Approximately half of the population of Dease Lake are members of the Tahltan Nation (BC Assembly of First Nations 2021).

Located 119 km west by gravel road from Dease Lake, Telegraph Creek is situated at the confluence of the Stikine River and Telegraph Creek at the base of the Stikine River Canyon. The community is said to be the most remote road-accessible town in BC. The main reserves of the Tahltan Band are located here. Telegraph Creek was an important location insofar as settler history related to the Cassiar, Stikine, and Yukon Gold rushes, dating back to the discovery of gold in the Stikine River in 1860. Construction of an overland telegraph line starting in 1866 to connect southern Canada with the Yukon led to the English name of Telegraph Creek. The line itself fell out of use in the 1930s. Today most residents of Telegraph Creek are of Tahltan ancestry (TBC 2022).

Located approximately 18 km northeast of Red Chris, Iskut is primarily inhabited by Tahltan Nation members and sits between the Mount Edziza Park and Spatsizi Plateau Wilderness Park. Iskut Indian Reserve (IR) No.6, Kluachon Lake IR No.10, and Stikine River IR No.7 are located within the vicinity of the community. Currently, the area in and around Iskut is a launching place for wilderness recreation (including guide outfitting) and has a post office, gas station, motor inn, café, and grocery store. As a result of a large fire started by lightning in 1958, Iskut claims to have the greatest patch of huckleberries in the province.

Tahltan Nation members living out of Territory typically reside in the larger towns of northwest BC including Terrace, Smithers, and Prince George, as well as places such as Whitehorse, Edmonton, and Vancouver.

4.3.3 Health Context

The Iskut Band Council, Tahltan Band Council, and the TCG are responsible for the planning, administration, and delivery of health and social services to the communities of Iskut, Telegraph Creek, and Dease Lake. The Tahltan Nation Health Working Group (TNHWG) is responsible for operational decision-making. Additionally, various health services to both on- and off-reserve Tahltan Nation members are administered by Iskut Valley Health Services (IVHS), Tahltan Health (TH), Northern Health Authority (NHA), First Nations Health Authority (FNHA), and other entities (BC Ambulance, Provincial Health Services Authority [PHSA]). The NHA is further divided into smaller service areas, and the Project is located within the Northwest Health Service Delivery Area's (NHSDA) Stikine Local Health Authority (LHA).

The FNHA operates health centres in Iskut and Telegraph Creek, and NHA operates the Stikine Regional Health Centre (SRHC) in Dease Lake, which provides around the clock emergency care and ambulance services. The nearest full-service hospitals are in Terrace and Smithers, approximately six to seven hours away by road.

Both the Iskut and Tahltan Bands offer mental health support services, through the Peoples' Haven in Dease Lake, the Health Building in Telegraph Creek, and Stikine Health Centre in Dease Lake, and Iskut Valley Health Services in Iskut. Mental health supports are offered through all locations; however, no clinical counsellors or registered mental health therapists live permanently in community.

Deriving from engagement, access to local health services appears to be a concern for Tahltan Nation leadership. Key informants noted that there are limited services provided in Telegraph Creek and Iskut and community members may need to find transport to the Dease Lake clinic to receive care when local nursing staff are unavailable, or a doctor is needed. Medevac wait times can average as high as 48 hours, although this has recently improved. Dease Lake has one doctor as of April 2021 (a reduction from two) who is the only physician providing health care services in the territory. Physicians also rotate through the territory, which impacts continuity of care. There is no longer a pharmacy in the territory and people must wait for prescriptions to be shipped from Smithers.

4.3.4 Public and Environmental Safety

Dease Lake is the largest community on Highway 37 and is considered the main service and government centre. This includes food, accommodation, automotive services, shopping, and health services. There are recreation facilities (community hall, public library, outdoor skating rink, school gym), a health clinic, the Royal Canadian Mounted Police (RCMP) detachment, and a BC Ambulance Unit. Several provincial government offices are housed here, including a BC Services Centre (representing the Ministry of Children and Family Development and Ministry of Transportation).

The Ministry of Forests, Lands, and Natural Resource Operations maintains an office at the airport and is active particularly during the forest fire season which has been particularly aggressive in recent years. Critical infrastructure in Telegraph Creek (e.g., the community water system and the Head Start and Nurses Housing) were destroyed in the 2018 wildfire season.

Iskut does not have a RCMP detachment stationed in the community and instead relies on the detachment in Dease Lake. Available services include food, accommodation, automotive, recreation, and an elementary school.

4.3.5 Local Economic Conditions

The region surrounding Red Chris has historically been dependent upon natural resource industries, such as forestry and mining, as well as the public sector for employment and economic opportunities. Mining has enjoyed a prolonged resurgence since the 1980s; however, in recent decades, forestry has waned following the transfer of harvest licensing to BC Timber Sales in 2003. Surrounding communities are also susceptible to changes in global commodity markets. Notwithstanding the changes and fluctuations in resource industries, they do remain significant employers and sources of economic opportunity.
Several other businesses that are primarily based in Dease Lake have developed to support resource industry operations, including air transportation, accommodation, equipment supply, and construction services. The Tahltan Nation Development Corporation (TNDC) is also based out of Dease Lake. Nevertheless, primary industry is increasingly complemented by tourism markets such as guide outfitting, hunting, fishing, heli-skiing, and backcountry recreation.

The service industry and goods-producing industry account for approximately 60% and 40% of workforce employment within Tahltan Territory, respectively. The largest sectors of employment are Public Administration, Construction, Mining, and Education. According to the Tahltan Nation Social Community Survey undertaken by NRCML as part of early engagement efforts, labour force participation within Tahltan Territory is higher than in the remainder of the province. Within the context of the RDKS, the 2016 Canadian census indicates that the region retained respective participation, employment, and unemployment rates of 60.0%, 60.0%, and 22.0%, respectively, within Electoral Area D and 72.2%, 64.8%, and 10.3%, respectively, within Electoral Area F.

Subject to the approval of the Production Phase, Red Chris workforce demands will increase during the development and construction phase, which will last for several years (Section 3). As the transition from surface mining to underground mining winds down, the workforce requirements will return to approximately what they are at present.

4.3.6 Education

Tahltan Territory falls within Stikine School District 87. The district has the highest proportion of Indigenous students at any school district in the province. Formal elementary and secondary school resources in Tahltan Territory include the following:

- Dease Lake provides schooling from kindergarten to Grade 12 with eight teachers, three learner support personnel, and one Aboriginal Language and Culture instructor. There are no specialized classes taught in Dease Lake.
- Telegraph Creek provides schooling from kindergarten to Grade 9 with three teachers and one Aboriginal Language and Culture instructor. After Grade 9, students in Telegraph Creek must relocate to finish high school.
- In Iskut students attend the Klappan Independent Day School which is run by the Iskut Band Council. It provides schooling for students up until Grade 9, after which students in Iskut must be bused to attend school in Dease Lake. The commute takes approximately two to three hours per day.

4.3.7 Infrastructure

The Dease Lake Airport (IATA code YDL, CYDL) is run by Stikine Airport Society (SAS). The airport recently underwent upgrades to improve reliability for medivac access, enable greater commercial and industrial activity in the area, and to bring the airport up to Transport Canada Civil Aviation certification. Funding was obtained from the province's StrongerBC program as well as the RDKS and the private sector (including NRCML, Seabridge, Skeena, Newmont/Teck, and Pretivm).

Currently, 85 to 90% of NRCML's workforce arrives by plane to Dease Lake Airport and are then transported to site via Northern Spirit Transportation/Tahltan NST Busing Ltd.; a partnership between the TNDC and Northern Spirit Transportation. Marshalling points for the Red Chris Mine include Vancouver, Nanaimo, Kamloops, Kelowna, Prince George, Smithers, and Williams Lake.

Once in Dease Lake, four to five coach buses are used to transport workers to site along Highway 37; approximately 16 to 20 buses per month. Approximately 10 to 15% of the workforce drives to site and leave their vehicles at the front gate for the duration of their rotation.

Highway 37, also known as the Stewart-Cassiar Highway, is the main route running north-south through the LAA and Tahltan Territory. Road conditions on Highway 37 can be variable throughout the year; snow, ice, and cold temperatures being commonplace in from fall to spring. The road is mostly paved, or seal coated, with one kilometer of gravel surface (Gov. BC 2021). Road markings may not be present and line of sight on the highway may be limited due to the terrain of the area. There are some one-lane bridges and the presence of wildlife including moose, caribou, fox, and grizzly and black bears is common (Government of BC 2021). Highway 37 (connecting from Highway 16 at Kitwanga) will be the transportation route used to supply Red Chris in relation to Production Phase development activities.

Traffic data for the Stikine Bridge, located 50 km South of Dease Lake and North of the Red Chris Mine along Highway 37 (BC Government, 2021), shows that Annual Average Daily Traffic (AADT) has decreased from 242 in 2014 to 213 in 2017 and to 147 in 2020. The sharp decrease in 2020 is attributed to travel restrictions imposed because of the global pandemic (i.e., COVID-19) declared in early 2020; and although public data is not available for 2022, it is reasonable to assume that the AADT may have already returned to levels comparable to 2017.

The 335 km Northwest Transmission Line, completed in 2012, runs north from Terrace to the Red Chris Mine. There are three hydroelectric facilities (Forrest Kerr, Volcano Creek, and McLymont Creek) that are owned by Axium Infrastructure Inc., within which the Tahltan Nation retains an equity position.

5 Tahltan Nation Context

This section will discuss NRCML's current understanding of the Tahltan Nation interests in the Block Cave Project and the potential interactions thereof.

The discussion relies on both primary and secondary data sources (primary data collection continues to be underway at the time of writing) and will incorporate the results of the Tahltan Nation Land Use Study (TLUS), community engagement, and key informant interviews, as appropriate (TCG TLUS May 2021).

Tahltan Nation Territory, identified in Figure 1, covers 93,500 km^2; stretching from its northwestern border that parallels the United States/Canada border into a southern portion of the Yukon, to its southeastern border that reaches the upper Nass tributaries and the western half of the Stikine plateau. This area includes the sacred headwaters of the Stikine, Nass, and Skeena rivers where, according to the Tahltan Nation oral history, the Earth was first created and Tahltan Nation culture began (TCG 2021c).

The Tahltan Nation relies on the same Territory and resources that sustained their ancestors since time immemorial, and continue to practice activities such as fishing, hunting, and gathering. The Tahltan Nation also continues to participate in the modern economy located both within and outside of their Territory. The current reserves under governance of the Tahltan and Iskut Bands that are in proximity to Red Chris are shown in Figure 13.

5.1 Tahltan Nation Territory Highlights

Tahltan Territory Overview (TCG 2021b):

- Tahltan Territory is 95,933 km^2, or the equivalent of 11% of BC's land mass.
- If the Tahltan Nation were its own country, it would be bigger than Portugal and slightly smaller than South Korea.
- The Territory is rich in natural resources and continues to garner international attention for its mineral and abundant wildlife.
- Tahltan Territory is home to:
    - Approximately 70% of BC's resource -rich Golden Triangle;
    - Three of BC's 16 operating mines or their shared footprint;
    - Approximately 41% of BC's exploration activities by expenditure, 6.3% of Canada's, and 0.9% of the world's; and
- In 2019, exploration expenditures on projects in the area were estimated to be over $135.5 million, with production values for active mines estimated to be over $817 million.

5.2 Governance

Historically, Tahltan society was organized according to an exogamous family/clan system based on matriarchal descent. Every Tahltan Nation member belonged (and still belongs) either to the Crow (Tsesk'iya) or the Wolf (Ch'ioyone) clan (TCG TLUS 2021). These clans are further subdivided into ten families, each connected to a certain geographical area within Tahltan Nation territory. This community of relationships embodies and forms the basis of the Tahltan Nation values of respect, belonging, and generosity (reciprocity). This clan system is incorporated into contemporary Tahltan Nation systems of governance.

The guiding principle of the Tahltan Nation, in terms of contemporary governance, is still the Declaration of the Tahltan Tribe. In 1910, as part of a growing movement to assert First Nations rights on the coast and in the southern interior of BC, Chief Nanok of the Tahltan Nation, along with 80 other members of the tribe, signed the Declaration. The document claims sovereignty over Tahltan Nation land and declares that any land interests concerning the territory of the Nation are to be settled directly with the Tahltan people. It represents a legal declaration of the rights of Tahltan Nation members to the Canadian government and British monarch – that Tahltan Nation members have yet to extinguish their Aboriginal title by any legal process.

In July 1976, the Tahltan united under a single democratic system to represent the interests of the Nation. This resulted in the formation of the Association of United Tahltans, which was then renamed to the Tahltan Tribal Council In 1985. In 1990, the bands withdrew their support for the Tahltan Tribal Council and the organization dissolved in 1998 (TCG 2020a). From 2001 to 2002, the Tahltan Tribal Council was reinstated and changed its name to the Tahltan Central Council and, subsequently, to the TCG.

The TCG is the central administrative governing body for the Tahltan Nation. The Iskut Band and the Tahltan Band continue to govern Tahltan Nation interests with respect to the *Indian Act but* have endorsed the TCG as the representative government of the Tahltan Nation with respect to inherent Aboriginal title and rights. The purpose of the TCG is to, among other things, define and protect the Tahltan Nation's inherent Aboriginal rights and title; to protect the eco-systems and natural resources of Tahltan Nation Territory through pursuing sustainable economic development; and to strengthen the cultural wellness of the Nation through the promotion of traditional values based on the concepts of caring, sharing, cooperation, truth, honour, fairness and above all, respect.

The TCG have approximately 4,000 registered members as of October 2022, with roughly 710 individuals living in local Tahltan Nation communities, though not all are living on reserve lands. The board of the TCG has one representative from each of the ten Tahltan Nation families. The Chairperson, Vice-Chair, and Secretary-Treasurer are elected for three-year terms at an annual general assembly held each summer (TCG 2020a).

The TCG Governance Policy (2020b) guides the TCG Board of Directors on all governance-related issues, decisions, and actions. The policy represents steps towards a more efficient, effective, and collective governance system which lays a foundation for future work to establish a Constitution for the Tahltan Nation. While the policy is intended to guide the Board of Directors' work, given that the TCG exists as a Society under the *BC Society Act, 1977,* the Tahltan Nation people continue to pursue self-determination and self-governance.

In terms of natural resource stewardship, land use planning currently falls under the Tahltan Stewardship Initiative (TSI).

The TSI is led by the TCG's Director of the Lands Department with the goal of (among other initiatives) supporting the development of a comprehensive set of Tahltan Nation land governance policies to plan and manage natural resources within the territory. In the meantime, the Project design is being guided by the *1987 Tahltan Resource Development Policy* (Marion 1987), where the elements and basic principles listed below continue to guide Tahltan Nation review and endorsement of resource development in the territory:

- Assurance that the development will not pose a threat of irreparable environmental damage.
- Assurance that the development will not jeopardize, prejudice, or otherwise compromise the outstanding Tahltan Aboriginal rights claim.
- Assurance that the project will provide more positive than negative social effects on Tahltan Nation people.
- Provision for the widest possible opportunity for education and direct employment-related training for Tahltan Nation people in connection with the project.
- Provision for the widest possible opportunity for employment opportunities for Tahltan Nation people with respect to all phases of the development.
- Provision for substantial equity participation by Tahltan Nation in the total project.
- Provision for the widest possible development of Tahltan Nation business opportunities over which the developer may have control or influence.
- Provision of the developer to assist the Tahltan Nation to accomplish the objectives stated above by providing financial and managerial assistance and advice when deemed necessary.

5.3 Economy

Mineral exploration, mining, forestry, guide outfitting, and ecotourism are the major industries operating in Tahltan Territory (TCG 2021b). The TCG and Tahltan Nation participates in a wide range of economic partnerships across these economic sectors through various agreements. As of 2021, TCG has signed 44 communications and engagement agreements with mineral exploration companies active in the Territory. There are also four active projects in the Territory where more comprehensive Impact Benefit Agreements (IBAs) are in place. As governments, the TCG, Iskut Band, and Tahltan Band do not partner with businesses directly; however, all three governments are equal and majority shareholders in the Tahltan Nation Development Corporation (TNDC).

The TNDC is the business arm of the Tahltan Nation and provides heavy construction, earthworks, camp services, air support, aviation, energy, forestry, transportation, and fibre optic communications services. The TNDC serves the resource exploration, mine development and mining, building construction, forestry, hydroelectric power, civil, infrastructure, and public works sectors. Partnerships with other businesses operating in the region include Bandstra Transportation, Central Mountain Air, Northwest Fuels, Pelly Construction, Orica Canada, Procon, Progressive Ventures Construction, RC Crane & Construction, Sodexo Canada, Summit Camps, Tahltan ERM Environmental Management, Tahltan Forestry, Tahltan Hy-Tech Drilling, Tahltan NST, Tahltan Allnorth, and Tahltech Drilling Services. The TNDC is also the contract operator for the Dease Lake Airport and is responsible for inspections, maintenance, and operations. According to the TCG 2020/2021 Annual Report, there are currently over 60 active Tahltan Nation companies operating in the territory (including Tahltan Nation partnerships and joint ventures [JVs]).

The mining and mineral exploration industries are particularly significant for both jobs (direct and indirect) and the number of contracts secured by Tahltan Nation businesses to supply a wide range of services.

Additionally, the TCG has entered into Government-to-Government agreements with the province (specifically EMLI), including Economic and Community Development Agreements (ECDA), to take advantage of the province's mechanism for sharing resource development revenue with First Nations. The Tahltan Nation is also an active participant in initiatives concerning collaborative permitting processes, joint inspections, Oil and Gas Tenure Management, Liquefied National Gas (LNG) Benefit Agreements, as well as the Standing Committee on the Health, Safety, and Reclamation Code for Mines in BC (TCG 2020b).

Inclusive of this process is the TCG's recent completion of the first consent-based decision-making agreement under the *Declaration on the Rights of Indigenous Peoples Act* (DRIPA) (BC Government 2019a) with the province.

NRCML, the Tahltan Band Council (TBC), and the TCG have a unique co-management agreement for the Red Chris Mine. The IBCA not only provides the Nation with environmental oversight over the Red Chris Mine, but also offers a number of other benefits, including preferential hiring and preferential contracting. Given this, Red Chris provides significant economic benefits to the Tahltan Nation and surrounding local communities.

5.4 Tahltan Nation Knowledge

As per the Tahltan Nation, the main elements of what constitutes Tahltan Nation Knowledge can be encapsulated as "the cultural heritage, traditional knowledge and traditional cultural expression of the Tahltan, along with knowledge of traditional Tahltan lifeways, and the non-traditional and local knowledge of Tahltan people today, whether embodied in tangible or intangible form, from both the ancient past and the living present, transmitted from generation to generation, and includes, but is not restricted to" (TCG TLUS 2021):

- Manifestations of Tahltan science, technology, and culture, including environmental knowledge, use of natural resources, land use and occupation, and systems of land tenure and management;
- Traditional and contemporary governance and laws, including those regulating intra- and inter-societal relations;
- Spiritual knowledge;
- Immovable cultural property (including sacred and culturally significant sites and burial grounds);
- Human and genetic resources and remains;
- Knowledge of fauna and flora, seeds, medicines, water, soils, weather, solar and lunar effects, processes, and cycles;
- Oral traditions, literature, and visual and performing arts (including songs, dances, music, stories, ceremonies, symbols, and designs);
- Sports and traditional games; and

- Any documentation of Tahltan heritage, culture, and knowledge, including archival materials, film, photographs, videotape, audiotape and any other form of media, along with all analysis, compilations, studies and reports that contain or have been generated from, in whole or in part, Tahltan knowledge.

For the purposes of this PD, relevant elements of Tahltan Nation knowledge can be divided into three categories: 1) knowledge about the environment; 2) knowledge of past and current use of the environment; and 3) ethical principles and values relating to the land and how people should act with respect to animals and the environment (Usher 2000).

Understanding that Tahltan Nation Knowledge is dynamic, constantly growing, and has sustained various pressures from settler and colonial forces, the Tahltan Nation's interests in the Project area are understood within the context of "existing within a community or relationships" (TCG TLUS 2021).

As such, a foundational aspect of Tahltan Nation Knowledge and worldview is maintaining a "right relationship" to the land. The different kinds of "right relationship" embody Tahltan Nation values and ethical principles insofar as an obligation to act in a certain way arising from the nature of the relationships of respect, ownership as belonging, generosity, and property rights (including stewardship).

5.5 Tahltan Nation Land Use

Red Chris is in an area where there are culturally important plants, fish, and wildlife (TCG TLUS 2021), such as moose, grizzly bears, woodland caribou, hoary marmot, and ground squirrels. Moose were, and continue to be, a significant Tahltan Nation food source, while other animals increased in importance as a food source when moose were unavailable. The plants and animals listed in Table 6 are mentioned as resources harvested from the Todagin Upland Plateau and the valleys surrounding it.

Table 6: Resource Use in the Area- Non-Exhaustive List

Biogeoclimatic Zone	Resource	Traditional Use
Alpine Tundra	Cinquefoil (*Potentilla*).	The stem and leaves of the plant were used to make yellow flower tea, good for relieving acid reflux or indigestion (Carlick and Carlick 2005).
	Caribou lichen (*Cladonia rangiferina*)	Boiled to make a tea and used for treating arthritis (Edzerza 2005). The lichen could also be chewed to treat a cough and sore throat (Carlick and Carlick 2005).
	Blue grouse	Hunted in the fall and winter (Carlick 2005; Marion 1983).
	Ptarmigan (willow and white-tailed)	Hunted opportunistically (Carlick 2005).
	Groundhog (hoary marmot)	Hunted in August and September when they were fattest just prior to hibernation. They were split and dried for storage (Albright 1984: 185-186).
	Mountain goat, Stone sheep, Dall sheep	Hunted mostly in the fall. Smoked, dried, and stored for winter (Carlick 2005).
Spruce-Willow-Birch and Boreal White and Black Spruce are combined here as there is significant overlap in floral and faunal species utilized by the Tahltan.	Balsam (sub-alpine fir)	Pitch used for healing cuts, wounds, eczema, rashes, bug bites and infections (Hamlin 2005).
	Lodgepole pine	Pitch used as a poultice to treat cuts and sores. The pitch was chewed, and the juice swallowed to treat a sore throat (Hamlin 2005). The dark-coloured pitch also used to treat blood poisoning and to soothe toothache pain (Quock and Quock 2005).
	White spruce	The shoots of new growth boiled and drunk as a tea to treat a cold (Edzerza 2005).
	Stinging nettle	The leaves were eaten as a vegetable. Whole plant was boiled to make a good tea (Carlick and Carlick 2005).
	Cow-parsnip (wild rhubarb)	The inner stem was eaten in the spring before flowering. Plant cannot be eaten after June (Hamlin 2005; Quock and Quock 2005).
Spruce-Willow-Birch and Boreal White and Black Spruce are combined here as there is significant	Juniper	Leaves and berries used to treat heart problems and kidney and bladder infections (Carlick and Carlick 2005).
	Black huckleberry	A good source of nutrition. Most berries dried and stored with animal fat. Dried berries by themselves were soaked in water and eaten (Carlick and Carlick 2005).

Biogeoclimatic Zone	Resource	Traditional Use
overlap in floral and faunal species utilized by the Tahltan.	Blueberry	A good source of nutrition. Most berries dried and stored with animal fat. Dried berries by themselves were soaked in water and eaten (Carlick and Carlick 2005).
	Low bush cranberry	Food source (Simonsen and Diaz 2005b).
	Soap berry (*Shepherdia canadensi)*	Unspecified medicinal purpose (Simonsen and Diaz 2005b).
	Fireweed	The leaves are good for treating burns. They were crushed and applied to the affected area. They could be dried and stored for later use (Edzerza 2005).
	Devil's club (*Oplopanax horridus*)	Used to treat stomach pains and cancer. The roots were boiled and drank as tea (Callbreath 2005). Also used for swelling. The bark is boiled in water, which is then used for soaking or bathing as a treatment for rheumatic fever (Quock and Quock 2005).
	Large mammals: grizzly bear, black bear, mountain goats, Stone sheep, Dall sheep, moose, mule deer	Bears only eaten when their diet consists entirely of vegetation (Hamlin 2005). Moose, sheep, goat, and bear were smoked and dried for winter use. Moose hunted all year. The fat of animals such as moose and goat was stored in the hide or in containers made from birch bark (Edzerza 2005).
	Smaller mammals: beaver, martin, wolverine, groundhog, ground squirrel (or gopher), porcupine, lynx, rabbits	Beaver is eaten in the spring and fall. Sometimes trapped and eaten during winter (Edzerza 2005). Rabbits were hunted in the winter (Carlick 2005).
	Labrador tea (*Rhododendron groenlandicum*)	Leaves used for making tea, which was good for treating arthritis (Hamlin 2005).
	Blue grouse; Ruffed grouse	Grouse hunted in the fall (Carlick 2005).
	Rainbow trout	Fished opportunistically throughout the year.

Source TCG 2021d.

Gathering, especially berries, is an important aspect of Tahltan culture. In the spring, new shoots and greens harvested included wild rhubarb, nettles, lamb's quarter, mountain sorrel, and dandelion (RES 2009), whereas later in the summer, fireweed and dock are harvested. Wild mushrooms have been and continue to be part of Tahltan diets, and following the wildfires of 2018 around Telegraph Creek, morels were in abundance. The Tahltan Guardians monitor mushroom picking in the Territory and issue permits on the spot for pickers and buyers (IGT 2021).

Berries continue to be an important part of Tahltan diets and include blueberries/echishchō (both low- and high-bush), soapberries/ishghohje, wild strawberries, raspberries/dahkāle, high-bush cranberries/gokhē', low-bush cranberries/itl'et, and Saskatoon berries/dechitl'eje. The inner bark or cambium of black pine, poplars/chabā'e, and sometimes spruce/ts'ū and alpine fir are also consumed.

The Tahltan Nation continues to actively hunt elk, moose, caribou, black bear, grizzly bear, porcupine, mountain goat, Stone sheep, and grouse. Cultural practices also continue regarding the sharing of meat and treating animals with respect (TCG 2019). Key informants noted that there is an emphasis on hunting predatory animals given their potential to negatively impact communities and ungulate populations (especially wolves and bears). Trapping activities depend on the time of year with community members actively trapping species such as fox, lynx, and wolves.

Participation in hunting was reported to be high in the 2007 Tahltan Census, where most respondents (34%) hunted every two to six months, while some people (23%) hunted once a year or less. The most active hunters (19%) were said to hunt at least once per month. Similarly, the Tahltan Survey also found that hunting was one of the more common cultural activities that respondents pursue, and moose and caribou were consumed on a frequent or regular occurrence as part of people's diet.

Fishing along the Stikine River is a key harvesting activity that provides significant food, social, ceremonial, and economic value to the Tahltan Nation. While sockeye and king salmon are the key resource fish, Dolly Varden, Arctic grayling, rainbow trout, and brook trout are some other prized resources. Families have fishing sites and camps along the banks of the Stikine where they go to harvest and preserve their catch. Like hunting, most Tahltan Nation members participate in fishing, with most respondents (72%) of the Tahltan Survey stating they fished yearly or more.

Red Chris is also in the guiding territory registered to Jerry Creyke (Guiding Certificate 601025), which stretches from the Klappan River to Mount Edziza. Guide outfitting activities generally occur from August to October, concentrating on hunts for Tinhorn sheep, Stone sheep, mountain goat, moose, black bear, and wolf in the Todagin Mountain area (Kinaskan Lake Outfitters 2021). Trout fishing is also offered with the client purchase of a trout fishing license. The outfitting base camp is located on Highway 37 at Kinaskan Lake, which is located southwest of the minesite near Iskut. Big game hunting is conducted via horseback. The Creyke family has been operating Kinaskan Lake Outfitters since the 1950s. Through engagement with Kinaskan Lake Outfitters in January 2021, Kinaskan representatives noted that the presence of Red Chris and its associated activities have led to auditory and visual effects which they believe may also be impacting the availability of target species. Engagement with Kinaskan Outfitters is ongoing.

6 Summary of Tahltan Engagement

NRCML's vision is to be the Miner of Choice for its people, shareholders, host communities, partners, and suppliers. NRCML believes that mutual respect and building trust is critical to success. NRCML strives to deliver sustainable long-term benefits to local communities in a way that supports and respects their rights and aspirations through engagement and development activities.

The principles that guide NRCML's engagement include:

- Respecting local traditions, rights, interests, cultures, perspectives, and special connections to the lands and waters of surrounding communities;
- Establishing communication and engagement methods that reflect the needs and interests of the Tahltan Nation;
- Utilizing a variety of engagement methods to ensure engagement is inclusive, timely, responsive, and reaches those potentially impacted by our activities;
- Working towards shared value, especially for those most affected by the Project;
- Adopting and applying culturally appropriate engagement processes that respect Tahltan governance with Tahltan communities and the Tahltan Nation;
- Working to achieve consent-based decision making with the Tahltan Nation; and
- Establishing a transparent feedback and grievance management process with Tahltan oversight into the resolution process.

6.1 Completed Engagement

The following section provides a description of engagement methods and early engagement completed from March 2020 to November 2022 with respect to the Production Phase. Red Chris is currently developing a Tahltan Nation Engagement Plan to support the Block Cave Production Phase project, which will be completed in early 2023.

6.1.1 Impact, Benefit and Co-Management Agreement Project Advisory Committee: 2021 – Present

The Project Advisory Committee (PAC) is the forum designated by the IBCA as holding primary responsibility for ensuring that the IBCA is implemented in a productive and timely manner. This includes the effective execution of the obligations and responsibilities within the IBCA itself, as well as addressing other issues or concerns that may arise between NRCML and the Tahltan Nation and Tahltan members as it pertains to the IBCA.

The PAC is made up of individuals from both Newcrest and the TCG. The PAC exists to:

- Serve as the primary formal mechanism for communication and cooperation with regards to Red Chris; and
- Provide a forum through which to build genuine capacity to facilitate informed and productive Tahltan Nation involvement in Red Chris.

The PAC has held regular meetings since the IBCA came into effect in 2019. Engagement that is not specific to the proposed Project within this Project Description has been excluded from Table 7.

Table 7: PAC Meetings

Date	Attendance	Focus of Discussion	Issues and Questions Raised
April 13, 2022	TCG, Newcrest	Block Cave Permitting Update	No questions were raised regarding the Block Cave permitting process and permitting phases.

6.1.2 Site Tours: Ongoing

From time to time, and in collaboration with the Iskut Band, Tahltan Band, and TCG, NRCML conducts site tours for members of the Tahltan Nation and Tahltan Leadership. Since COVID-19 restrictions have been relaxed, two site tours have taken place, with additional future site tours planned regarding the proposed Project described within this Project Description. Other site tours not specific to the proposed Project have been excluded from Table 8.

Table 8: Site Tours

Date	Attendance	Description
October 18, 2022	NRCML, Two Tahltan Elders	In conjunction with Tahltan Day, an informal tour was organized for two Tahltan Elders. The tour included Red Chris' major infrastructure including the current development taking place in relation to the proposed Project. Discussion included the various phases of the proposed Project and the future of Red Chris.
November 10, 2022	TCG, Iskut Band Council	Tour included minesite infrastructure, including the current development taking place in relation to the proposed Project.

6.1.3 Developed Virtual Engagement Platforms: 2021 – Ongoing

Recognizing the importance of adhering to the pandemic related restrictions, the NCMRL Community Relations team developed a digital platform and virtual engagement space to provide information about the Project. The virtual meeting space was modelled after a community gym and includes a range of boards where users can learn more about the Project. To date, the platform has been accessed over 1,900 times.

A limitation of the virtual platform is its accessibility to those residing in Tahltan Nation communities, where internet can be costly and unreliable at times. While steps, including audio text read outs and clear navigation icons, have been taken to make the virtual platform as inclusive as possible to those who have a limited understanding or interest in using more complex platforms, some members, such as Elders, may not be accessing the space at the same rate as other demographics.

6.1.4 Tahltan Leadership Meetings: 2021 - Ongoing

Tahltan Nation leadership meetings are typically attended by representatives of the TCG, Iskut, and Tahltan Bands, and/or the TCG Board. Tahltan Nation leadership meetings have been instrumental in helping provide guidance and insight into the Project and engagement planning. The dates of leadership meetings, key topics presented, and interests/issues raised are presented in Table 9.

Table 9: Tahltan Leadership Meetings

Date	Attendance	Focus of Discussion	Interests and Issues Raised
January 13, 2021	TCG, TCG Board, Iskut and Tahltan Bands	Block Cave program	Benefit sharing, education and skills development, procurement and contracting, risk of long-term tailings management to Tahltan.
October 28, 2021	Iskut Band Council	Block Cave program, production phase, permitting approach	Tahltan hire, contracting and procurement, safety of block caving, community investment, future engagement.
October 28, 2021	Tahltan Band Council	Block Cave program, production phase, permitting approach	Potential health impacts from tailings, employee mental health, effects of intergenerational trauma.
January 31, 2022	TCG, TCG Board, Iskut and Tahltan Bands	Block Cave program, production phase, permitting approach	Procurement, Tahltan apprenticeships, permitting and environmental assessment approach.

Apart from the engagement outlined above, NRCML has participated in weekly meetings with the leadership of the Tahltan Environmental Management Committee (EMC) since early 2020. Red Chris has also undertaken numerous meetings with local band leadership related to community investment and support during the pandemic. These engagements have been excluded as they were not specific to the proposed Project.

6.1.5 Tahltan Nation Virtual Meetings (Virtual): 2021 - Ongoing

Virtual Tahltan Nation meetings were conducted on March 9 and March 13, 2021, as noted in Table 10. Virtual meetings provide a significant opportunity to access Tahltan Nation members from all over the world. Sessions were arranged and facilitated by the TCG Communications and Lands departments.

Table 10: Tahltan Nation Virtual Meetings

Date	Attendance	Focus of Discussion	Issues and Questions Raised
March 9, 2021	Tahltan Nation members	Introducing block caving, future expansion of Red Chris	Benefits of underground versus open pit mining, process plant upgrades, infrastructure upgrades needed, the subsidence zone, permitting approach, potential for block caving to cause earthquakes, potential impacts to animals and hunting, IBCA, royalty structure, local businesses, size of workforce.
March 13, 2021	Tahltan Nation members	Introducing block caving, future expansion of Red Chris	

6.1.6 Social Baseline Study: April 2020 – Ongoing

NRCML is undertaking the development of a social baseline study to provide social, economic, and cultural information relevant to deepening the understanding of the Tahltan Nation and local communities. This understanding will help NRCML minimize effects from its activities, enhance available opportunities, and support future permitting activities. NRCML initiated discussions with representatives of the TCG in April 2020 to collaboratively develop and implement the participatory social baseline study. The response was positive, although the timing was noted to be a challenge, given the COVID-19 pandemic. The pandemic strained critical resources in the Tahltan Nation and given this, the study took longer than expected and participation rates were not as high as originally anticipated.

The main aspects of the methodology implemented are the:

- Development of the study approach in collaboration with the TCG.
- Establishment of the Social Baseline Working Group, comprised of NRCML, TCG, and community representatives, which meets meeting bi-weekly.
- Comprehensive review of secondary data resources in conjunction with the incorporation of primary data. This process includes additional data and information provided by the TCG.
- Collaboration with other entities conducting similar studies in Tahltan Nation territory (e.g., other mining companies, provincial government).
- Development of key informant interview guides. Key informants were selected based on their specific knowledge and roles in the community.
- Commencement of key informant interviews with Tahltan Nation leadership and knowledge holders to inform the study's design.
- Development of a draft Tahltan Nation Social Community Survey.
- Implementation of the online Tahltan Nation Social Community Survey, supplemented with in-person interviews conducted by Tahltan Nation liaisons (visitors were restricted from coming in-Territory at the time).
- Training of Tahltan Nation researchers to collect data via telephone, targeting elders in particular.
- Analysis of preliminary findings and production of a draft report with initial findings.

The study is currently in the final stages of completion. The next steps include additional in-person interviews with elders and youth (dependent on pandemic--related restrictions) as well as focus groups and workshops to expand on key findings and gain greater insight.

6.1.7 Sociocultural Committee: September 2020 - Ongoing

The purpose of the Sociocultural Committee (SCC) is to identify, review, and report on issues of concern related to the social, cultural, and economic effects that may be linked to ongoing mining activities. The SCC will also be responsible for supporting appropriate mitigation of the project's social effects and may design and implement programs to do so.

The SCC is comprised of both NRCML and TCG appointed representatives. There are plans to expand the SCC to include additional representation from the three local communities (Table 11). The SCC plays a key role in providing the Tahltan Nation with oversight of the resolution of grievances, concerns, and complaints.

Table 11: Sociocultural Committee Meetings

Date	Attendance	Focus of Discussion	Issues and Questions Raised
September 24, 2021	TCG, Tahltan EMC, Newcrest	Developing the terms of reference, review of any concerns/complaints/grievances received over past year	Incorporating traditional and Tahltan knowledge into workplace, impacts of rotation work, mental health, addressing harassment and bullying in workplace, access to drug and alcohol treatment.
November 26, 2021	TCG, Tahltan EMC, Newcrest	Reviewing and finalizing Terms of Reference	Team noted a preference to meet face-to-face, so the time was used to finalize the Terms of Reference.
May 10, 2022	TCG, Newcrest	Changes in camp capacity, review of any concerns/complaints/ grievances	No concerns were raised about the additional camp capacity needs, although Tahltan expressed an interest in providing elder input into the facilities (beading room, music room).

6.1.8 Environmental Oversight Committee – Block Cave and Early Works Technical Subcommittee – 2020-Ongoing

The Environmental Oversight Committee (EOC), comprised of both NRCML and TCG appointed representatives, is the forum designated by the IBCA for environmental co-management of Red Chris. The EOC exists to:

- Provide a forum for constructive dialogue between NRCML and the TCG to review and consider Red Chris' environmental compliance and performance.
- Provide advice and guidance to NRCML on Project-related environmental matters, including environmental performance, and consideration and integration of Tahltan Nation Knowledge and Health Safety and Environmental Management Systems;
- Identify and/or report on issues of concern pertaining to environment related information and potential environmental effects;
- Monitor the implementation of any other environmental-related obligations; and
- Provide a mechanism for the engagement of TCG for future amendments, permit applications, and project modifications.

The EOC Block Cave and Early Works Subcommittee (EOC Subcommittee) was formed in September 2020 to:

- Provide a dedicated forum for discussion of the project's permitting strategy and community engagement.

- Provide a forum for TCG-NRCML subject matter experts to review and provide technical input into permitting materials prior to submission.
- Review materials with consideration to the integration of Tahltan Nation Land Use and Tahltan Nation Knowledge.

The list of meetings held with TCG since September 2020 is presented in Table 12. Over 60 meetings have occurred, offering critical insight and guidance from Tahltan Nation members into the project design and execution. Engagement that is not specific to the proposed Project within this Project Description has been excluded from Table 13.

Table 12: Environmental Subcommittee Summary of Technical Meeting Topics

Meeting No.	Date of Meeting	Topic
01	Sep 24, 2020	Review of proposed draft Terms of Refence for the Subcommittee technical meetings.
02	Oct 1, 2020	Present and discuss high level block cave concept study and permitting sequence.
03	Oct 6, 2020	Continue to present and discuss high level block cave development plans and permitting sequence.
06	Oct 16, 2020	Present Block Cave plan to Patrick Hudson, TCG/ Tahltan Heritage, Resources and Environmental Assessment Team (THREAT)
07	Oct 20, 2020	Present and review Engagement Framework.
16	Nov 26, 2020	Permitting process general discussion.
20	Jan 5, 2021	Review and discussion of alternatives assessment methodology and approach
21	Jan 7, 2021	Presentation of leadership meeting slides.
22	Jan 12, 2021	Discussion on governance and revised meeting format.
23	Jan 14, 2021	Alternatives assessment methodology (re-scheduled).
24	Jan 19, 2021	Alternatives assessment methodology (continued).
25	Jan 21, 2021	Governance check-in.
31	Feb 16, 2021	Focused team to work through multiple accounts analysis.
32	Feb 18, 2021	Governance check-in.
33	Feb 23, 2021	Early (underground) mining.
34	Mar 4, 2021	Subsidence and geotechnical modelling.
35	Mar 9, 2021	Mine materials handling (shaft vs. conveyor).
36	Mar 23, 2021	Block Cave Tailings Impoundment Area design.
38	Apr 1, 2021	Governance check-in.
39	Apr 6, 2021	Block Cave introduction overview.
40	Apr 29, 2021	Governance check-in.

Meeting No.	Date of Meeting	Topic
41	May 5, 2021	Pre-conditioning.
42	May 13, 2021	Underground mining safety management.
43	Jun 1, 2021	Discussion of technical sessions and topics.
44	Jun 8, 2021	Block Cave environmental management system and plans.
45	Jun 16, 2021	Block Cave water management.
46	Jun 23, 2021	Water management follow-up and schedule.
47	Jun 30, 2021	Tahltan Nation Land Use and Occupancy Study.
48	Jul 28, 2021	Tahltan Nation governance.
49	Sep 1, 2021	Permitting update.
56	Feb 23, 2022	Operations Accommodation Complex (OAC) – camp expansion.
57	Mar 2, 2022	Block Cave production permitting overview.
58	Mar 23, 2022	Block Cave geotechnical considerations
59	Mar 30, 2022	Block Cave production EAC amendment proposed valued components.
60	Apr 6, 2022	Block Cave groundwater model.
61	Sep 7, 2022	EAC Amendment application - camp expansion and EAC conditions review.

Table 13: Subject Matter Specific Engagement

Date	Attendance	Description
June 10, 2022	Newcrest VP Social Performance and Government Relations, TCG Employment and Business Department	Meeting to discuss Newcrest and TCG cooperation regarding the permitting process of the proposed Project.
October 2022	Newcrest, TCG Lands Department	
November 1, 2022	Newcrest Social Performance, Newcrest Government Advisor, TCG Lands Department, TCG Communications Department	Meeting with the TCG Lands Department Director to discuss community engagement and permitting process and planning as it pertains to the proposed Project

6.1.9 Subject Matter Specific Engagement

NRCML meets with the TCG and their subject matter experts on an ad hoc basis. Topics of engagement include permitting processes and plans, community engagement, subject specific topics, as well as general updates.

6.1.10 Tahltan Nation Land Use Study- March 2020- August 2021

In August 2021, the Tahltan Nation completed *A Report on Tahltan Land Use and Occupancy in the Vicinity of the Red Chris Mine Project.* The study was commissioned by NRCML to provide insight into Tahltan land use around the Project area. Proposed frameworks for the mitigation of effects associated with the continued operation of Red Chris are included in the report.

The study will be incorporated into both the effects assessment process for the Production Phase of the proposed Block Cave program, as well as the overall Project design.

6.1.11 Kitchen Table Meetings with Elders - July 2021-Ongoing

The Red Chris Community Liaison (based in Tahltan Territory) conducted in-home visits with elders starting in July 2021. Discussions focused on how elders wanted to be engaged by NRCML, their level of knowledge regarding the Block Cave Project and Red Chris' activities, whether they were able to participate in virtual engagement, and if they had any feedback or concerns, they wanted to raise with NRCML. From the kitchen table meetings, elders indicated a preference for in-person engagement and requested a site tour of the Project when pandemic restrictions were lifted. Additionally, while elders felt positive changes had been made, especially around the training and hiring of Tahltan Nation members, elders also expressed concerns regarding the potential effects of mining on hunting and trapping activities. They also encouraged NRCML to invest in culture camps and other types of cultural revitalization programs in the Territory.

6.1.12 Kinaskan Lake Guide Outfitter Meetings 2021-Ongoing

In 2021, NRCML initiated discussions with Kinaskan Lake Outfitters. Two meetings have been held where information was provided about the Block Cave Project, its associated permitting process, ongoing exploration activities, and current mining operations (Table 14).

Table 14: Kinaskan Lake Outfitters Engagement Activities

Date	Attendance	Focus of Discussion	Issues and Concerns Raised
June 30, 2021	Kinaskan Lake Outfitters, NRCML	Planned exploration activities, future expansion plans for Red Chris, compensation	Visual impacts from operations affecting the business, auditory impacts to animals from helicopters and mine related activities, impacts of the power line on availability of target species, impacts from the mine on availability of target species, negative impacts to guide outfitting business, lack of benefit sharing, and potential impacts to water quality.
February 17, 2021	Kinaskan Lake Outfitters, NRCML	Compensation, exploration activities, Red Chris and related Block Cave activities	Impacts to availability of sheep, impacts to business, visual and auditory impacts, impacts from increased truck traffic, and lack of benefit sharing.

6.2 Planned Engagement

A range of consultation and engagement activities will be conducted with respect to the Block Cave Project. Table 15 below outlines the major engagement methods and their respective timing. It is worth noting that some of these activities may be affected, or have been affected, by pandemic-related restrictions.

Table 15: Engagement and Consultation Approach

Activity	Status	Proposed Timeline
Project updates provided to the PAC	Currently in place	As determined by the PAC
Project updates provided to the EOC	Currently in place	Quarterly or as determined by the EOC
EOC Subcommittee technical meetings	Currently in place	Monthly
Updates provided to the Sociocultural Committee	Commenced in 2021	Quarterly or as determined by the SCC
Project updates provided to the Red Chris Monitoring Committee	Commenced in 2019	Quarterly or as determined by the Red Chris Monitoring Committee (RCMC)
TCG Annual General Assembly	Commenced in 2019	Annual, as invited
Tahltan Leadership Meetings	Commenced in 2020	Bi-annual
Virtual Town Hall Meetings with Tahltan Nation	Commenced in 2020	Bi-annual
Social Baseline Study (includes in person interviews and focus groups)	Commenced in 2021	Completion in 2022
Social Impact Assessment	Commence in 2022	Completion in 2023
Kitchen table meetings with Elders and youth	Commenced in 2021	Ongoing
In person community sessions in Tahltan communities and other communities with a high number of Tahltan residents (Terrace, Prince George, Smithers, Vancouver)	Commence in 2022	Annual
Topic focused workshops	Commence in 2022	As needed
Establish local Project office	Commence in 2022	Ongoing
Site tours of other underground mines	Commence in 2022	Ongoing
Site tours and visits to Red Chris	Commence in 2022	Ongoing

6.3 Identified Tahltan Interests and/or Concerns

Tahltan Nation interests continue to be identified through ongoing engagement. The interests that have been identified by the Tahltan Nation based on engagement to date are summarized in Table 16.

Table 16: Potential Tahltan Nation Interests Related to the Project

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Local Economy (Business; Employment)	Concern regarding the effective distribution of benefits to both large and small Tahltan businesses; helping ensure procurement benefits are shared equally.	Continue ongoing meetings and engagement between TCG and Red Chris Commercial Department. Preferred bidding, direct award, and operational critical contracting opportunities with Tahltan entities through the IBCA (ongoing).
Local Economy (Training; Education; Employment)	Interest in expanding skill development and training opportunities.	Continue ongoing meetings and engagement between the TCG and Red Chris Commercial Department and HR Department. Continuation of ongoing contributions to Tahltan scholarship and bursary programs to support education.
Local Economy (Employment)	Concern regarding the potential impacts of evolving workforce conditions; supporting ongoing employment for Tahltan in varying levels, including senior positions.	Continue ongoing meetings between the TCG and Newcrest HR Department to identify and address changing workforce demands. Development of on-the-job training and mentoring programs, including leadership development programs and succession planning. Work collaboratively with the TCG in implementing a transferable skills development program. Continue ongoing contributions to Tahltan scholarship and bursary programs to support education.
Local Economy	Interest in expanding benefit-sharing in relation to the Project.	Royalties paid to TCG through the IBCA (ongoing). Collaboratively develop a robust community investment opportunities strategy through the Newcrest Community Support Fund. Preferred bidding, direct award, and operational critical contracting opportunities with Tahltan entities through the IBCA (ongoing).
Local Economy	Interest in expanding community investment initiatives and programs.	Collaboratively develop a community investment strategy developed to target Tahltan communities, with a significant focus on cultural programs and initiatives. Royalties paid to TCG through the IBCA (ongoing).

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Water Quality; Aquatic Resources; Community Health and Well-being; Tahltan Culture	Concern with the risks associated with long-term tailings management to downstream communities; potential tailings breach; use of downstream riparian areas; concerns about the chemicals used in the process; and potential to impact human health.	Continue ongoing Sociocultural Committee meetings through the IBCA in support of collaboratively developing mitigation strategies and plans: focus on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue. Continue to collaborate with TCG through the Environmental Oversight Committees on environmental management planning. Continued execution of the Engagement Plan to ensure Tahltan interests and concerns are considered, tracked, and addressed. Incorporate the results of the Tahltan Land Use Study (TLUS) into the Project design insofar as developing effect assessments and mitigation planning that respect Tahltan Knowledge.
Vegetation and Terrestrial Ecosystems; Wildlife and Wildlife Habitat; Tahltan Culture	Concerned about the potential impacts of the Project on the environment, wildlife (and their movements/migration), and habitat through increased noise: availability of target species. Includes reclamation activities insofar as ensuring that end land use objectives reflect Tahltan Knowledge, interest, and values.	Continue ongoing Sociocultural Committee meetings through the IBCA that focus on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue. Continue to collaborate with the TCG through the Environmental Oversight Committee and Subcommittee regarding environmental management and mitigation planning.
Water Quantity; Water Quality; Aquatic Resources; Ecosystems; Tahltan Culture	Specific concern regarding the potential risks of the project on water resources (Quarry Creek to Klappan River watershed, and Trail Creek to Kluea Lake watershed), including associated habitats of cultural significance.	Continue ongoing Sociocultural Committee meetings through the IBCA focusing on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue. Continue to collaborate with TCG through the Environmental Oversight Committee and Subcommittee on environmental management. Continue the development and execution of the Engagement Plan to ensure Tahltan interests and concerns are considered, tracked, and addressed.

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Tahltan Culture; Vegetation and Terrestrial Ecosystems; Wildlife and Wildlife Habitat	Concern regarding potential effects to Kinaskan Lake Outfitters from Project development; auditory and visual impacts to hunting areas and effects to *enjoyment of the land.*	Ongoing Sociocultural Committee meetings through the IBCA; focus on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue. Continue to collaborate with TCG through the Environmental Oversight Committee and Subcommittee on environmental management. Continued development and execution of the Engagement Plan to ensure Tahltan interests and concerns are considered, tracked, and addressed. Incorporate the results of the Tahltan Land Use Study into the Project design, effects assessments, and mitigation.
Tahltan Culture; Local Services and Infrastructure; Local Communities Health and Well-being; Local Economy	Concerned about the amount of Tahltan membership outmigration from local Tahltan communities.	Continue with Sociocultural Committee meetings through the IBCA that focus on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue. In collaboration with the TCG, develop a Social Conditions Monitoring Program to identify and explore potential mitigations within local communities.
Tahltan Culture; Local Services and Infrastructure; Local Communities Health and Well-being; Local Economy	Concern relating to the negative effects of rotation work on community and family cohesion. Includes substance abuse and mental health.	Improve internet connectivity/access at Red Chris to facilitate communication with family (in progress). Enhance and promote Employee Assistance Program (already in place). Tahltan Feedback Mechanism, to address and respond to any concerns raised by Tahltan members in a timely fashion (already in place). Hire a Tahltan counsellor to be based at Red Chris on rotation (from the IBCA). Develop a continued employment policy for individuals seeking treatment for substance abuse to ensure they have a job when the relevant recovery program has been successfully completed. Continue Sociocultural Committee meetings which focus on identifying opportunities to support cultural activities and limit sociocultural effects of the Project. In collaboration with the TCG, develop a Social Conditions Monitoring Program to identify and explore potential mitigations within local communities.

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Tahltan Culture; Local Services and Infrastructure; Local Communities Health and Well-being; Local Economy	Concerned about the impacts of rotation work on the ability to participate in cultural/traditional activities and the reduction of opportunities to transfer knowledge to younger generations.	Provide support to Tahltan in attending culture, berry, fish camps, and other related initiatives. Work collaboratively with the TCG to develop opportunities to host cultural activities at the mine site for Tahltan Day and National Indigenous Peoples Day (e.g., local drumming, dance groups, opening, and closing prayers). In collaboration with the TCG, develop a Social Conditions Monitoring Program to identify and explore potential mitigations within local communities.
Local Economy; Local Services and Infrastructure; Cumulative Effects	Concern that potential increased workforce demands from the Project will diminish local workforce pool.	Work collaboratively with the TCG to support programs or initiatives that may aid in increasing the number of Tahltan members that return to the territory. Work collaboratively with the TCG to support local training and development through the implementation of a transferable skills development program, development of on-the-job training and mentoring programs, and continued contributions to Tahltan scholarship and bursary programs. Work collaboratively with the TCG in developing plans or initiatives to support local businesses and economic diversification. Work collaboratively with the TCG in developing plans or initiatives in support of increasing housing availability within Tahltan Territory. Implement additional marshaling points in Northern BC.

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Tahltan Culture; Local Communities Health and Well-being	Concerns were raised regarding the effects of mining camps on Tahltan and Indigenous women. Key informants mentioned concerns about the potential for women to be harassed or taken advantage of while working in industrial camps.	Seek to create a more gender-balanced workforce through Diversity and Inclusion as well as Respect@Work Programs (already in progress). Continue to deliver Code of Conduct and Workplace Behaviour Cultural awareness training (Tahltan led, in development). Ensure that concerns and issues related to sexual violence, assaults, and harassment are addressed and that actions are recorded and monitored for contractors and employees. Employ Tahltan HR position for individuals to raise issues of harassment or other culturally sensitive issues (completed). In collaboration with the TCG, develop a Social Conditions Monitoring Program to identify and explore potential mitigations within local communities. Tahltan Feedback Mechanism, to address and respond to any concerns raised by Tahltan members in a timely fashion (already in place).
Tahltan Culture; Local Community Health and Well-being; Cumulative Effects	Concerns regarding potential for increased land alienation	Work collaboratively with the TCG to develop and support land-based cultural revitalization programs and initiatives. In collaboration with the TCG, develop a Social Conditions Monitoring Program to identify and explore potential mitigations within local communities. Continue ongoing Sociocultural Committee meetings through the IBCA that focus on identifying opportunities to support cultural activities and limit sociocultural effects through regular dialogue.
Cumulative Effects	Concerned about the segmented permitting process; potential for cumulative effects to be inadequately accounted for during EA Certificate amendment process.	Continue ongoing IBCA Project Advisory Committee (PAC) meetings: focus on collaboratively managing the process and incorporating concerns into Project permitting process. Continue ongoing Sociocultural Committee meetings through the IBCA in support of collaboratively developing mitigation strategies and plans: focus Project activity-related communication for information and education. Continue to collaborate with TCG through the Environmental Oversight Committee and Subcommittee on environmental management and mitigation planning.

Related Valued Component	Interest or Concern	Potential Project Action/Management Approach
Local Community Health and Wellbeing; Tahltan Culture; Terrain and Landscape	Interest in engagement, education and communication given the new methods associated with block caving; potential for seismic activity associated with preconditioning and projected subsidence.	Continue to collaborate with the TCG through the Environmental Oversight Committee and Subcommittee regarding environmental management and mitigation planning. Incorporate the results of the Tahltan Land Use Study (TLUS) into the Project design insofar as developing effect assessments and mitigation planning that respect Tahltan Knowledge.

7 Project Interactions and Potential Effects

This section describes the potential interactions of the proposed Project with the biophysical and human environments, including the Tahltan Nation culture.

7.1 Environmental Management and Compliance

Red Chris' Environmental Management System 400-0000-EN-PLA-0001 (EMS) (NRCML 2022h) is the primary environmental management tool for all construction, operation, and closure works. The primary purpose of the EMS is to provide a consistent approach and framework to sustainability management across operations, ensuring that all environmental commitments, safeguards, and mitigation measures are implemented, monitored, audited, and improved upon as the mine progresses. The EMS is based on the principles of avoidance, minimization, mitigation, and management of potential adverse effects. NRCML has implemented a series of environmental management plans (EMPs), procedures, and monitoring programs that integrate these principles into engineering design and environmental planning. These limit the potential for mine-related adverse effects on the environment and align mine operations with NRCML's sustainability vision. Both the EMS and EMPs were developed based on an adaptive management strategy that requires periodic reviews of the EMPs, mitigation measures, and efficacies, to determine whether the regulatory requirements and environmental commitments are being met. This adaptive management strategy has undergone extensive regulatory and stakeholder consultation as an important component of an effective environmental management system.

The EMPs currently in place will be revised as required to incorporate the proposed changes to the mine and will be used to guide construction and operations to maintain compliance and best practices. These plans include the following:

- Health and Safety Management:
  - Health and Medical Services Plan 400-0000-HE-PLA-0001 (NRCML 2021b);
  - Traffic Management Plan 400-0000-MN-PLA-0001 (NRCML 2021f);
  - Emergency Response and Spill Contingency Plan 400-0000-ER-PLA-0001 (NRCML 2022g);
  - Ground Control Management Plan 400-1000-GO-PLA-0002 (NRCML 2022i); and
  - Communicable Disease Management Plan 400-0000-AL-PLA-0001 (NRCML 2022d).
- Water Management:
  - Site Wide Water Management Plan 400-0000-EN-PLA-0015 (NRCML 2022r);
  - Rock and Soil Storage Area Operation, Maintenance and Surveillance Manual 4001000-GO-PLA-0004 (NRCML 2022p);
  - TIA Seepage Management Plan 400-0000-EN-PLA-0017 (NRCML 2022v);
  - Site Wide Erosion and Sediment Control Plan 400-0000-EN-PLA-0014 (NRCML 2022q);
  - Water Quality Mitigation and Contingency Measures Plan 400-0000-EN-PLA-0011 (NRCML 2022y); and
  - Surface and Groundwater Monitoring Plan 400-0000-EN-PLA-0005 (NRCML 2022u).

- Waste Management:
  - Non-Hazardous Waste Management Plan 400-4000-EN-PLA-0001 (NRCML 2022n); and
  - Chemicals and Hazardous Materials Storage and Waste Handling Plan 400-4000-EN-PLA-0002 (NRCML 2022c).
- Land Management:
  - Metal Leaching/Acid Rock Drainage Prediction and Prevention Plan 400-0000-EN-PLA-0016 (NRCML 2022m);
  - Hydrocarbon Management Plan 400-0000-EN-PLA-0002 (NRCML 2022j);
  - Soil Management Plan 400-0000-EN-PLA-0008 (NRCML 2022t); and
  - Contaminated Soil Treatment Facility Management Plan 400-4000-EN-PLA-0003 (NRCML 2022e).
- Terrestrial Ecosystem Management:
  - Wildlife Management Plan 400-0000-EN-PLA-0003 (NRCML 2020b);
  - Vegetation and Invasive Species Management Plan 400-0000-EN-PLA-0007 (NRCML 2022x); and
  - Traffic Management Plan – Environment and Wildlife 400-0000-MN-PLA-0001 (NRCML 2021f).
- Aquatic Ecosystem Management;
- Air Quality and Dust Management:
  - Air Quality Management Plan 400-0000-EN-PLA-0012 (NRCML 2022b).
- Cultural Heritage Management:
  - Cultural Heritage Management Plan 400-0000-EN-PLA-0006 (NRCML 2022f).
- Community and Employee Management:
  - Communities Policy;
  - Diversity and Inclusion Policy;
  - Donations and Sponsorship Policy;
  - Indigenous Relations Policy; and
  - Human Rights Policy.

The following stand-alone management plans would be developed or updated to incorporate proposed Production Phase activity changes:

- Ground Control Management Plan update;
- Metal Leaching / Acid Rock Drainage Prediction and Prevention Plan update;
- Site Wide Water Management Plan update;
- Underground Water Management Plan update;
- Production activity specific Construction Environmental Management Plan;

- Soil Management Plan update; and
- Air Quality Management Plan update.

7.2 Potential Effects of the Project

A preliminary evaluation was undertaken to identify potential interactions between the proposed Project and the Valued Components (VC) and to classify the interactions in a manner that will allow the assessment to be focused on those project-VC interactions of greatest importance. The evaluation was undertaken in context of the fact that Red Chris has been operating since 2015.

Potential Project-VC interactions were identified by analyzing proposed Production Phase components and activities compared to impacts captured in EAC M05-02 for the current operation, which represents the base case against which potential Project effects will be assessed. Where a potential interaction was identified, the list of current EMPs outlined in Section 7.1 was reviewed to determine if NRCML has existing EMP(s) in place that would either already address, or could be updated to address, the management of potentially adverse effects. The EMPs include mitigation measures that are part of the EMS and that were developed to comply with the conditions of the EA Certificate.

Table 17 provides a summary of the identified VC-specific interactions and identifies the associated EMPs currently in effect for Red Chris. During the detailed assessment of the impacts of the proposed activities, NRCML will assess the need to modify or add specific mitigation measures to the existing management plans or to develop new management plans to address Production Phase specific impacts. Table 17 also shows that some of the impacts and benefits that Red Chris generates to the Tahltan Nation are covered under the IBCA between NRCML and TCG.

Table 17: Description of Potential Interactions and Applicable Environmental Management Plans

Valued Component	Description of Interactions	Applicable Environmental Management Plan
Air Quality	Transition from surface mining to underground mining will reduce overall atmospheric emissions because the ratio of waste rock to ore will be reduced significantly. Transportation of the ore to the processing plant will be done mainly through conveyors. Surface and underground mining activities occur simultaneously for a period of time following construction activities for the development of the Project. Increased throughput translates into additional sources of air emission by vehicles required to transport materials and concentrate.	• Air Quality Management Plan 400-0000-EN-PLA-0012 (NRCML 2022b)
Acoustics	Transition from surface mining to block caving will reduce overall noise emissions due to the reduction of surface activities. There would be a period when construction activities will occur simultaneously with surface mining. Increased throughput translates into increased traffic to bring materials to Red Chris and to transport concentrate from the site to the Port of Stewart. Increased workforce requirements will add to traffic during construction.	• Traffic Management Environment and Wildlife 400-0000-EN-PLA-0004 (NRCML 2022w)
Landscape and Terrain	The cave is expected to break through the surface at the current location of the open pit, which will result in a deeper landscape feature that will remain in place in perpetuity. Block caving has the potential to induce seismic events which could increase the risk of activation of existing landslides in the area of influence of the Project. Block caving is expected to generate a subsidence zone which would affect areas around the final open pit rim. Subsidence is expected to occur following completion of surface mining.	• Slope Monitoring Plan, 400-1000-GO-PLA-0001 (NRCML 2022s)

Valued Component	Description of Interactions	Applicable Environmental Management Plan
Water Quantity	Increased throughput affects the site-wide water balance, by increasing mill water requirements for ore processing. Block cave dewatering will provide additional water to the mill. Also, water use efficiency measures to be in place before execution of the Production Phase will allow for higher recirculation rates and will reduce water losses through evaporation or seepage. The Project would affect the groundwater regime due to the need to dewater the underground mine in greater volumes than currently required for open pit mining. Effects on the groundwater regime because of Block Caving have the potential to change base flows of surface streams within Red Chris' area of influence. During closure, flooding of the cave lake would require a longer period to reach stable condition.	• Water Quality Monitoring and Contingency Mitigation, 400-0000-EN-PLA-0011 (NRCML 2022y) • TIA Seepage Management Plan 400-0000-EN-PLA-0017 (NRCML 2022v)
Water Quality	Underground mining activities have the potential to affect groundwater quality because groundwater will report to underground working areas where it would be in contact with equipment and materials used for mining activities. The Production Phase proposes to mine ore with different geochemical properties; therefore, the properties of the waste rock and tailings will also be different. This has the potential to affect the quality of the water pumped to surface from underground workings during operations and associated with the cave lake and TIA water cover during closure.	• Erosion and Sediment Control Plan 400-0000-EN-PLA-0014 (NRCML 2022q) • Hydrocarbon Management Plan 400-0000-EN-PLA-0002 (NRCML 2022j) • Non-Hazardous Waste Management Plan 400-4000-EN-PLA-0001 (NRCML 2022n) • Water Management Plan 400-0000-EN-PLA-0015 (NRCML 2022r) • Metal Leaching Acid Rock Drainage Prediction and Prevention Plan 400-0000-EN-PLA-0016 (NRCML 2022m) • Emergency and Spill Response Plan 400-0000-ER-PLA-0001 (NRCML 2022g) • TIA Seepage Management Plan 400-0000-EN-PLA-0017 (NRCML 2022v)

Valued Component	Description of Interactions	Applicable Environmental Management Plan
Aquatic Resources	Surface disturbances including subsidence have the potential to directly affect streams that support aquatic resources. Potential changes to surface run-off reporting to streams or baseflows caused by impacts to the groundwater regime have the potential to affect aquatic resources. Potential water quality changes have the potential to affect aquatic resources, including fish and fish habitat.	• Erosion and Sediment Control Plan 400-0000-EN-PLA-0014 (NRCML 2022q) • Hydrocarbon Management Plan 400-0000-EN-PLA-0002 (NRCML 2022j) • Non-Hazardous Waste Management Plan 400-4000-EN-PLA-0001 (NRCML 2022n) • Water Management Plan 400-0000-EN-PLA-0015 (NRCML 2022r) • Metal Leaching Acid Rock Drainage Prediction and Prevention Plan 400-0000-EN-PLA-0016 (NRCML 2022m) • Emergency and Spill Response Plan 400-0000-ER-PLA-0001 (NRCML 2022g) • TIA Seepage Management Plan 400-0000-EN-PLA-0017 (NRCML 2022v)
Vegetation and Terrestrial Ecosystems	The subsidence zone is primarily within the bounds of the open pit, with minimal additional disturbance of vegetation due to clearing of new areas required for surface infrastructure. The interactions with vegetation and terrestrial ecosystems will be investigated.	• Vegetation and Invasive Species Management Plan 400-0000-EN-PLA-0007 (NRCML 2022x) • Soil Management Plan 400-0000-EN-PLA-0008 (NRCML 2022t) • Reclamation Research Management Plan 400-0000-EN-PLA-0009 (NRCML 2022o)
Wildlife and Wildlife Habitat	The subsidence zone is primarily within the bounds of the open pit; thus, minimal to no impact on wildlife and wildlife habitat is anticipated due to the mine itself. The project will result in additional disturbance of wildlife habitat due to clearing of new areas required for surface infrastructure.	• Wildlife Management Plan 400-0000-EN-PLA-0003 (NRCML 2020b)
Local Communities Health & Wellbeing	It is expected that local communities would be contributing to additional workforce requirements with potential impacts on family cohesion and mental health.	• Engagement Plan, under development • Health and Medical Services Plan 400-0000-HE-PLA-0001 (NRCML 2021b)

Valued Component	Description of Interactions	Applicable Environmental Management Plan
Local Social Services and Infrastructure	Transportation of workforce, equipment, and materials will increase due to construction activities and increased throughput, creating additional traffic and higher power demands. Impacts that are currently occurring on social services, housing, and demographics have the potential to increase.	• Engagement Plan, under development • Impact-Benefit Co-Management Agreement
Local Economy	It is expected that additional employment and business opportunities would appear for local communities during construction and transition to block caving. Some impacts caused by the presence of Red Chris on local business (e.g., guide outfitters) have the potential to increase.	• Engagement Plan, under development • Impact-Benefit Co-Management Agreement
Archaeological and Heritage Resources	The project will result in additional surface disturbance due to clearing of new areas required for surface infrastructure and the subsidence zone.	• Cultural Heritage Management Plan 400-0000-EN-PLA-0006 (NRCML 2022f) • Impact-Benefit Co-Management Agreement
Tahltan Culture	Block caving is expected to need an increased workforce, additional potable water, and power to sustain a higher throughput and would also enlarge the overall footprint of the Project from what was originally assessed. The proposed post-closure scenario would also change because of the generation of a cave lake, which will take longer to reach an equilibrium. The duration, geographic extent, and magnitude of some of the current impacts could increase, which has the potential to affect key components of Tahltan culture such as governance, Tahltan use of land, and resources and Tahltan knowledge transfer.	• Engagement Plan, under development • Impact-Benefit Co-Management Agreement

Based on the identification of potential Project-VC interactions in the context of the environmental management controls already in place for Red Chris, the interactions were then classified according to the Provincial Guidelines (BC Government 2020a). The classification of interactions is intended to differentiate those that do and those that do not warrant further analysis in the assessment and, of those that do, which have the greatest potential to be significant.

The classifications are summarized below, including denoting the colour coding used in Table 18:

- Weak (Green): The proposed activity has a weak interaction which doesn't have the potential to change the nature of the impact that has already occurred, is currently occurring, or is expected to occur on the VC. No further analysis is warranted because the impact has manifested itself and is characterized with the description of current environmental conditions.
- Moderate (Yellow): The proposed activity has the potential to change the nature of the impact that has occurred, is occurring, or is expected to occur on the VC but doesn't have the potential to generate a significant impact. Further analysis is warranted to characterize the future impacts caused by the proposed activity on the VC.
- Strong (Red): The proposed activity has a strong interaction with the VC, which has the potential to result in a significant impact. Detailed analysis is required to characterize the residual effects of these interactions and to incorporate mitigation measures in addition to the ones that are currently in place to prevent the occurrence of significant impacts.

The analysis presented in Table 18 concludes that a Strong Project interaction exists for the following VCs:

- Water Quality: The Production Phase proposes to mine ore with different geochemical properties; therefore, the properties of the waste rock and tailings will also be different. This has the potential to affect the quality of the water pumped to surface from underground workings during operations and associated with the cave lake and TIA water cover during closure.
- Water Quantity: The Project would affect the groundwater regime due to the need to dewater the underground mine in greater volumes than required for the current open pit mining. Effects on the groundwater regime as a result of dewatering has the potential to change base flows of surface streams within the area of influence. During closure, flooding of the cave lake would require a greater volume of groundwater and surface water.
- Tahltan Nation Culture: The Project would result in an updated mine site closure configuration, with key differences consisting of the new cave lake and the subsidence zone that would develop around the cave footprint. The proposed post-closure scenario would also change because the creation of the cave lake will take longer to reach an equilibrium. The duration, geographic extent, and magnitude of some of the current impacts could therefore increase, which has the potential to affect key components of Tahltan culture such as governance, Tahltan use of land and resources, and Tahltan knowledge transfer. This interaction has also been classified as Strong due to the high importance that the mine site post-closure conditions represent to the Tahltan Nation culture.

Interactions with other proposed valued components are deemed to be Weak or Moderate, as the predicted potential effects are not anticipated to substantially deviate from those already considered in EAC M05-02.

Table 19: Interaction Table

Phase	Activity	Sub-Activity	Air Quality	Acoustics	Landscape and Terrain	Water Quantity	Water Quality	Aquatic Resources	Vegetation and Terrestrial Ecosystems	Wildlife and Wildlife Habitat	Local Communities Health & Wellbeing	Local Social Services and Infrastructure	Local Economy	Archaeological and Heritage Resources	Tahltan Culture
Production	Underground Development and Early Mining	Pre-Conditioning	△	△	●	△	△	△	●	●	△	△	△	△	△
		Underground mine development													
		Construction of underground infrastructure													
		Early mining													
	Completion of Open Pit Mining	Drilling and blasting	△	△	●	△	△	△	●	●	●	●	●	●	●
		Transportation of ore to processing plant or stockpile													
		Transportation of ore from stockpile to processing plant													
		Transportation of waste rock to RSA													
		Crushing of ore on surface													
	Block Cave Production Mining	Undercutting	●	●	△	■	■	△	△	△	●	●	●	△	△
		Loading-Hauling-Dumping of underground ore													
		Underground ore crushing													
		Underground ore conveyance to surface													
		Underground ventilation													
		Underground waste rock transportation to surface													
	Process Plant Expansion	Crushed ore stockpiling	△	△	●	■	■	△	●	●	●	●	●	●	●
		Comminution													
		Flotation													
		Dewatering of concentrate													
	Water Management	Water recycling from thickener	●	●	●	■	■	△	●	●	●	●	●	●	△
		Pumping of fresh water from deep aquifer													
		Dewatering of underground workings													
		Seepage management													
		Surface water management													
	Tailings Management	Tailings transport	●	●	●	△	△	△	●	●	●	●	●	△	△
		Raising to tailings dams													
		Deposition of tailings in impoundment													
	Other On-Site Activities	Camp expansion	●	●	●	●	●	●	●	△	△	△	△	●	△
		Haul and site roads upgrades													
		Power supply infrastructure expansion													
		Ancillary infrastructure upgrades													
	Off-Site Activities	Transportation of workforce	△	△	●	●	●	●	●	△	△	△	△	●	△
		Transportation of materials and equipment													
		Concentrate handling													
Closure	Closure Activities	Decommissioning, demolition and removal of infrastructure	●	●	△	■	■	△	△	△	△	△	△	●	■
		Construction of fence around subsidence zone													
		Construction of barrier on RSA													
		Maintenance of wet cover on TIA													
		Flooding of underground workings													
Post-Closure	Post-Closure Activities	Mine site care and maintenance	●	●	△	■	■	△	△	△	△	△	△	●	■
		Cave lake water management													

● Little to no interaction expected, no further consideration warranted

△ Potential interaction with potential adverse effects; warrants further consideration

■ Key Interaction with potential significant adverse effects or significant concerns; warrants further detailed

7.3 Potential Cumulative Effects

The assessment of cumulative effects will consider the potential interactions between the residual effects of the proposed changes to Red Chris Mine with the effects of past, present, or reasonably foreseeable projects and activities, as defined by EAO's Effects Assessment Policy (BC Government 2020a), and within a study area that would be defined through engagement with the Tahltan Nation.

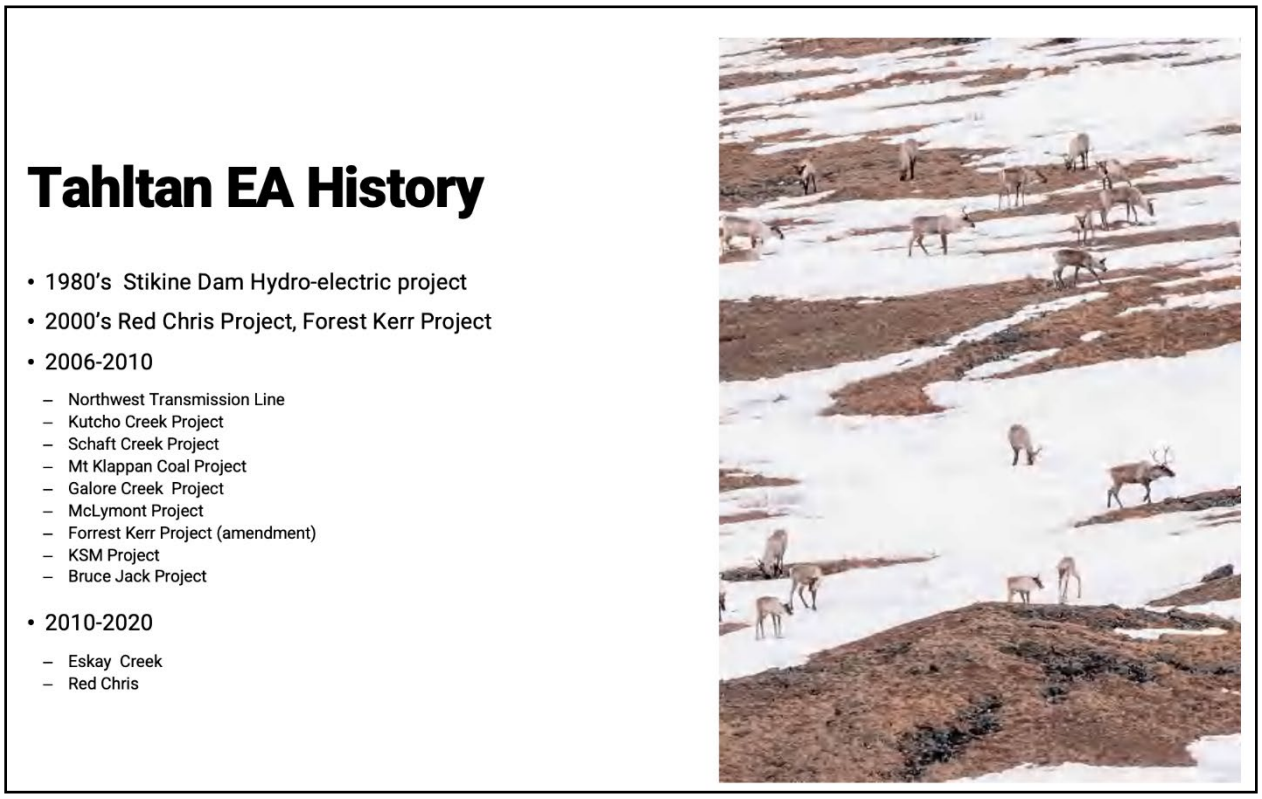
NRCML acknowledges Tahltan perspectives regarding cumulative effects, as documented in Tahltan Risk Assessment Factors and Tahltan Sustainability Requirements (BC and TCG 2022).

The effects of past and present projects and activities, including the Red Chris Mine, are considered in the characterization of the existing environmental and social context. Reasonably foreseeable future projects and activities include projects that may be considered certain or that have a high probability of proceeding including those that:

- Have been publicly announced and have a sufficient level of information available to inform the cumulative effects assessment;
- Are identified in a publicly available development plan that is approved or for which approval is anticipated;
- Are under regulatory review or the submission for regulatory review is imminent;
- Have received approval in whole or in part;
- Are under construction or site preparation is being undertaken; or
- Are existing and expected to continue during the life of the project and project residual effects.

The cumulative effects assessment will include consideration of activities described in the Block Cave PFS published by NRCML in 2021 that go beyond the timeline of the Production Phase but that fall within the timeline of the potential LOM extension , as described in Chapter 3. Also, the cumulative effects assessment will consider projects that have undergone or are undergoing an environmental assessment process on which the Tahltan Nation has been engaged and that fall within the cumulative effects study area for the project list provided by the Tahltan Nation in July 2021 (Figure 14).

Figure 14: Tahltan Nation Environmental Assessment History



Source: Tahltan Central Government, Lands Governance Framework, Red Chris/Threat Workshop, July 21, 2021.

Information on the effects of reasonably foreseeable future projects and activities will be compiled for each VC and described in reference to the Production Phase effects pathways described for that VC. Residual adverse cumulative effects (those remaining after the implementation of all mitigation measures) will be characterized with a focus on providing an understanding of the magnitude and severity of the effects.

8 Closing

NRCML submits this document to the EAO and the Tahltan Nation to support the EAC Amendment process for the Production Phase of the Block Cave Project and to facilitate the development of the Application Information Requirements (AIR) document.

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