



BC EAO EAC Application – Tenas Project

PART A INTRODUCTION

Section 1.0 Overview of Project Proponent Description

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VERSION 1.0

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Submitted by:	Telkwa Coal Limited Suite 1410 – 409 Granville Street Vancouver, BC V6C 1T2

Tenas Project

PART A - INTRODUCTION Section 1.0 Overview of Project Proponent Description

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ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
@ (in tables only)	at
2D	two-dimensional
3D	three-dimensional
ABA	acid base accounting
ACL	Allegiance Coal Limited
ACSR	Aluminum Conductor, Steel Reinforced
adb	air dried basis
AID	Application Instruction Document
AIR	Application Information Requirements
ALR	Agricultural Land Reserve
ANFO	ammonium nitrate fuel oil
AP	acidification potential
AQMP	Air Quality Management Plan (S13.0-C2)
arb	as received basis
ARD	acid rock drainage
as	American Standard
ATV	all-terrain vehicle
ASTM	American Society for Testing and Materials
BC	British Columbia
BC AWQG	British Columbia Approved Working Water Quality Guidelines
BC EAO	British Columbia Environmental Assessment Office
BC IOM	British Columbia Input-Output Model
BC MAG	British Columbia Ministry of Attorney General
BC MECCS	British Columbia Ministry of Environment and Climate Change Strategy
BC MEM	British Columbia Ministry of Energy and Mining
BC MEMLI	British Columbia Ministry of Energy, Mines and Low Carbon Innovation
BC MEMPR	British Columbia Ministry of Mines and Petroleum Resources
BC MFLNRORD	British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development
BC MOE	British Columbia Ministry of Environment
BC MIRR	British Columbia Ministry of Indigenous Relations and Reconciliation
BC MOTI	British Columbia Ministry of Transportation and Infrastructure
BCMWRP	British Columbia Mine Waste and Rock Pile
BC WWQG	British Columbia Working Water Quality Guidelines

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
BD	bulk density
BMP	best management practices
C	Chapter
C&M	care and maintenance
CAC	criteria air contaminants
CAS	Canadian Abstract Service
CBR	California Bearing Ratio
CCME	Canadian Council of Ministers of the Environment
CDA	Canadian Dam Association
CEAA	<i>Canadian Environmental Assessment Act</i> , 2012, SC 2012, c 19, s 52 (Government of Canada [GovCan] 2012)
CEAA	Canadian Environmental Assessment Agency (former)
CEPA	<i>Canadian Environmental Protection Act</i> 1999, SC 1999, c 33 (Government of Canada [GovCan] 1999)
CEMP	Construction Environmental Management Plan (S13.0-C4)
CFO	Chief Financial Officer
CH	high plastic clay
CIM	Canadian Institute of Mining and Metallurgy
CL	low plastic clay
CMSTHP	Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3)
CNR	Canadian National Railway
CO ²	carbon dioxide
Code	Health, Safety and Reclamation Code for Mines in British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation (BC MEMLI 2021)
COSR	cut-off strip ratio
CPP	Coal Processing Plant
CSA	Canadian Standards Association
CSM	conceptual site model
CSP	corrugated steel pipes
CV	Calorific Value
d95	size that 95% of material is less than
db	dry basis
DB	dry bulb
DCP	dry chemical powder
DCM	dense media cyclone
DEF	diesel exhaust fluid
DFO	Department of Fisheries and Oceans Canada

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
DFS	Definitive Feasibility Study (TCL 2019)
DL	District Lot
DMC	dense medium cyclone
DSR	dam safety review
E-House	electrical house
EA	environmental assessment
EAC	Environmental Assessment Certificate
ECCC	Environment and Climate Change Canada
EMA	<i>Environmental Management Act</i> , SBC 2003 (GovBC 2003)
EMP	East Management Pond (only in tables)
EMP	Explosives Management Plan (S13.0-C6)
ERT	Emergency Response Team
FC	fixed carbon
FCAN	Full Capacity Above Normal
FCBN	Full Capacity Below Normal
FEL	front-end loaders
FMSCP	Fuel Management and Spill Control Plan (S13.0-C7)
FOS	factor of safety
FRP	fiberglass reinforced plastic
FSI	Free Swelling Index
FSR	Forest Service Road
FTE	full-time equivalent
GAR	Government Actions Regulation, BC Reg 582/2004 (Government of British Columbia 2004)
GHG	greenhouse gases
GovBC	Government of British Columbia
GovCan	Government of Canada
IAAC	Impact Assessment Agency of Canada
IRT	Information Requirements Table
GNSS	Global Navigation Satellite System
GSC	Geological Survey of Canada
GVW	gross vehicle weight
H:V	ratio of horizontal to vertical slope
HDPE	high-density polyethylene
HFSA	High Fines Granular Surfacing Aggregate
HGI	Hardgrove Index

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
HVAC	heating, ventilation, and air conditioning
IAAC	Impact Assessment Agency of Canada
ITT	Issues Tracking Table
HV	heavy mine vehicles
IBC	Intermediate Bulk Container
JAIR	Joint Application Information Requirements for <i>Mines Act</i> and <i>Environmental Management Act</i> Permits (British Columbia Ministry of Energy, Mines and Petroleum Resources [BC MEMPR] and British Columbia Ministry of Environment and Climate Change Strategy [BC MECCS] 2019).
JORC	Joint Ore Reserves Committee
LE	limit-equilibrium
Lidar	Light Detection and Ranging
LOM	life-of-mine
LRMP	Land and Resource Management Plan
Luscar	Luscar Limited
LV	light vehicles
MA/EMA	<i>Mines Act</i> , RSBC 1996, c 293 and <i>Environmental Management Act</i> , SBC 2003, c 53
MCC	motor control centre
MERP	Mine Emergency Response Plan (S13.0-C9)
MIBC	methyl isobutyl carbinol
MIC	Mine Infrastructure Complex
MMO	Major Mines Office
MP	Modified Proctor
MPSSRHC	Material Pile and Stockpile Stability Rating and Hazard Classification
MRC	Mine Review Committee
MV or mid-vol	medium-volatile
MWMP	Minesite Water Management Plan (S13.0-C11)
NFPA	National Fire Protection Association
NI 43-101	National Instrument 43-101
NMP	North Management Pond (only in tables)
NO _x	nitrogen oxide
NP	neutralizing potential
NPR	neutralization potential ratio
NRCAN	Natural Resources Canada
OCP	Official Community Plan
OGB	Open Graded Base

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
OGMA	Old Growth Management Areas
Orica	Orica Canada Inc.
ONAN/ONAF	Oil Natural Air Natural/Oil Natural Air Forced
OW	Office of the Wet'suwet'en
PAG	potentially acid generating
PAMP	Public Access Management Plan (S13.0-C14)
PCI	pulverized coal injection
PD	Project Description
PGA	Peak Ground Acceleration
PIR	Pacific Inland Resources
PM _{2.5}	aerodynamic diameter smaller than 2.5 micrometres
PM ₁₀	aerodynamic diameter smaller than 10 micrometres
PMF	Probable Maximum Flood
POF	Probability of Failure
Project	Tenas Project
PVC	polyvinyl chloride
Q	quarter
RC	Recreation Camp
RCP	Reclamation and Closure Plan (S13.0-C15)
RDBN	Regional District of Bulkley-Nechako
RMR	Rock Mass Rating
RMZ	Resource Management Zone
ROM	run-of-mine
ROW	right-of-way
Ru	water inflow
S (in bold with number)	Section
S	sulfur
Sa	Spectral Acceleration
SC	clayey sands
SCADA	Supervisory Control and Data Acquisition
SEMP	Socio-economic Management Plan (S13.0-C16)
SG	specific gravity
SOPs	Standard operating procedures
SO _x	sulfur oxides
SPOs	Site performance objectives
SPT	Standard Penetration Test

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
SLSa	Seismic Load Spectral Acceleration
SRK	Steffen, Robertson, and Kirsten Consulting (Canada) Inc.
SRMP	Sustainable Resource Management Plan
SSCC	semi-soft coking coal
TAC	Tenas Access Corridor
TCL	Telkwa Coal Limited
TCP	Tenas Control Pond (only in tables)
TCRC	Telkwa Coalmine Recreation Camp
TDG	Transportation of Dangerous Goods
TS	Total Sulfur
TSA	Timber Supply Area
TSP	total suspended particles
TSS	total suspended sediments
UCS	Uniaxial Compressive Strength
USA	United States of America
UV	ultraviolet
UWR	Ungulate Winter Range
VC	Valued Components
VM	volatile matter
VOIP	voice-over internet protocol
WB	Wet bulb
WMPRE	Waste Management Plan for Refuse and Emissions (S13.0-C20)
WGB	Well Graded Base
WHA	Wildlife Habitat Areas
WQG	Water Quality Guidelines
WMP	West Management Pond (only in tables)
WRC	Western Red Cedar

UNITS OF MEASURE

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
°	degree (only in tables)
c'	effective cohesion
>	greater than
≥	greater than or equal to

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
"	inch
%	percent
ϕ	effective internal friction angle
°C	degrees Celsius
°F	degrees Fahrenheit
BCM	bank cubic metre (where bank means insitu or in the face being excavated)
CDN\$	Canadian Dollars
cm	centimetre
CV	calorific value
ft	foot
g	force of gravity of 9.81 m/s ²
g/m ²	gram per square metre
ha	hectare
hp	horsepower
kg	kilogram
kg/BCM	kilograms per bank cubic metre
kg/m ³	kilograms per cubic metre
km	kilometre
km ²	square kilometre
kN/m	kilonewton per metre
kN/m ²	kilonewton per square metre
kPa	kilopascal
kt	kilotonne
kV	kilovolt
kVA	kilovolt amps
kW	kilowatt
<	less than
≤	less than or equal to
L	litre
lbs	pounds
lb/in	pound per inch
Lpm	litre per minute
L/s	litres per second
m	metre
m/s	metres per second
m ²	square metre

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
m ³	cubic metres
m ³ /d	cubic metres per day
masl	metres above sea level
MBCM	million bank cubic metres
mg/L	milligrams per litre
mil	one-thousandth of an inch
MJ/kg	megajoules per kilogram
mm	millimetre
MPA	megapascal
Mt	million metric tonnes
MVA	megavolt-ampere
Ro max	maximum vitrinite reflectance
t	metric tonne (only when used in combined unit of measure e.g., t/hr)
t/h	tonnes per hour
t/m ³	tonnes per cubic metre
V	volt
W	watt
w/w	weight by weight

EXECUTIVE SUMMARY

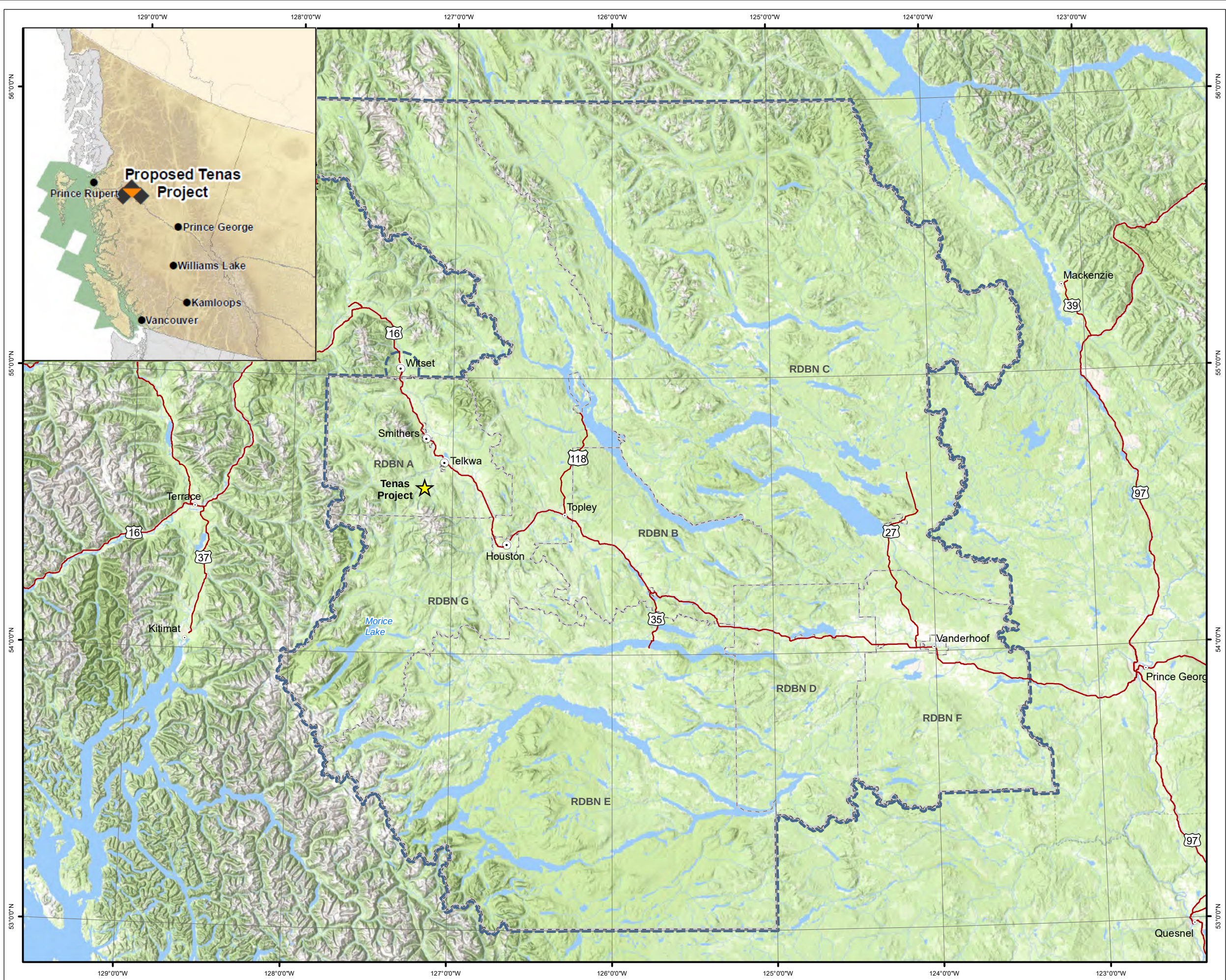
Project Overview and Location

The Tenas Project (Project) which is a surface metallurgical coal mine located 7 kilometres (km) southwest of the Village of Telkwa, and 25 km south of the Town of Smithers, British Columbia (BC), Canada. The Project will produce metallurgical coal at an annual production rate of between 775,000 and 825,000 metric tonnes of processed coal with a maximum daily production rate of 2,500 metric tonnes of processed coal per day. The Project will have a life-of-mine (LOM). The LOM is approximately 26.5 years, including the Construction, Operation, and Decommissioning and Reclamation phases. **Figure 0-1** illustrates the Project's location.

The Project's initial estimated capital cost is 123.5 million Canadian Dollars (CDN\$) (2018 dollars) to achieve the full commercial production rate. The Project is anticipated to generate 125 person-years of direct employment during the Construction Phase. The Project is anticipated to require between 55 and 145 full-time equivalent (FTE) employees during the Operation Phase, and generate approximately 3,125 person-years of employment over the life of the Project excluding the Construction activities and the Post-closure Phase.

Telkwa Coal Limited (TCL) is a joint venture partnership of Allegiance Coal Limited (ACL) and the Itochu Corporation. ACL is a publicly listed company on the Australia stock exchange (ASX: AHQ) with headquarters in Sydney, Australia. ACL does not own or operate any other projects or mines in BC. ITOCHU Corporation is a Japanese trading house founded in 1858. ITOCHU has offices in 100 cities in 62 countries engaged in various commodities including textile, machinery, metals, minerals, energy, and communications technology. TCL has offices in both Telkwa and Vancouver, BC.

The company was registered in BC on September 10, 2014 (BC1013154). The ACL website is: <http://www.allegiancecoal.com.au>, while TCL's website is <http://www.telkwacoal.com>.



Tenas Project

Project Location

Legend

★ Tenas Project

Regional District of Bulkley Nechako (RDBN)

Electoral Areas

Highway

Notes

1. All mapped features are approximate and should be used for discussion purposes only.

2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Project Area: Allegiance Coal, 2020

- Basedata: Government of British Columbia

- Basemap: World Topo Base

N

1:1,500,000

0 10 20 30 40 50

Kilometres

NAD 1983 BC Environment Albers

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Figure 0-1



TELKWA COAL
LIMITED

Project Proponent and Contacts

The key contacts for the Project are as follows:

- ▶ **Mark Gray** is the Managing Director of ACL;
- ▶ **Jonathan Reynolds** is the Chief Financial Officer (CFO) for ACL;
- ▶ **Dan Farmer (P.Eng.)** is the Chief Operating Officer (COO) for TCL and is the single point of contact for the Environmental Assessment (EA) and permitting phases for the Project; and
- ▶ **Ashleigh Ballevona** is the Environmental Manager for TCL, and is responsible for coordinating this Environmental Assessment Certificate (EAC) Application and associated regulatory documents, as well as supporting the COO.

The purpose of the Project is to develop a surface coal mine to produce metallurgical coal, which is a vital ingredient for making steel, iron alloy, carbon, and other metals for uses such as:

- ▶ vehicles, including automobiles, ships, and planes;
- ▶ bridges and multi-story buildings and other infrastructure;
- ▶ surgical tools and implants;
- ▶ green energy components such as wind turbines, turbines for hydroelectric projects; and
- ▶ facilitating the mining and processing of rare earth minerals for battery components, such as nickel and lithium in hybrid and electric vehicles.

Telkwa Coal Limited (TCL) Corporate Policies

TCL is guided by the following corporate policies:

- ▶ Health and Safety;
- ▶ Indigenous People;
- ▶ Environment;
- ▶ Community; and
- ▶ Environmental, Social, and Governance Policy (ESGP)

Project History, Geology, and Resources

Coal was reportedly discovered in the Telkwa Area around the year 1900. The Geological Society of Canada's (GSC) Report No. 988, entitled The Telkwa River and Vicinity, BC (Leach 1907), included the first geological map of the area and documented the geology and coal occurrences in the area.

Small-scale underground and surface mining began in the Telkwa Area in 1918 and continued into 1985. Sporadic production since 1918 has resulted in the recovery of over 400,000 tonnes of coal. Modern exploration of the Project started with Cyprus Anvil Mining Corporation in 1978 and since then, over 800 exploration drillholes and three (3) bulk samples have been carried out on the Telkwa Property (of which the Project is a part).

The overall modelled Resources, which are both Joint Ore Reserves Committee (JORC) and National Instrument (NI) 43-101 compliant, for the Project are provided in **Table 0-1** below. This is dependent on the following key inputs required to understand and calculate resources for the Project coal seams:

- ▶ guidelines;
- ▶ resource classification;
- ▶ seam thickness and parting;
- ▶ coal density;
- ▶ insitu moisture; and
- ▶ open pit shell.

Table 0-1: Summary of Tenas Project Resources (air dried basis [adb]) – December 31, 2021, NI 43-101 and JORC Compliant

Seam	Measured (Mt)	Indicated (Mt)	Inferred (Mt)	Total (Mt)
Total	8.7	27.9	0.0	36.6

Note: JORC=Joint Ore Reserves Committee; Mt=million tonnes; NI= National Instrument

Existing Infrastructure and Project Phases

A key advantage to this Project, in terms of infrastructure development requirements, is the presence of existing required infrastructure near to the Project leading to a reduction of the Project footprint including:

- ▶ a 25 kilovolt (kV) BC Hydro grid within 3 km of the Project's Coal Processing Plant (CPP) which can provide access to renewable electricity;
- ▶ two (2) communities located within 25 km of the Project that provide accommodations, services, and a potential source of labour;
- ▶ extensive development of Forestry Service Roads (FSRs) and private roads which provide easy access to the Project once a planned permanent bridge is re-installed over Goathorn Creek;
- ▶ 15 km from an existing Class I railroad, which is owned and operated by Canadian National Railway (CNR);
- ▶ favorable (shallow) topography both where the Project's open pit, management ponds, and Rail Infrastructure are located, and
- ▶ extensive geological and environmental data that has been acquired over the past 40 years by various owners who have worked on this Project and by TCL since 2018.

Another existing development which TCL has been a part of is providing land and support for the Telkwa Coalmine Recreation Camp (TCRC) located in the Goathorn Creek Valley just north of the Project. TCL is proud to work with the BCHBCNC to provide a safe and high calibre facility for horse riders from all over BC and the local region.

TCL has incorporated several mitigation measures in the Project design and/or operational procedures to reduce the magnitude, duration, and extent of effects due to the Project. These Project mitigation measures are grouped under the categories below:

- ▶ Avoid Sensitive Environments;
- ▶ Limit Project Footprint and Project Area;
- ▶ Reclamation Measures;
- ▶ Project Footprint Boundaries;
- ▶ Transport Measures;
- ▶ Project Component Design;
- ▶ Blasting Measures;
- ▶ Coal Processing Measures;
- ▶ Forest Management Practices;
- ▶ Management, Control and Water Storage Pond Designs;
- ▶ Seepage Management Measures;
- ▶ Water Capture Measures;
- ▶ Project Use of Water;
- ▶ Water Quality Monitoring and Reporting Measures;
- ▶ Management of Metal Leaching/Acid Rock Drainage (ML/ARD);
- ▶ People, Employees, Contractors, and Onsite Policies;
- ▶ Occupational Health and Safety Program (OHSP);
- ▶ Public Access Management;
- ▶ Enhance Local and Regional Benefits including Employment;
- ▶ Housing Measures;
- ▶ indigenous Consultation and Engagement;
- ▶ Consultation with Tenure Holders;
- ▶ Compensation for Affected Commercial Tenure Holders; and
- ▶ **Heritage Resources Management Plan (s13.0-C8) (HRMP).**

Where Project mitigation measures are relevant to minimizing a potential Project-related effect on a Valued Component (VC), the mitigation measure has been included in the VC assessment. Furthermore, if there were VC specific mitigation measures required, these are provided in each VC environmental effects assessment chapter. See **Section (S) 4.0 to S8.0** for Project and VC-specific mitigation measures relevant to each VC.

The Project consists of four (4) phases (Construction, Operation, Decommissioning and Reclamation and Post-closure), which are summarized in **Table 0-2**.

Table 0-2: Temporal Boundaries for the Tenas Project

Phase	Year	Duration (years)	Description of Activities
Construction	-0.5 to 0	1.5	Site clearing, soil salvage, open pit development, building construction, service and haul road development, Rail Infrastructure construction, bridge construction and development of onsite utilities and services. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as surface soils, overburden, woody debris, and any other materials suitable for reclamation. Development of water management systems and management ponds for storage of potentially acid generating (PAG) materials.
Operation	1 to 21	21	Development of the open pit through drilling, blasting, loading, and hauling functions. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as surface soils, overburden woody debris and any other materials suitable for reclamation. Development of water management systems and management ponds for PAG storage. Conducting coal processing, stockpiling of raw coal prior to processing, and stockpiling of processed coal prior to shipping. Progressive reclamation will be accomplished during the Operation phase as well such as sloping, placement of reclamation materials (surface soils, overburden and woody debris) and revegetation.
Decommissioning and Reclamation	22 to 25	4	Tear-down of infrastructure onsite plus reclamation activities, including sloping of storage piles, backfill materials, and placement of reclamation materials including surface soils, overburden and non-PAG rock for management pond covers and revegetating surfaces that are planned to be reclaimed.
Post-closure	26 to 50	10	Active: This involves the filling of the open pit with water, monitoring of vegetation growth and water quality for both groundwater and surface water and wildlife. Control and sedimentation ponds may still be needed for settling of total suspended solid levels. The management ponds are left as dry land reclamation except for portions that will be left as open water.
		15	Passive: This stage is when the control and sedimentation ponds are no longer required for settling of total suspended solid (TSS) levels and the management ponds are left as dry land reclamation except for portions that will be left as open water. Telkwa Coal Limited (TCL) is now simply monitoring the site.

Construction Phase

Planning for construction began with the completion of the Definitive Feasibility Study (DFS) (TCL 2019) and is ongoing with the submission of this EAC Application. Once the required authorizations, permits, and licenses are obtained, the Construction Phase will proceed for approximately one (1) and a half years.

As this a greenfield operation, all required Mine Infrastructure and facilities need to be constructed. However, TCL will leverage existing infrastructure such as office space in the Village of Telkwa and nearby infrastructure such as grid power, and a Class I rail line.

Construction Phase activities will be undertaken largely by contractors hired by TCL. The Construction Phase ends with the CPP achieving commercial production, which it is expected in Year 1.

Site preparation activities will begin in Year -0.5 and continue into Year 1 of the Operation Phase after the receipt of all the necessary regulatory authorizations. The following are the main site preparation activities:

- ▶ logging of merchantable timber for sawmills in the region;
- ▶ logging of timber for pellet mills in the region;
- ▶ grubbing;
- ▶ reclamation material (surface soils, woody debris) salvage where required;
- ▶ construction of erosion and control facilities to allow for the construction of the Tenas Control Pond;
- ▶ construction of collection and diversion channels to allow for subsequent mining activities;
- ▶ removal of any poor-quality foundation materials (e.g., peat, clay, or other weak soil materials) within the management pond dam and buttress footprints; and
- ▶ dozing and establishing the initial bench working area for the mining equipment selected for the Project.

A Reclamation and Closure Plan (S13.0-C15) (RCP) has been developed to manage the soil/reclamation salvage activities for disturbed areas within the Project footprint. The reclamation material (surface soils) planning horizons were based on field surface soil sampling activities and subsequent ecohydrological modelling will be utilized for all planned disturbances onsite.

Project construction activities will occur in the Telkwa River and Bulkley River watersheds, with most of the Minesite components being either in the Tenas, Goathorn, and/or Four Creek watersheds. Surface water management involves the following key activities to allow construction activities:

- ▶ phasing of Construction Phase activities to reduce disturbance footprint;
- ▶ diversion of non-contact water around and away from the Project;
- ▶ installation of temporary diversion berms around the Tenas Control Pond construction area to divert non-contact water around working area;
- ▶ placement of erosion control materials on disturbed ground to reduce sediment generation;

- ▶ use of contingency active sediment treatment facilities along channel C-04 downstream of the Tenas Control Pond dam; and
- ▶ lining of the sedimentation pond internal area to reduce erosion and sediment generation.

Operation Phase

The Project is a conventional surface metallurgical coal mine similar but smaller than other operating coal mines in BC. The current run-of-mine (ROM) coal production is estimated at approximately 1.05 million tonnes (Mt) per annum which is approximately 20 percent (%) the rate of production of the mines seen in the Elk Valley of BC. The ratio of the Project is approximately 3.8 bank cubic meters (BCM) of overlying material above the coal to one (1) tonne of recoverable coal which again at least 50% below other operating mines in BC. The infrastructure that will be constructed as part of the Operation Phase:

- ▶ open pit;
- ▶ management ponds for permanent storage of potentially acid generating (PAG) material;
- ▶ water management infrastructure consisting of sedimentation and control ponds; and
- ▶ stockpiles for ROM, processed coal and processed rock.

A summary of the life-of-mine (LOM) plan with detailed coal production is provided in **Table 0-3** below.

Table 0-3: Tenas Project Life-of-mine (LOM) Plan Including Construction (Years -0.5 to 0) and Operation Phases (Years 1 to 21)

Year Materials	Total for Years -0.5 to 5	Total for Years 6 to 11	Total for Years 12 to 15	Total for Years 16 to 21	TOTAL
Reclamation Materials (surface soils) for Entire Project Footprint (BCM)	1,578,915	252,652	273,380	158,928	2,263,875
Overburden (BCM)	11,204,867	5,530,475	3,904,770	1,320,189	21,960,301
PAG Rock (BCM)	8,551,181	9,676,163	7,055,350	6,545,899	31,828,593
Non-PAG Rock (BCM) including rehandle	4,939,365	11,976,139	7,478,159	5,127,909	29,521,572
ROM coal (@ 5% moisture) (tonnes)	5,512,500	6,300,000	5,250,000	4,953,105	22,015,605
Processed coal (@ 10% Moisture) (tonnes)	4,079,482	4,590,248	3,978,342	3,626,497	16,274,569

Notes: @=at; %=percent; BCM=bank cubic metre; PAG=potentially acid generating; ROM=run-of-mine; non-PAG=not potentially acid generating

The Project is understood to have a portion of PAG material that needs to be appropriately managed to ensure acid rock drainage (ARD) is prevented for the life of the Project and beyond the Post-closure Phase or active treatment. TCL spent time and conducted engagement with Indigenous, regulators, stakeholders and engineering consultants to complete a full options assessment involving:

- ▶ storage of PAG materials below water as source control;
- ▶ blending of non-PAG and PAG materials to achieve a design neutralizing potential ratio (NPR) as source control; and
- ▶ active treatment using a lime treatment plant.

TCL has selected storage of PAG materials below water as source control as it is considered the highest standard by regulators and independent third-party groups for mitigation PAG materials for the prevention of ARD. Furthermore, this option is considered the most robust method with the fewest risks versus the other two (2) options that were reviewed.

TCL is constructing unique and separate management ponds to saturate PAG materials underwater during the Operation Phase starting with the North Management Pond, and then moving on to the East Management Pond and finally finishing with the West Management Pond. The management ponds are outside of the open pit and are constructed by constructing embankments and/or through the excavation of structures within the overburden layer above bedrock. The West Management Pond is constructed as a part of the open pit and excavation of overburden outside of the open pit and the construction of an embankment.

Once a management pond has met its design elevation for PAG material, non-PAG rock is then placed on top within about 0.5 metres (m) of final water elevation. Then overburden is used to complete the cover design to be at least 0.25 m above the design final water level. Topsoil will then be placed at a thickness of approximately 30 centimetre (cm) to complete the final dry land reclamation for the management ponds. Areas within the surface of the management ponds will be left open to the water and the atmosphere to ensure there is adequate conductivity between the management pond water levels and water being collected in the contact water channels to provide certainty for a water source.

The CPP selected for the Project is a standard two (2) circuit design consisting of a heavy media cyclone (HMC) and flotation circuit with the ability to a middlings circuit if coal conditions warrant this during the Operation Phase.

The overall stated reserves from the Project Area, including soil salvaged for reclamation purposes, is provided in **Table 0-4**.

Table 0-4: Project Reserves for the Tenas Project as of December 31, 2021, with Coal Reserves Being NI 43-101 and JORC Compliant

Parameter	Units	Value
Reclamation materials (surface soils) within the Open Pit	BCM	886,910
Reclamation materials (surface soils) within the remainder of Project Area	BCM	1,376,965
Overburden excluding reclamation materials (surface soils)	BCM	21,409,301
Non-PAG rock not including rehandle	BCM	28,705,846
PAG rock	BCM	31,828,593

Parameter	Units	Value
Road Construction (Overburden)	BCM	551,000
Rehandle (non-PAG rock)	BCM	815,726
Proven ROM Coal @ 5.0% moisture	tonnes	17,112,387
Probable Rom Coal @ 5.0% moisture	tonnes	4,903,218
Proven and Probable Processed Coal @ 10.0% moisture	tonnes	16,274,569
CPP Yield	%	73.9%
ROM Coal Ratio	BCM: ROM tonnes	3.75
Processed Coal Ratio	BCM: Processed coal tonnes	5.07

Notes: @=at; %=percent; CPP=Coal Processing Plant; JORC=Joint Ore Reserves Committee; NI=National Instrument; PAG=potentially acid generating; ROM=run-of-mine;

TCL has conducted geotechnical assessments on all proposed components, as required by the Health, Safety and Reclamation Code in British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021)) (Code), including:

- ▶ open pit slopes;
- ▶ management and control pond embankments and buttresses;
- ▶ Tenas Access Corridor (TAC); and
- ▶ Rail Infrastructure.

Decommissioning and Reclamation Phase

At the end of the Operation Phase in Year 21, decommissioning activities will commence focussing on dismantling and removal of infrastructure components. Concurrent with the decommissioning activities, reclamation activities will commence which will involve resloping of any piles with dozers that have not been completed. The West Management Pond cover will be completed as will any open pit walls that have not been backfilled during the Operation Phase. Once reclamation materials (surface soils) are placed, revegetation activities can then occur which will involve seeding and fertilizing activities.

Reclamation Prescriptions have been developed for the following major categories as follows:

- ▶ Structures and Equipment;
- ▶ Material Backfill Piles;
- ▶ Open Pit;
- ▶ Haul Roads and Access Roads within the Minesite;
- ▶ Rail Infrastructure;
- ▶ Management Ponds (Tailings Storage Facility);

- ▶ TAC;
- ▶ Surface Water Management Infrastructure;

Post-closure Phase

In the Post-closure Phase, mainly monitoring and maintenance activities will be undertaken for the Project.

Project Components

In relation to these Project phases, the Project components for the Project consist of:

- ▶ open pit;
- ▶ CPP;
- ▶ coal handling systems for ROM coal, processed rock, and processed coal (including CPP conveyors, storage bins, and stockpiles);
- ▶ administration, first aid, maintenance/warehouse, mine dry, laboratory, light vehicle, mine rescue, and warehouse buildings;
- ▶ Surface Water Management Infrastructure, including the Project sedimentation ponds, such as the Tenas Control Pond dam and associated spillway, the CPP Sedimentation Pond, Rail Infrastructure Sedimentation Pond, Explosive Magazine Sedimentation Pond, Explosive Facility Sedimentation Pond, as well as erosion protection along Goathorn Creek tributary;
- ▶ temporary diversion berms and channels to collect and divert runoff around working areas;
- ▶ Potable Water Storage Pond and associated collection channel and distribution network, as well as water supply wells;
- ▶ fuel and lubricant storage facilities and distribution network;
- ▶ Explosive Magazine, storage silos, and vehicle wash and maintenance facilities;
- ▶ propane storage facilities and distribution network (as required);
- ▶ solid waste management systems including landfill, recycling, and composting facilities;
- ▶ haul roads and access roads within the Minesite;
- ▶ TAC which encompasses an 11 km of newly constructed Bypass Road and improvements to approximately 5.0 km of an existing FSR;
- ▶ a 3.5 km long 25 kV powerline and a 25-kV to 600-volt (V) substation adjacent to the CPP;
- ▶ Rail Infrastructure consisting of processed coal stockpiles, scales, dust control facilities and a 2.5 km Rail Loop connected to the CNR track and the Rail Infrastructure Sedimentation Pond; and
- ▶ a permanent bridge over Goathorn Creek.

The Project components listed above are typical of similar operating surface coal mines located in southeastern BC and are well proven and understood, including the CPP and ancillary infrastructure.

The Project will have the following areal details for various Project components, Project footprint and Area.

Table 0-5: Summary of Tenas Project Component Footprints, Project Area and Project Footprint

Project Components	Project Subcomponents	Major Component Area (ha)	Subcomponent Area (ha)
Open pit related		293.3	
	Open pit including backfill areas	207.5	207.5
	Haul roads and service roads	31.0	31.0
	Cleared areas for access	54.7	54.7
Coal Processing Plant and ancillary buildings including processed coal, rock and run-of -mine coal stockpiles		15.2	
Material storage facilities		139.1	
	Rock and overburden (dams and buttresses)	106.2	106.2
	Reclamation materials ¹ stockpiles	32.9	32.9
Site water management infrastructure and discharges		300.4	
	Collection, diversion, and discharge channels	38.7	38.7
	Management, Sedimentation, and Control ponds	261.7	261.7
Explosive infrastructure	Includes access roads and sedimentation ponds	3.1	
Tenas Access Corridor including gravel quarries		60.3	
Power supply	Under all new powerlines excluding overlap	5.0	
Rail Infrastructure	Centre of Rail Loop excluded	13.8	
Project Footprint		830.1	
Buffers and Contingency areas		1,025.0	
Project Area		1,855.1	

Note: ha=hectare; Project=Tenas Project; ¹ surface soils only

Project Emissions

The Project will generate three (3) main types of emissions from mining and processing activities, all of which will be managed through design and best management practices (BMPs). The emission types are:

1. airborne (gases);
2. liquids; and
3. solids.

These emissions will be managed according to the compliance requirements outlined and guidelines in **4. Applicable Authorizations.**

Project Benefits

The following **Tables 0-6 to 0-9** summarize the potential benefits of the Project in terms of labour, wages, and taxes during each Project phase.

Table 0-6: Direct, Indirect, and Induced Effects of Construction Phase on Employment (Full-time Equivalent [FTE])

Phase	Effect on Employment	Employment (FTEs)	Total Wages and Salaries (Millions CDN\$)	Labour Income (Millions CDND\$)
Construction Phase (Years -0.5 to end of Year 0 (only belonging to Construction activities))	Direct, Indirect, Induced for all of BC and Canada	655.9	\$45.38	\$54.58

Notes: CDN\$=Canadian Dollar; FTE=full-time equivalent

Table 0-7: Number of Direct, Indirect, and Induced (Full-time equivalent [FTE]) during the Operation Phase

Year	Total		
	Direct	Indirect	Induced
0 (last quarter only belong to operation)	59.7	14.7	14.6
1	144.1	132.1	58.8
2	129.3	136.3	59.1
3	161.6	112.2	58.7
4	165.9	123.9	62.5
5	161.6	95.5	54.3
6	164.9	158.9	71.4
7	157.7	84.6	50.7
8	147.0	79.3	47.4
9	146.3	89.0	49.8
10	161.3	147.8	68.0
11	162.0	130.4	63.3
12	148.1	112.8	56.4
13	136.7	76.0	44.6
14	134.2	96.6	49.6
15	133.7	87.3	47.0
16	134.1	90.4	48.0
17	129.1	66.8	40.9

	Total		
Year	Direct	Indirect	Induced
18	130.0	88.0	46.6
19	119.5	63.6	38.3
20	122.7	63.6	38.9
21	85.2	44.3	27.0

Table 0-8: Direct, Indirect and Induced Effects of the Project on Total Wages and Salaries During the Operation Phase (in Millions of Canadian Dollars)

Total RDBN, BC and Canada		
Direct	Indirect	Induced
\$287.46	\$166.94	\$53.58

Notes: \$=Canadian dollar; BC=British Columbia; RDBN=Regional District of Bulkley-Nechako

Table 0-9: Number of Direct, Indirect and Induced Full-time Equivalents (FTEs) during Project Decommissioning and Reclamation and Post-Closure Phases

	Direct	Indirect	Induced
Decommissioning	35.4	2.8	7.4
Reclamation	98.7	28.2	28.8
Active Post-closure	7.8	2.7	2.8
Passive Post-closure	6.1	2.4	2.4

Notes: \$=Canadian dollar; BC=British Columbia; FTE=full-time equivalent; RDBN=Regional District of Bulkley-Nechako

Applicable Authorizations

A preliminary list of applicable federal and provincial authorizations, licenses, and permits that may be required for the Project are presented in **Table 0-10**, **Table 0-11**, and detailed in **4. Applicable Authorizations**.

TCL will be following a coordinated approach to EAC, *Mines Act*, RSBC 1996, c 293 and *Environmental Management Act*, SBC 2003, c 53 (*MA/EMA*) permitting process which allows for the permitting process to start prior to an EAC being issued for the Project. TCL understands that permits cannot be issued until an EAC is issued for the Project.

Table 0-10: Preliminary List of Federal Authorizations and Permits Likely Required for the Tenas Project

Authorization	Legislation	Authorizing Agency	Purpose
Federal Division 1 Factory License and Permit	<i>Explosives Act</i> , RSC 1985, c E-17 (Government of Canada [GovCan] 1985a), Explosives Regulations 2013, SOR/2013-211 (Part 5 / division 1 of the ER-2013) (GovCan] 2013)	Natural Resources Canada (NRCAN)	Explosive authorizations are required during the Construction and Operation phases. Authorization is required to manufacture and operate an explosives storage facility. Licenses are required by either Telkwa Coal Limited (TCL) or a blasting contractor. (Note: A third party will apply for the authorization and own the facility to be located on TCL tenure. TCL will acquire the explosives license from this third party).
<i>Fisheries Act</i> Authorization	<i>Fisheries Act</i> , 1985, c F-14 (GovCan 1985b), Authorizations Concerning Fish and Fish Habitat Protection Regulations, SOR/2019-286 (GovCan 2019)	Department of Fisheries and Oceans Canada (DFO)	A <i>Fisheries Act</i> , 35(2b) authorization for Four Creek will be required to allow for the harmful alteration, disruption or destruction of fish habitat (HADD) and the fish habitat compensation plan in Goathorn Creek.
Migratory Birds Damage or Danger Permit	<i>Migratory Birds Convention Act</i> , 1994, S.C. 1994a, c. 22 (GovCan 1994), Migratory Birds Regulations, C.R.C. c. 1035 (GovCan 1994b)	Environment and Climate Change Canada (ECCC)	May require an authorization if the Project is shown to affect nesting habitats used by migratory birds or if activities occur during the nesting season (e.g., clearing of vegetation, disturbance to nests).
Navigation Protection Program (NPP) Approval Permit	<i>Canadian Navigable Waters Act</i> , RSC 1985, c N-22 (GovCan 1985)	Transport Canada	May require a NPP approval if TCL proposes to construct or place a major work (such as a bridge) and/or in a navigable water listed in the schedule that is on any navigable water that may interfere with navigation. If TCL proposes to construct or place a work in any navigable water that will not interfere with navigation, TCL will deposit information specified by the Minister and publish a notice.
<i>Species at Risk Act</i> (SARA) permits, Agreements, and/or Exceptions	<i>Species at Risk Act</i> , SC 2002, c 29 (GovCan 2002) (SARA)	ECCC	Permits, agreements, and/or exceptions may be required if the Project has the potential to affect a species listed on Schedule 1 of SARA, including any part of its critical habitat, or the residences of its individuals.

Table 0-11: Preliminary List of Provincial Authorizations and Permits Likely Required for the Tenas Project

Authorization	Legislation	Authorizing Agency	Purpose
Access Permit(s) - Highway	<i>Transportation Act</i> , SBC 2004, c 44 (Government of British Columbia [GovBC] 2004d)	British Columbia Ministry of Transportation and Infrastructure (BC MOTI)	Required for the Telkwa Coal Limited (TCL) haul road crossing on Lawson Road. Permit(s) are also required for: access to an employee parking lot; works within and access to the BC MOTI right-of-way (ROW), and industrial access to the BC MOTI highway for logging trucks during the Construction Phase
Access Permit(s) - Controlled Access Permit	<i>Transportation Act</i> , SBC 2004, c 44 – Section 4 (GovBC 2004d)	BC MOTI	Highway 16 is designated a controlled access highway. Under Section 48 of the <i>Transportation Act</i> , SBC 2004, c 44 (GovBC 2004d), a Controlled Access Permit is required for access to or from a controlled access highway.
Agricultural Land Reserve (ALR) Application	<i>Agricultural Land Commission Act</i> , SBC 2002, c 36 (GovBC 2002a)	Agricultural Land Commission	Required to allow for the construction of the TAC between the Canadian National Railway (CNR) main line and the Goathorn Creek Valley and the construction of the Rail Infrastructure. This approval is also required for registration of a Statutory Right-of-way (SROW) for Crown land parcels to allow construction of the Bypass portion of the Tenas Access Corridor (TAC). <i>Non-farm application and zoning change submitted November 2020.</i>
Approval for Works In and About a Stream	<i>Water Sustainability Act</i> , B.C. Reg. 36/2016, Section 11(1) (GovBC 2016)	British Columbia Ministry of Forests, Lands and Natural Resource Operations and Rural Development (BC MFLNRORD)	Regulates work in and about a stream (i.e., stream crossings). <i>The temporary Goathorn Creek bridge was approved for Changes In and About a Stream, in December 2017 and bridge deactivation was completed in March 2019.</i> Installation of a backup water system in Goathorn Creek to be applied for unless installation is authorized under a water license.
Coal Lease	<i>Coal Act</i> , SBC 2004, c 15 (GovBC 2004)	British Columbia Mineral Titles Branch, British Columbia Ministry of Energy, Mines and Low Carbon Innovation (BC MEMLI)	Converts licenses to a coal lease for production purposes.
Drinking Water Treatment Plant Construction and	Drinking Water Protection Regulations, BC Reg 200/2003 (GovBC 2003)	British Columbia Ministry of Health - Drinking Water Officer	Regulates the provision of water in the Administration Building and Maintenance Facility.

Authorization	Legislation	Authorizing Agency	Purpose
Operating Permits			
Environmental Assessment Certificate (EAC)	<i>Environmental Assessment Act, SBC 2018, c 5</i> (GovBC 2018)	British Columbia Environmental Assessment Office (BC EAO)	To minimize or avoid adverse environmental, heritage, health, social and economic effects and incorporate environmental factors and Indigenous and stakeholder consultation into decision making.
Explosives Magazine Storage and Use Permit	<i>Mines Act, RSBC 1996, c 293</i> (GovBC 1996c), and Health, Safety and Reclamation Code for Mines in British Columbia (Part 8) (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021)	BC MEMLI	Authorizes explosives magazine storage and use onsite.
Hazardous Waste Authorization	<i>Environmental Management Act, SBC 2003, c 53</i> (GovBC 2003) Hazardous Waste Regulation, BC Reg. 63/88 (GovBC 1988)	British Columbia Ministry of Environment and Climate Change Strategy (BC MECCS)	Authorizes temporary storage of hazardous waste.
Heritage Investigative Permit	<i>Heritage Conservation Act, RSBC 1996, c 187</i> (GovBC 1996)	BC MFLNRORD	Authorizes mitigation of impacts to sites (should any be identified) through systematic data recovery after an impact assessment has been completed.
<i>Mines Act, RSBC 1996, c 293</i> (GovBC 1996c) Permit	<i>Mines Act, RSBC 1996, c 293</i> (GovBC 1996c), and Health, Safety and Reclamation Code for Mines in British Columbia (Part 10) (BC MEMLI 2021)	BC MEMLI	Provides approval for the site preparation, and all phases of Project development subject to conditions, provision of further detailed information and assessment as it becomes available and sets out closure and reclamation obligations and security through the Joint <i>Mines Act</i> , RSBC 1996, c 293 and <i>Environmental Management Act</i> , SBC 2003, c 53 (MA/EMA) permit process.
No Unauthorized Entry and No Hunting / Shooting Zone over Project	Ministerial Order under the <i>Wildlife Act</i> , RSBC 1996, c 488 (GovBC 1996e) Closed Areas Regulation, BC Reg 76/84 (GovBC 1984)	BC MEMLI and BC MFLNRORD	Establishes No Unauthorized Entry and Hunting/Shooting prohibition over Project Area.
Occupant License to Cut	<i>Forest and Range Practices Act</i> (GovBC 2002c)	BC MFLNRORD	Regulates cutting and harvesting trees of merchantable size. To be discussed with BC FLNRORD, regarding the Bulkley Timber Supply Area (TSA) and the area tree farm licensee.
Permit to Construct	<i>Public Health Act, SBC 2008, c 28.</i>	Public Health	Regulates the disposal of sewage from the Administration

Authorization	Legislation	Authorizing Agency	Purpose
and Operate a Sewage Treatment system	(GovBC 2008), Sewerage System Regulation, BC Reg 326/2004 (GovBC 2004)	Inspector/Officer of Northern Health	Building, Maintenance Facility and Mine Dry.
Rail Infrastructure Rezoning	Regional District of Bulkley-Nechako Zoning Bylaw No. 1800, 2020 (RDBN 2020) of the Smithers Telkwa Rural Official Community Plan (RDBN 2014), under the <i>Local Government Act</i> , RSBC 2015, Chapter 1 (GovBC 2015b)	Regional District of Bulkley Nechako (RDBN)	Required for RDBN land use rezoning for the Rail Infrastructure parcel (to be completed concurrently with the ALR Non-farm Use application). Letter detailing the Rail Infrastructure rezoning of Property Lot (A) District Lot 1143 Range 5 Coast District Plan 1056 except Plan 9828 within the RDBN, Rail Infrastructure overview, and proposed Application for Amendment to a Plan, Bylaw, Permit, or Floodplain Exemption submitted February 2, 2021.
Railway Minister's Certificate and Operating Permit	<i>Railway Act, RSBC 1996, Chapter 395 (GovBC 1996d)</i> <i>Railway Safety Act, SBC 2004, Chapter 8 (GovBC 2004)</i>	BC MOTI and Technical Safety BC	Required for construction and operation of the Industrial Rail Infrastructure.
Road Use Permit	<i>Forest and Range Practices Act, SBC 2002, c 69 (GovBC 2002)</i>	BC MFLNRORD	Authorizes use of a Forest Service Road (FSR). Road Use Permit issued December 2018.
Sand and Gravel Permit G-2-48 for Gravel Quarry	<i>Mines Act, RSBC 1996, c 293 (GovBC 1996c)</i>	BC MEMLI	Authorizes excavation of gravel material, screening and crushing at Goathorn Gravel Pit for road construction or use by cement industry. Permit G-2-48 issued October 2020.
Site Alteration Permit	<i>Heritage Conservation Act, RSBC 1996, c 187 (GovBC 1996a)</i>	BC MFLNRORD	Regulates alteration or removal of archaeological or paleontological items (should any be identified and impacted by the Project).
Statutory Right-of-way (SROW)	<i>Land Act, RSBC 1996, c 245 (GovBC 1996b)</i>	Crown Lands, Land Tenure Branch	Authorizes the construction and use of the Bypass Road portion of the TAC. Authorizes occupation of Crown land for a rock quarry in the TAC ROW. SROW application submitted June 11, 2021. Application updated on January 14, 2022, to address proposed reclamation. SROW application was advertised under the Land Act Notice of Application for a Disposition of

Authorization	Legislation	Authorizing Agency	Purpose
			<i>Crown Land, with comments due to BC FLNRORD up to March 17, 2022.</i> <i>Note: This application won't be finalized until a decision is made on the Environmental Assessment Certificate (EAC).</i>
Waste Discharge Permit - Effluent	<i>Environmental Management Act, SBC 2003, c 53 (GovBC 2003)</i> <i>Waste Discharge Regulation, B.C. Reg. 320/2004 (GovBC 2004)</i>	BC MECCS	Authorizes discharge of liquid effluent to the environment through the Joint MA/EMA permit process.
Waste Discharge Permit - Emissions	<i>Environmental Management Act, SBC 2003, c 53 (GovBC 2003)</i> <i>Waste Discharge Regulation, B.C. Reg. 320/2004 (GovBC 2004)</i>	BC MECCS	Authorizes discharge of airborne emissions to the environment through the Joint MA/EMA permit process.
Waste Discharge Permit - Solid Wastes	<i>Environmental Management Act, SBC 2003, c 53 (GovBC 2003)</i> <i>Waste Discharge Regulation, B.C. Reg. 320/2004 (GovBC 2004)</i>	BC MECCS	Authorizes discharge from the Project of solid industrial refuse through the Joint MA/EMA permit process.
Water License	<i>Water Sustainability Act, BC Reg. 36/2016 (GovBC 2016)</i> <i>Groundwater Protection Regulation, BC Reg 39/2016 (GovBC 2016)</i>	BC MFLNRORD	Authorizes storage, use or diversion of surface water, including installation of works for a backup water system in Goathorn Creek. If groundwater wells are proposed, water license(s) will be applied for.

Land Use

The Project is located in an area in northwestern BC where there is a variety of tenured and non-tenured land use, private land, parks, and protected areas. Resource-based industries are important drivers of the local and regional economy. Forestry, agriculture, and grazing are important in the region.

The Project is located on provincial Crown land, three (3) freehold land parcels owned by TCL, and 11 coal licences held by TCL. There are no federal lands existing within the Project Area. The Project is located outside of the Village of Telkwa, and thus not subject to Village bylaws and zoning. The Project is located within the Smithers Telkwa Rural Official Community Plan (OCP).

The Project falls within the Bulkley Land and Resource Management Plan (LRMP), Bulkley Valley Sustainable Resource Management Plan (SRMP). The Bulkley LRMP, created by the BC Government in 1998, directs the management of 760,000 hectares (ha) of Crown land and provides general management direction related to eleven (11) categories. The Project is located within the Private Zone and the Integrated Resource Management Zone (RMZ), in Planning Unit 11 (Telkwa) and Sub-Unit 11-4 (Goathorn Creek). Specific management direction for Subsurface Resources in this Sub-Unit 11-4 include maintaining “opportunities for coal exploration and extraction” (GovBC 1998).

Crown tenures that overlap with the Project include range, trapline and guide outfitting tenures. The Minesite is located outside of the Agricultural Land Reserve (ALR), but the TAC overlaps with a small portion of ALR land and TCL has submitted a non-farm application and zoning change to the Agricultural Land Commission (ALC) for the TAC. The Project does not overlap with any Old Growth Management Areas (OGMA) or Ungulate Winter Range. The Project does overlap with a Wildlife Habitat Areas (WHAs) established for the Telkwa Caribou Herd.

Portions of the Project are also within the ALR of BC:

1. Bypass Road, which is a portion of the TAC; and
2. Rail Infrastructure.

The land will have to be rezoned to a “Non-farm Use” via an application to the ALC and the Regional District of Bulkley-Nechako (RDBN). Furthermore, a Statutory Right-of-way (SROW) will need to be obtained under the *Land Act*, RSBC 1996, c 245 (GovBC 1996b) to allow the construction of the Bypass Road. Lastly, the land that the Rail Infrastructure is located on will need to be rezoned for this use by the RDBN.

Alternative Means for Carrying Out of the Project

TCL used the following performance objectives to assess the alternatives means to carry out the Project activities:

- ▶ effects on the natural environment;
- ▶ technical applicability, system integrity, and reliability;
- ▶ cost effectiveness; and
- ▶ community impacts and input including human health.

Table 0-12 below provides a summary and results of the alternatives reviewed.

Table 0-12: Summary of Alternative Means for Completing the Project

Component	Alternatives Considered	Option Selected and Carried Forward Into the Environmental Effects Assessments
Mining Method	Surface	<i>Surface-only was selected</i> due to the dip of the coal structure and presence of numerous faults in the area.
	Underground	
Surface Mining Method	Truck/shovel	The <i>truck/shovel</i> method was selected due to its flexibility and ability to maximize the recovery of the available resource.
	Contour and highwall	Contour and highwall was rejected due to the dip of the coal, presence of faults and low resource extraction levels of 40%.
	Dragline	Dragline was rejected due to the small size of the deposit, and incompatible geometry of the deposit.
Production Rate for Project	<250,000 tonnes of processed coal per annum	Stakeholder input and the requirement to construct the Tenas Access Corridor (TAC) and Rail Infrastructure required capital amounts that a 250,000 tonnes of processed coal per annum operation could justify.
	775,000 to 825,000 tonnes of processed coal per annum	Modular plant design limits the feed rates available to reduce capital costs, as a result the production rate of <i>775,000 to 825,000 tonnes of processed coal per annum has been selected</i> for this Project.
	>1,500,000 tonnes of processed coal per annum	Community effects and input including human health requested a smaller Project and the ability for the company to finance the Project selected ruled out a production rate greater than 1.50 million tonnes (Mt) of processed coal per annum.
Processed Coal Transport from CPP to Port	Truck	To reduce the amount of traffic on existing road network, <i>rail haulage was selected</i> as each unit train replaces, approximately 305 truck trips.
	Rail	To reduce the amount of traffic on existing road network, <i>rail haulage was selected</i> as each unit train replaces, approximately 305 truck trips.
Mine Equipment Selection – Loading Equipment	Backhoe	<i>A backhoe configured loading equipment was selected</i> for this Project due to its added flexibility when dealing with coal seams.
	Shovel	
Mine Equipment Selection – Equipment Size	6 m ³ backhoe/45 tonne trucks	The Project requires two (2) loading units to be able to produce run-of-mine (ROM) coal and mine rock at the same time. Given the production schedule required to produce enough ROM coal 1,050,000 tonnes for
	12 m ³ backhoe / 90 tonne trucks	

Component	Alternatives Considered	Option Selected and Carried Forward Into the Environmental Effects Assessments
	15 m ³ backhoe / 135 tonne trucks	the CPP, only the 12 m ³ was small enough to provide two (2) units while being large enough to provide an economic Project, so the <i>12 m³ was selected</i> .
	22 m ³ backhoe / 180 tonne trucks	
	29 m ³ backhoe / 205 tonne trucks	
CPP Location	CPP located on the east side of Goathorn Creek.	To keep operation activities as far from public property as possible, the <i>west side of Goathorn Creek was selected</i> for the CPP location.
	CPP located on the west side of Goathorn Creek	<i>Furthermore</i> , to keep the ROM coal hauls as short as possible, a <i>CPP location on the west side of Goathorn Creek is preferred</i> .
Rail Infrastructure Location	Rail Loop on private land parcel east of Lawson Road	The <i>Rail Loop location on private land parcel was selected</i> as it did not require disturbing an important archaeological resource that is on Crown land. Secondly the private land Rail Loop location requires less earthwork and related disturbance versus the Crown land Rail Loop location. Lastly, it was generally more acceptable to the community.
	Rail Loop on Crown land parcel east of Lawson Road	Due to the high capital cost of constructing the Rail Loop at this location and having to disturb an important archaeological resource this option was unacceptable.
	Rail Loop on Crown land west of Lawson Road	Due to the high capital cost of bringing the Rail Loop closer to the Minesite, the Rail Loop east of Lawson Road was ruled out.
	Linear siding along existing CNR right-of-way	Due to the higher capital cost of the two (2) linear siding options these were ruled out.
	Linear siding on Crown land west of Lawson Road	
Processed Coal Transport Methodology from CPP to Rail Infrastructure	Truck haulage	<i>Truck haulage was selected</i> due to the high capital cost of using conveyors to transport coal between the CPP and Rail Infrastructure.
	Conveyor transport	Conveyor transport was rejected due to the high capital cost of using conveyors to transport coal between the CPP and Rail Infrastructure.
	Slurry pipeline transport	Pipeline transport was rejected due to the large increase of water that would be required to make this option possible plus the capital cost of dewatering equipment at the Rail Infrastructure and an increased disturbance footprint for the Project.

Component	Alternatives Considered	Option Selected and Carried Forward Into the Environmental Effects Assessments
Processed Coal Truck Haul and Project Access	TAC	<i>Dedicated constructed haul road (TAC) to transport processed coal was selected</i> to reduce potential traffic effects in the area and was requested during Telkwa Coal Limited (TCL)'s discussions with stakeholders.
	Existing road network	Using the existing road network was ruled out due to feedback from community stakeholders.
	Powerline road	The TAC option of using the powerline road was ruled out as it would require the coal haul to go through the Cottonwood neighborhood close to the mine.
Fine Processed Rock Dewatering	Filter press and haul with trucks	The <i>filter press option</i> was selected to reduce the amount of make-up water required by the CPP.
	Conventional wet processed rock (tailings) disposal	
Potentially Acid Generating (PAG) Material Management	Material blending	TCL has spent a significant amount of resources on understanding this issue for the Project, given Equity Silver's issues in the region. Material blending was ruled out as viable option due to the quantity of PAG material present in the deposit and the requirement to get almost perfect blending for this method to work.
	Passive treatment	Passive treatment was ruled out for much the same reason as material blending.
	Active treatment	Active treatment is a viable method for dealing with potential acid rock drainage (ARD) onsite, however, it was ruled out as it would have an unknown duration for treatment.
	Dry covers	Dry covers were ruled out as this method is prone to letting oxygen and water come into PAG material and subsequent ARD. This method is also prone to degradation over time and again causing PAG material to encounter the environment.
	Water covers	<i>Water covers</i> are the best technology for preventing PAG material from going acidic and <i>was selected</i> versus dry covers.
Water Cover Methodology	Use existing water body	There are no existing water bodies available in the Project area that could be used for PAG material storage so one has to be constructed.
	Construct a water body using excavation only	Of the three (3) options, the option of <i>constructing a water body using dams only was selected</i> as it creates the least amount of disturbance and allows the use of an engineered liner to limit groundwater seepage from the structure.
	Construct a water body using a combination of excavation	

Component	Alternatives Considered	Option Selected and Carried Forward Into the Environmental Effects Assessments
	and dams	
	Construct a water body using dams only	
Office and Mine Dry Location	Offsite	Majority of components will be <i>onsite with an administration office in Telkwa</i> at current location to minimize transport of personnel and have a more efficient operation. The option selected is to have this infrastructure onsite for the time being.
	Onsite	
CPP Plant Flowsheet	Standard three (3) stage circuit consisting of Heavy Media Cyclones, Reflux Classifiers and Flotation	Of the two (2) options presented, the two (2) stage CPP Flowsheet was selected as it had a lower capital cost while still maintaining an acceptable CPP yield. However, the CPP has been designed to allow for a second middling circuit in the future if it is found that coal yield is lower than predicted due to the ROM coal being finer than testing to date have provided.
	Two (2) stage circuit consisting of Heavy Media Cyclones and Flotation	
Process Water Supply for the Project	Precipitation only	Based on the water balance completed, <i>precipitation only</i> will meet all the requirements, so it <i>was selected</i> for the Project. However, for the effects assessment for the Fish and Fish habitat Valued Component it was felt that additional water should be sourced from Goathorn Creek
	Precipitation and surface water	Precipitation and groundwater were ruled out as available groundwater resources onsite are very limited and not able to supply sufficient water to meet Project requirements.
	Precipitation and groundwater	
Potable Water Supply	Surface water	Along with precipitation, a backup surface water source was selected as there is enough and acceptable quality to meet the daily requirement of 16 m ³ .
	Groundwater	Potable water sourced from groundwater sources was ruled out as adequate pump studies have not been completed to verify if enough groundwater is available for potable water.
	Offsite supplier	An offsite supplier was ruled out due the amount of potable water required and associated costs.
Sewage Treatment Methodology	Trucking to offsite disposal	Due to the quantity of sewage water generated onsite, trucking was ruled out.
	Sewage Treatment Plant	A <i>secondary Sewage Treatment Plant</i> was selected for this Project

Component	Alternatives Considered	Option Selected and Carried Forward Into the Environmental Effects Assessments
	Septic field	Site geology does not favor a septic field.
Employee Transport	Bus from designated parking lot	<i>Bus transport from a designated parking lot was selected to:</i> ▪ reduce traffic on local roads and for the safety of employees, and ▪ allow for a more efficient bus transport, with bus service from a designated lot instead of having designated buses going through town doing pickups.
	Bus using designated route through communities	
	Employees using private vehicles	
Employee Parking Lot Location	East side of Bulkley River	The <i>east side</i> of the Bulkley River was selected for the parking lot location to reduce traffic over the existing one-lane bridge to get to the Project.
	West side of Bulkley River	
	Extend three-phase 25 kV along Lawson Road	
	New 138 kV to 25 kV transformer west of Rail Infrastructure	
	2 m	
	2.5 m	

Notes: <=less than; >=greater than; %=percent; kV=kilovolt; m=metre; m³=cubic metre; V=volt

Alternatives to the Project

TCL also reviewed actual alternatives to the development of Project which were:

- ▶ no project;
- ▶ alternative Project production rates,
- ▶ use of alternative methods to produce steel, and
- ▶ development of an alternative steelmaking coal resource outside BC.

In summary, the current market is strong for steel and subsequently metallurgical coal over the next 30 years and the alternative methods for making steel without using coal are not predicted to replace 100% of blast furnace coal over the next 30 years and will be challenged to even replace 50% of total blast furnace steel production by the Year 2050. Therefore, even if this Project is not built, the global demand for steel is driving metallurgical coal projects forward and it is highly likely other metallurgical coal projects elsewhere across the globe will be constructed which may be in a jurisdiction with less regulatory oversight than BC.

Based on an evaluation of the potential development of several other projects, including not developing the Project, and given the positive results for pre-feasibility and feasibility studies for the Project, and the market demand for steel and subsequently metallurgical coal for the next 30 years, TCL is proceeding with its plans to develop the Project.

1. DESCRIPTION OF THE TENAS PROJECT

1.1 Project Overview

Telkwa Coal Limited (TCL) is proposing to develop the Tenas Project (Project), which is a metallurgical surface coal mine in northwestern British Columbia (BC), Canada that will recover metallurgical coal for export to the seaborne market.

The Project will produce metallurgical coal at an annual production rate of between 775,000 and 825,000 metric tonnes of processed coal with a maximum daily production rate of 2,500 metric tonnes of processed coal per day. The life-of-mine (LOM) (i.e., the end of the Operation Phase) of the Project will be approximately 26.5 years, including the Construction, Operation, and Decommissioning and Reclamation phases. The Post-closure Phase occurs after the Decommissioning and Reclamation Phase is completed and will have an unspecified period but will likely be approximately 25 years with this timing dependent on regulatory approvals and progress of reclamation. This is a total Project life of 51.5 years. The metallurgical coal produced from the Project will be exported primarily to the Asian marketplace.

The Project's initial estimated capital cost is 123.5 million Canadian Dollars (CDN\$) (2018 dollars) to get to commercial production rates. The Project is anticipated to generate 125 person-years of direct employment during the Construction Phase. The Project is anticipated to require between 55 and 145 full-time equivalent employees during the Operation Phase and generate approximately 3,125 person-years of employment over the life of the Project excluding the Construction Phase activities.

This Environmental Assessment Certificate (EAC) Application has been prepared in accordance with the British Columbia Environmental Assessment Office (BC EAO) Guidelines for Preparing Environmental Assessments (BC EAO 2016).

Prior to and during the preparation of the Project Description (PD), the Office of the Wet'suwet'en (OW) and the following government ministries and local governments were engaged and consulted: BC EAO, the former Canadian Environmental Assessment Agency (CEAA), and the current Impact Assessment Agency of Canada (IAAC), British Columbia Ministry of Energy, Mines and Low Carbon Innovation (BC MEMLI), British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development (BC FLNRORD), British Columbia Ministry of Transportation and Infrastructure (BC MOTI), British Columbia Ministry of Environment and Climate Strategy (BC MECCS), British Columbia Ministry of Indigenous Relations and Reconciliation (BC MIRR), Regional District of Bulkley-Nechako (RDBN), Town of Smithers, Town of Houston, and Village of Telkwa.

The public was also consulted through a series of in person and virtual public open houses and scheduled meetings with identified community groups and individuals. **Section (S) 12.0 Public Consultation** of the **EAC Application** describes the engagement and discussions completed with Indigenous groups, federal and provincial governmental agencies, local governments, non-governmental agencies (NGOs) and the broader public, and it presents the results of consultations up to the delivery of the BC EAO. TCL is committed to continuing overall engagement with all groups during the screening and review phase of this EAC Application and if granted an EAC, to continue to the permitting phase of the regulatory review process.

The Project has been developed in consultation with the broader land use plans for the region as developed by the RDBN.

The Project components for the Project consists of:

- ▶ open pit;
- ▶ Coal Processing Plant (CPP)
- ▶ coal handling systems for run-of-mine (ROM) coal, processed rock, and processed coal (including CPP conveyors, storage bins, and stockpiles);
- ▶ administration, first aid, maintenance/warehouse, mine dry, laboratory, light vehicle, mine rescue, and warehouse buildings;
- ▶ Surface Water Management Infrastructure, including the Project sedimentation ponds, such as the Tenas Control Pond dam and associated spillway, the CPP Sedimentation Pond, Rail Infrastructure Sedimentation Pond, Explosive Magazine Sedimentation Pond and Explosive Facility Sedimentation Pond, as well as erosion protection along Goathorn Creek tributary;
- ▶ temporary diversion berms and channels to collect and divert runoff around working areas;
- ▶ Potable Water Storage Pond and associated collection channel and distribution network, as well as water supply wells;
- ▶ fuel and lubricant storage facilities and distribution network;
- ▶ Explosive Magazine, storage silos, and vehicle wash and maintenance facilities, including the associated sedimentation ponds;
- ▶ propane storage facilities and distribution network (as required);
- ▶ solid waste management systems including landfill, recycling, and composting facilities;
- ▶ haul roads and access roads within the Minesite;
- ▶ Tenas Access Corridor (TAC) which encompasses an 11 kilometre (km) of newly constructed Bypass Road and improvements to approximately 5.0 km of an existing Forest Service Road (FSR);
- ▶ a 3.5 km long 25 kilovolt (kV) powerline and a 25 kV to 600-volt (V) substation adjacent to the CPP;
- ▶ Rail Infrastructure consisting of processed coal stockpiles, scales, dust control facilities and a 2.5 km Rail Loop connected to the Canadian National Railway (CNR) track and the Rail Infrastructure Sedimentation Pond; and
- ▶ a permanent bridge over Goathorn Creek.

The Project components listed above are typical of similar operating surface coal mines located in southeastern BC and are well proven and understood, including the CPP and ancillary infrastructure.

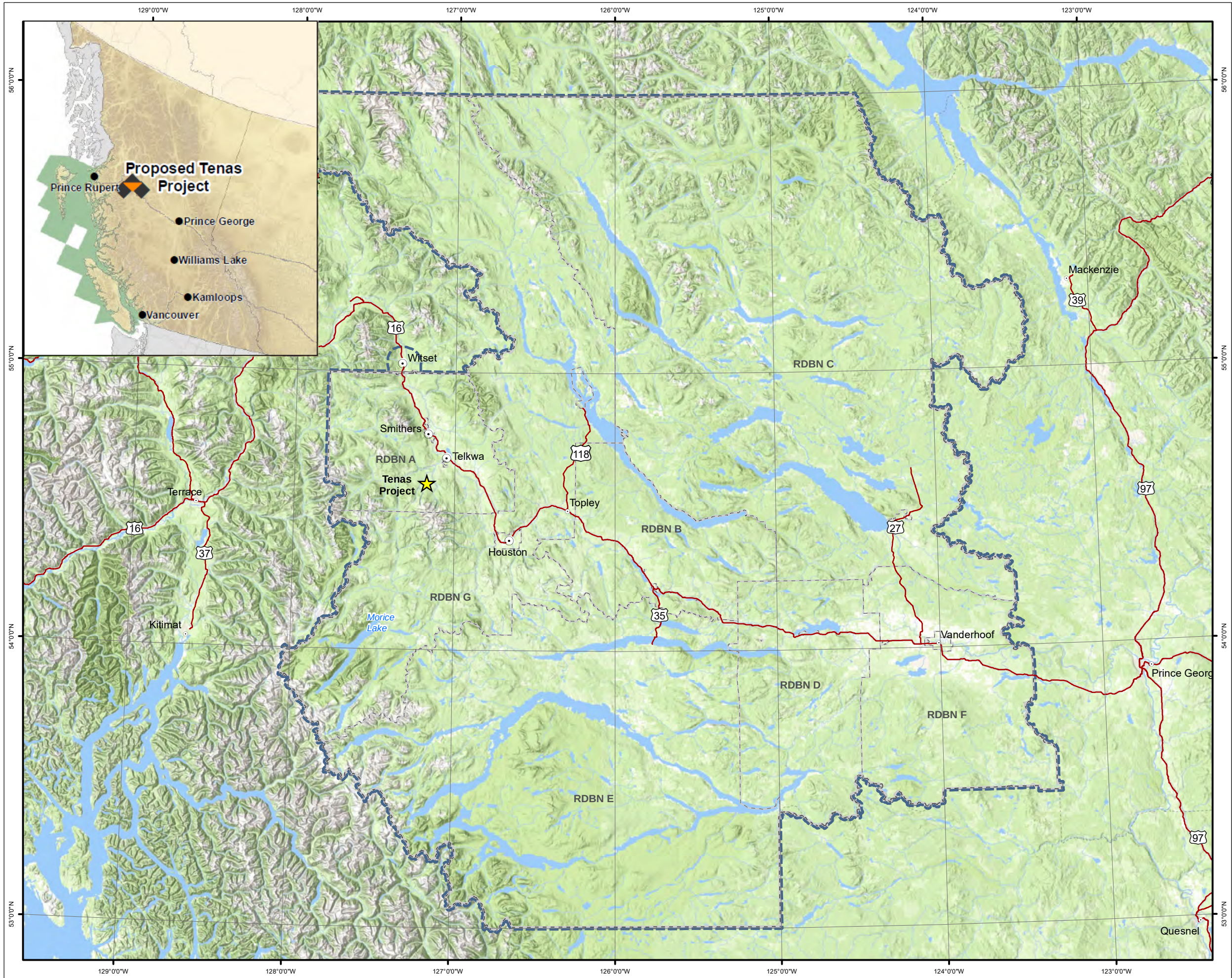
1.2 Project Location

The Project is located within the RDBN in the province of BC in Canada. The Project is located approximately 25 km south of the Town of Smithers and seven (7) km southwest of the Village of Telkwa. See **Figures 1.2-1** and **1.2-2**. Full-page sized copies of these figures are also provided in **Appendix 1.0-A Select Tenas Project Full Sized 11' x 17' Figures**.

The coordinates of the Project site (centre of the Project Mine Infrastructure Complex [MIC]) are approximately 54°36'48" north latitude and 127°09'32" west longitude. The coordinates for the center of the open pit are approximately 54°35'55.67" north latitude and 127°10'43.25" west longitude.

The Project is within Wet'suwet'en traditional territory, specifically the Gitdumden and Laksilyu clans (**Figure 1.2-3**). The Project is situated in proximity to places of cultural importance to the Wet'suwet'en. *Yinta* is a Wet'suwet'en concept in which everything is connected to the land. This world view embodies within it the responsibility of stewardship over the territories that sustain Wet'suwet'en lifeways. The Wet'suwet'en continue to practice deliberate resource management strategies that are designed to ensure generational succession of territorial resources. The OW, as governed by the Hereditary Chiefs who continue to collectively manage lands and resources, fisheries and wildlife, human and social services, and treaty negotiations on behalf of the Wet'suwet'en (OW 2018).

TCL acknowledges and respects the unceded rights, title, interests, culture, and aspirations of the Wet'suwet'en to 22,000 square kilometres (km²) of traditional territory, the lands where the Project is located. This is the core culture of TCL, and it guides its discussions and actions in relation to this Project.



Tenas Project

Project Location

Legend

★ Tenas Project

Regional District of Bulkley Nechako (RDBN)

Electoral Areas

Highway

Notes

1. All mapped features are approximate and should be used for discussion purposes only.

2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Project Area: Allegiance Coal, 2020

- Basedata: Government of British Columbia

- Basemap: World Topo Base

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NAD 1983 BC Environment Albers

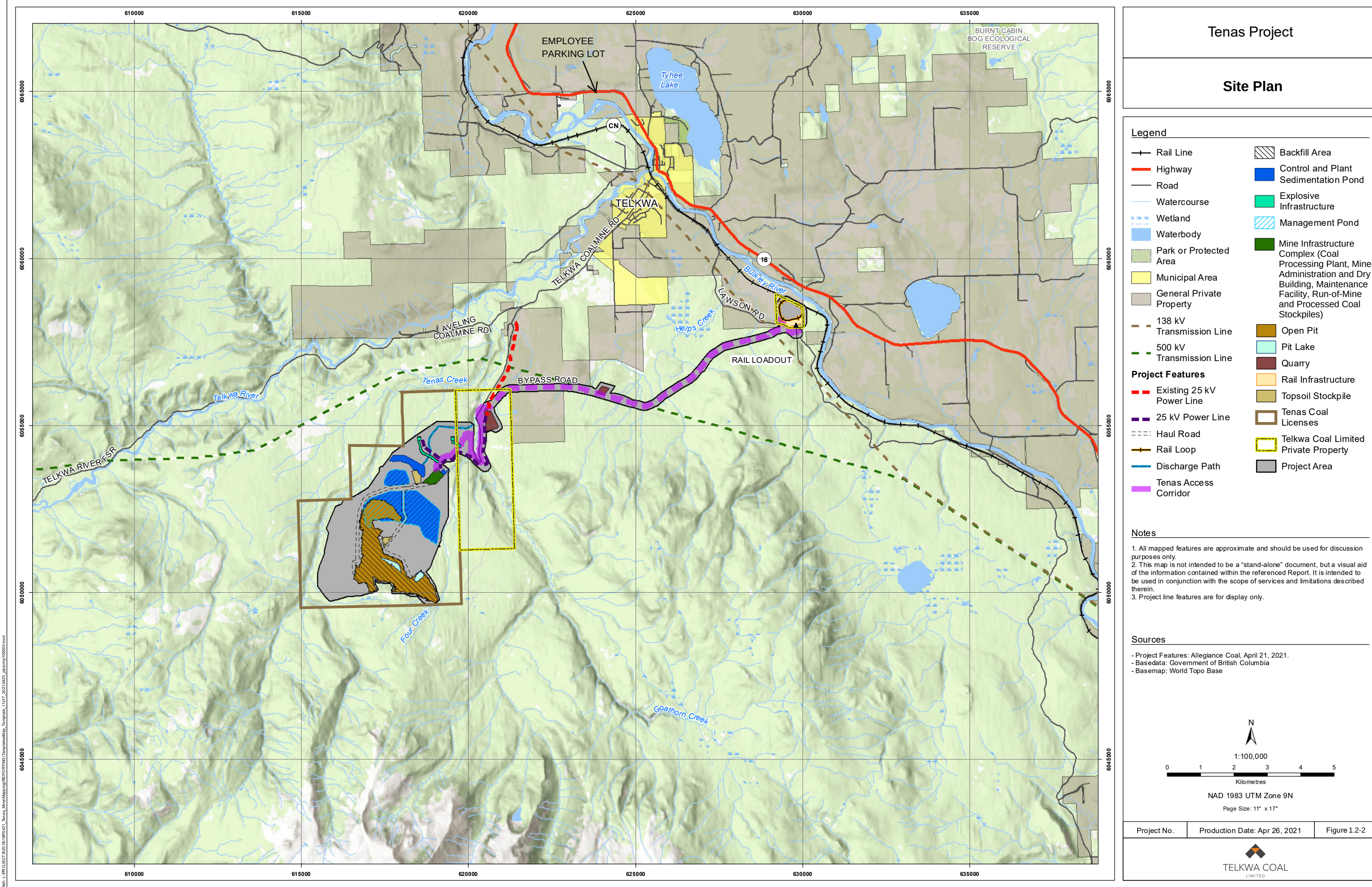
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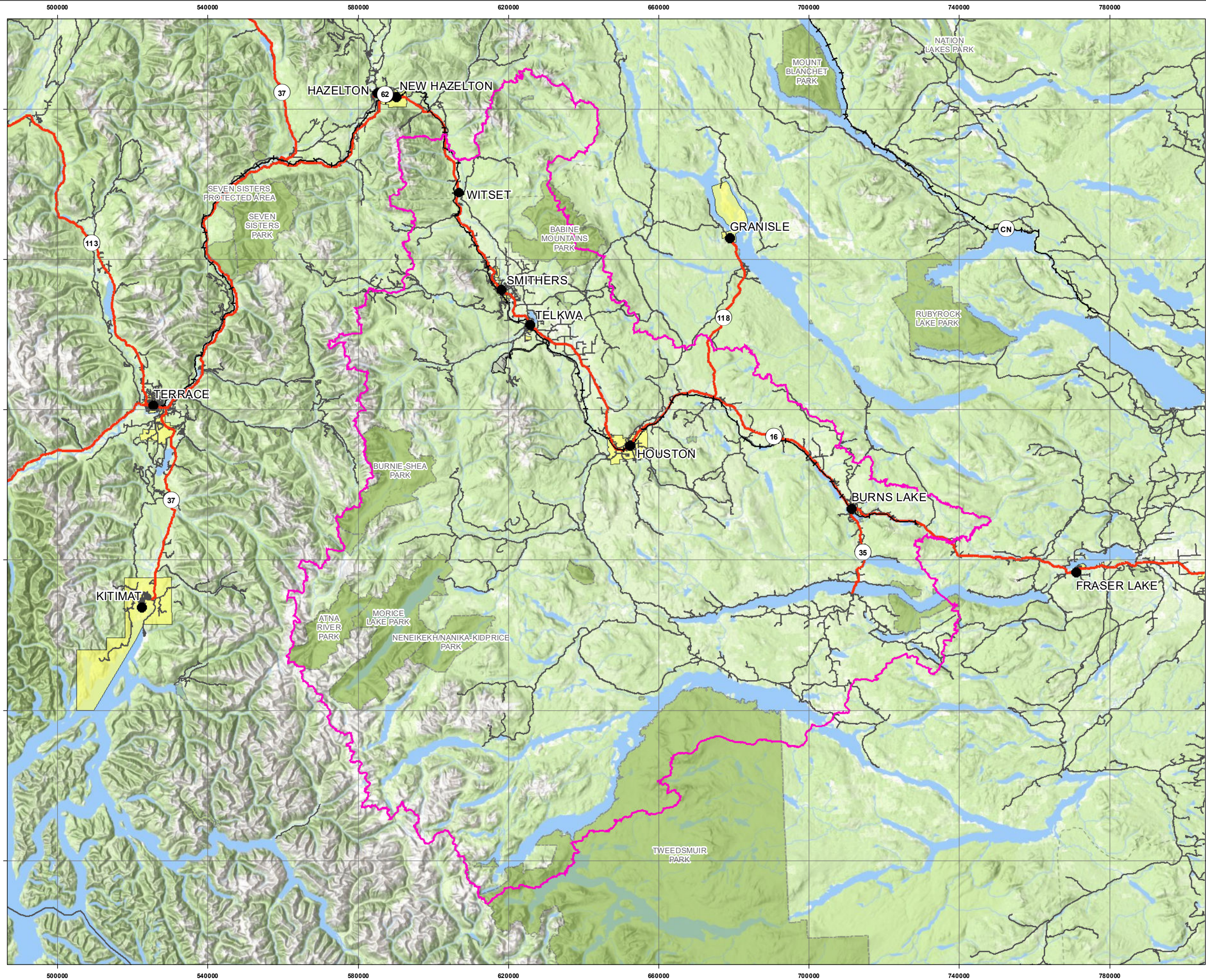
Figure 1.2-1

TELKWA COAL

LIMITED



Path: L:\PROJECT\82018\18P0172_Tenas's_Maps\map\REPORTING\EA_L_and_La\Fig123_Wet'suwet'en_Territory_20211014.mxd



Tenas Project

Wet'suwet'en Traditional Territory

Legend

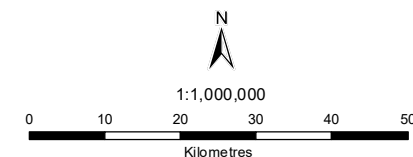
- City/Town
- +— Rail Line
- Highway
- Road
- Watercourse
- Waterbody
- Park or Protected Area
- Municipal Area
- Project Area
- Wet'suwet'en Traditional Territory

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Project Area: Allegiance Coal, April 21, 2021
- Basedata: Government of British Columbia
- Basemap: World Topo Base



NAD 1983 UTM Zone 9N
Page Size: 11" x 17"

21P0172 Production Date: Nov 04, 2021 Figure 1.2-3



1.3 Project Proponent

TCL is a joint venture partnership of Allegiance Coal Limited (ACL) and the Itochu Corporation. ACL is a publicly listed company on the Australia stock exchange (ASX: AHQ) with headquarters in Sydney, Australia. In addition to the Project, ACL owns two (2) other projects located in central Queensland, Australia: the Kilmain, and Back Creek Projects, one (1) operating mine located in Colorado, in the United States of America (USA) called the New Elk Coal Mine, and one (1) operating mine located in Alabama, in the USA called the Black Warrior Mineral Mine and one (1) project called the Short Creek Underground Project. The Project is currently Allegiance's flagship project. ACL does not own or operate any other projects or mines in BC. ITOCHU Corporation is a Japanese trading house founded in 1858. ITOCHU has offices in 100 cities in 62 countries engaged in various commodities including textile, machinery, metals, minerals, energy, and communications technology. Its market capitalization is approximately 4,799.8 Billion Yen (42.1 million American dollars [\$USD]). ACL currently owns 90 percent (%) of the Project with ITOCHU owning the remaining 10%, with an option to increase their ownership stake to 20% with the submission of the EAC Application. Itochu has a further option to increase their ownership stake in the future with continued capital support of the Project.

TCL has offices in both Telkwa and Vancouver, BC. The company was registered in BC on September 10, 2014 (BC1013154). The ACL website is: <http://www.allegiancecoal.com.au>, while TCL's website is <http://www.telkwacoal.com>.

1.4 Project Key Contacts

Mark Gray is the Managing Director of the Project. Mark is an Indigenous Maori of Te Arawa descent with 20 years of experience overseeing mining entities, including underground coal operations in Australia. Mark has also practiced law, including representing the Maori in negotiations with forestry and energy companies to develop resources on Maori lands.

Contact information for Mark Gray:

Telkwa Coal Limited
Suite D, 115 Hankin Avenue
Telkwa, BC V0J 2X0
Telephone: (778) 643-2843
Email: m.gray@allegiancecoal.com.au

Jonathan Reynolds is the Chief Financial Officer (CFO), with more than 25 years of experience as an accountant. Jonathan has been the CFO and held directorships of many exploration and producing operations across several commodities, in multiple jurisdictions and stock exchanges.

Contact information for Jonathan Reynolds:

Allegiance Coal Limited
Suite 107, 109 Pitt Street
Sydney NSW 2000
Telephone: +61 2 9233 5579
Email: jreynolds@allegiancecoal.com.au

Dan Farmer (P.Eng.) is the Chief Operating Officer, with more than 25 years of coal mining experience. Dan is formerly the Operations Manager of Anglo American's coal mines in BC, an Open Pit Foreman for Teck Resources Cheviot Mine in Alberta and Senior Mine Engineer for Cardinal River Coal's Luscar Mine. He has overseen projects from exploration stage to production. He holds a B.A.Sc. from the University of British Columbia's Mining and Mineral Engineering School.

Contact information for Dan Farmer, P.Eng.:

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Suite 1410 - 409 Granville Street
Vancouver, BC V6C 1T1
Cell: (604) 220-5703
Email: dfarmer@allegiancecoal.com.au

Dan Farmer will be the single point of contact for all communication related to the Project's EAC Application.

Ashleigh Ballevona, R.P.Bio. is the Environmental Manager for the Project. Ashleigh is an Environmental Assessment Specialist with 15 years of professional experience in environmental assessments and permitting. Ashleigh has an in-depth knowledge of federal and provincial environmental legislations and is effective in forming constructive and genuine relationships with stakeholders of diverse backgrounds, including technical specialists, regulatory agencies, and Indigenous groups. She holds a B.Sc. from the University of Winnipeg.

Contact information for Ashleigh Ballevona, R.P.Bio:

Telkwa Coal Limited
Suite D, 1415 Hankin Avenue
Telkwa BC V0J2X0
Mobile: 604-831-6231
Email: aballevona@allegiancecoal.com.au

1.5 Telkwa Coal Limited (TCL) Corporate Policies

TCL is guided by the following corporate policies:

- ▶ **Health and Safety:** Safety is a core value of our company. We believe that all activities can be completed with zero harm to personnel and that all incidents and injuries are preventable. We will provide resources to manage health and safety and expect all employees and contractors to share in this responsibility;
- ▶ **Indigenous People:** We acknowledge and respect the unceded rights, title, interests, culture, and aspirations of the Wet'suwet'en to 22,000 km² of traditional territory. In April 2017, we signed a Community and Engagement Agreement as an initial, formal step in our commitment to the Wet'suwet'en. In November 2021, TCL signed a Project Assessment Agreement with the Wet'suwet'en to provide the necessary capacity for an independent review of the Project;
- ▶ **Environment:** We will ensure that our activities are responsible and protective of the environment. Our design and operational activities will adhere to the mitigation hierarchy (Government of British Columbia [GovBC] 2014) to avoid and minimize impacts and reclaim onsite and offsite effects from our activities and carry out compensation and offsetting activities when necessary;
- ▶ **Community:** Integrity is fundamental to how we operate. We will engage with the community and stakeholders with the aim of understanding and addressing their concerns and goals; and
- ▶ **Environmental, Social, and Governance Policy (ESGP):** This policy is included in the overarching **Environmental Management System (S13.0-1) (EMS)**, and the policy dictates TCL's commitment to safety and operating responsibly to protect community and environmental values

1.6 Purpose of the Project and Relationship to Existing Public Sector Policies, Plans, and Programs

The purpose of the Project is the production of approximately 16.2 million tonnes (Mt) of processed metallurgical coal over a 26.5-year Project life in an environmentally and socially responsible and sustainable manner that will return economic and social benefits to TCL, the Wet'suwet'en, employees of TCL and their families, local communities, and the regional, provincial, and national economies.

TCL believes in the economic viability and potential of the Project and that Project development will bring training and employment opportunities as well as increased investment in services to the people of the Bulkley Valley and the surrounding region. A **Socio-economic Management Plan (S13.0-C16) (SEMP)** has been developed by TCL to assist in achieving these goals. This aligns with the BC Jobs Plan which outlines steps to attract investment and open new markets for BC, as well as to create jobs and ensure that British Columbians have the right skills for the jobs of the future (Affiliation of Multicultural Societies and Service Agencies of BC [AMSSA] 2015) and the BC's Mineral Exploration and Mining Strategy (GovBC 2012), which outlines a plan to maximize the benefits of the mining industry in a sustainable way, with economic and social prosperity for communities supporting job creation and skill development, as well as providing opportunities for business growth and revenue sharing. At the regional level, Project objectives also align with the 2021-2023 Strategic Plan for economic development of the Northern Development region which outlines goals to enhance regional capacity, investment, and growth opportunities for communities, to stimulate job creation, support resiliency of businesses, and improve economic diversity of the region (Northern Development 2020).

The Project is located within the Smithers Telkwa Rural Official Community Plan (OCP). Prepared by the RDBN, the OCP covers RDBN Electoral Area A and contains objectives to help guide land use planning and development of a variety of topics.

The Project is located within the Bulkley Land and Resource Management Plan (LRMP) area created by the BC Government in 1998. The Minesite and other Project components are located within the Private Zone and the Integrated Resource Management Zone, in Planning Unit 11 (Telkwa) and Sub-Unit 11-4 (Goathorn Creek). The Integrated Resource Management Zone was created to “recognize a full range of resource values and activities, including timber harvesting, mining, grazing, tourism, wildlife and recreation”. Planning unit objectives for Sub-Unit 11-4 include development of a comprehensive plan to sustain a viable caribou population and manage caribou habitat. The Project also overlaps with the Bulkley Valley Sustainable Resource Management Plan (SRMP) which presents objectives and strategies for resource management within the Bulkley Valley portion of the Bulkley LRMP.

The management objectives of the Bulkley LRMP for Caribou are to emulate natural disturbance patterns while providing forage and screening within the sub-boreal spruce biogeoclimatic zone (BGC) zone in the Telkwa Caribou Herd Recovery Area (TCHRA) and avoid Caribou displacement and reduce opportunities for Caribou interaction with humans and predators. These objectives were considered in the development of mitigation measures identified in **S4.0-Chapter (C) 8-5.3** of the **Wildlife Valued Component (VC)** in the EAC application and carried over into a comprehensive **Wildlife Management Plan (S13.0-C21) (WMP)**.

The Bulkley LRMP and Bulkley Valley SRMP also identified visual quality as an important consideration for resource development projects. Visual quality directives focus views from specific viewpoints (as identified in **S5.0-C2 Visual Resources VC** of the EAC Application. The assessment of the Visual Resources VC identified the following general mitigation measures: Project layout and footprint size limits; ambient light considerations; Project component design; revegetation of disturbed areas, and targeted vegetation screening.

As such, TCL has integrated these Visual Resources VC values in the **Visual Resources Management Plan (S13.0-C19) (VRMP)** in which mitigation strategies, specific measures and monitoring will be undertaken to ensure these values are maintained. Moreover, the **TCL Reclamation and Closure Plan (S13.0-C15) (RCP)** integrates both wildlife (including caribou) and visual quality objectives into progressive and closure reclamation programs.

1.7 Consultant and Proponent Qualifications

Drafting of the EAC Application was informed by environmental effects assessments undertaken by several consultants and relies on baseline studies also conducted by several consultants. **Appendix 1.0-B TCL, Tenas Project Consultant and Proponent Qualifications** identifies environmental effects assessment consultants, baseline study report consultants, geotechnical analysis, and their respective qualifications. A copy of the TCL key individual's resumes who were involved in the development of the EAC is also included in **Appendix 1.0-B**.

1.8 History, Geology, and Resources

1.8.1 Exploration and Mining History

Coal was reportedly discovered in the Telkwa Area around the year 1900. The Geological Society of Canada's Report No. 988, entitled *The Telkwa River and Vicinity, BC* (Leach 1907), included the first geological map of the area and documented the geology and coal occurrences in the area.

Small-scale underground and surface mining began in the Telkwa Area in 1918 and continued into 1985. Sporadic production since 1918 has resulted in the recovery of over 400,000 tonnes of coal, which was used to heat industrial, public, and private buildings in the region. Modern exploration of the property started with Cyprus Anvil Mining in 1978. Since then, over 800 exploration drillholes and three (3) bulk samples have been carried out on the Telkwa Property (of which the Project is a part). Other ancillary activities, such as trenching, geological mapping, geotechnical drilling, geotechnical test pits, and surface geophysics, have also been carried out on the property. TCL also completed supplemental exploration programs in 2018, 2019, and 2021 to augment the geochemistry, hydrogeology, coal quality, and geotechnical database for the property. TCL will carry out further exploration programs in the future as the Project moves through the regulatory process to further augment existing information.

Between 1918 and 1980, coal licenses for the Telkwa Property were held by Bulkley Valley Collieries and Crowsnest Resources. In 1981, Manalta Coal purchased the Telkwa Property and associated coal licenses. Manalta Coal was then purchased by Luscar Limited (Luscar) in 1999, and in 2002, Luscar decided to put the property development on hold. In 2004, Sheritt purchased the non-producing and mine-mouth properties from Luscar, which were in turn purchased by Altius Minerals in 2014. In 2015, TCL signed a farm-in agreement with Altius to purchase the coal licenses associated with the Telkwa Property. In late 2017, TCL acquired the coal licenses, and in early 2018, the freehold land private property was transferred from Altius Minerals to TCL. In 2020, TCL invoked the option to purchase the coal licenses held by Bulkley Valley Collieries and now is the sole owner of all coal licenses in the region.

1.8.2 Project Geology

The following subsections provide a brief overview of the geology of the Project.

1.8.2.1 Regional Geological Setting

The Telkwa Property within which the Project is located, is predominantly underlain by lower Jurassic volcanic rocks of the Hazleton Group (Telkwa Formation) which are unconformably overlain by lower

Cretaceous sedimentary rocks of the coal bearing Bulkley Canyon Formation. These strata were then intruded by Late Cretaceous to Eocene feldspar porphyry, quartz feldspar porphyry, granodiorite, and quartz diorite (**Figure 1.8-1**).

A table of formations for the Telkwa Property region is presented in **Figure 1.8-1**.

Overall, the regional depositional environment for the Skeena Group is a continental margin setting along western North America. In detail, Skeena Group strata record three (3) distinct paleogeographic stages, reflecting contrasting tectonic phases. The summary below is modified from Bassett and Kleinspehn (1997) and Ferri et al. (2005).

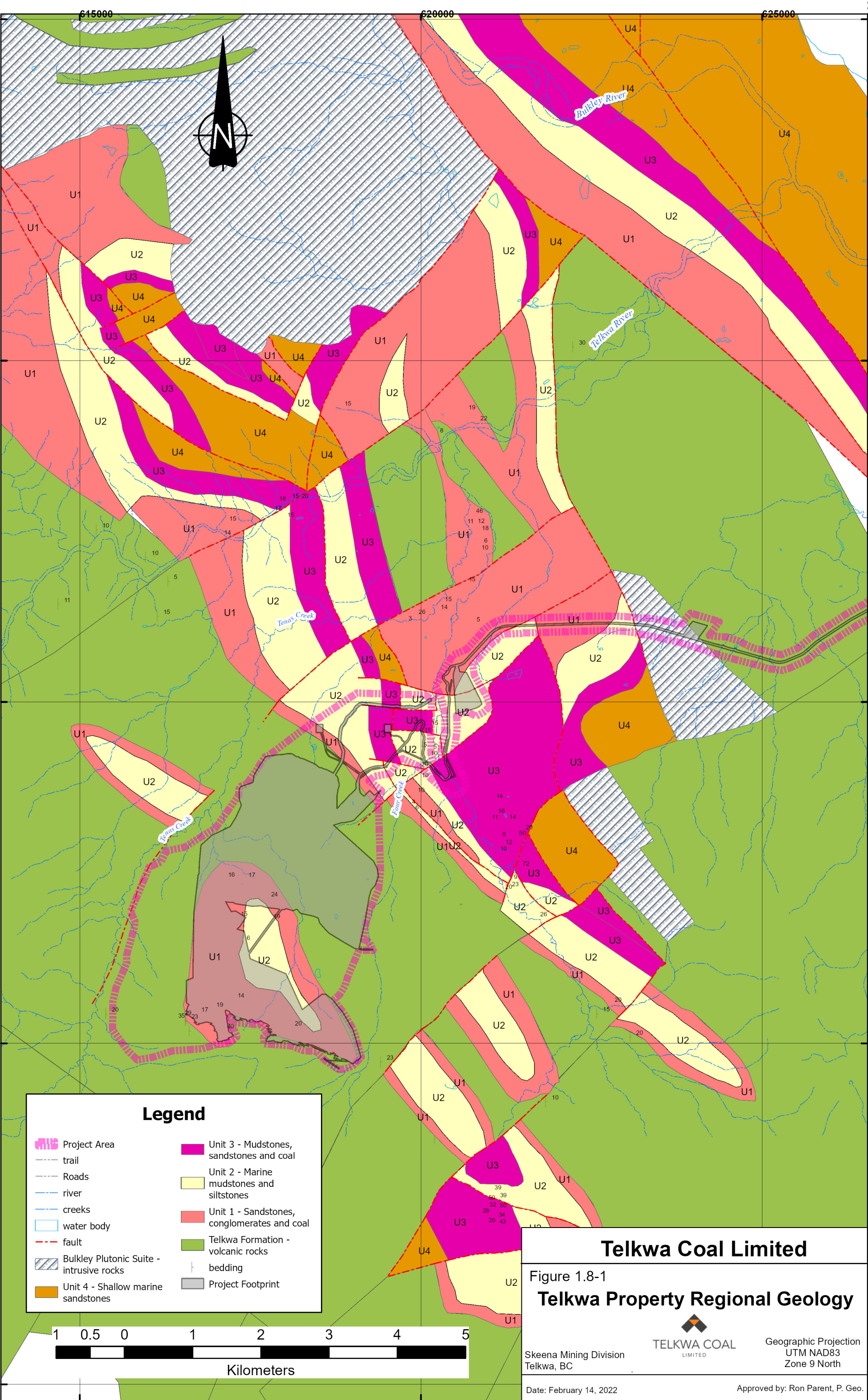
In the first paleogeographic stage, Skeena Group strata is represented as two (2) contrasting rock types that grade laterally (**Figure 1.8-2**). Coal bearing micaceous sandstone and siltstone of the lower Bulkley Canyon Formation are interpreted as sediment accumulation in a series of coal swamp deltas. Marine black shale, and lesser siltstone and sandstone, of the lower Laventie Formation are interpreted as deposits accumulated in restricted tidal basins adjacent to the deltas.

Throughout late Jurassic and early Cretaceous time, the basin was subjected to increased tectonic activity, which resulted in small to large scale faulting creating a multitude of fault blocks within which the stratigraphy is consistent and predictable (**Figure 1.8-3**).

The Telkwa Property has undergone at least two (2) episodes of structural deformation, the first during the Upper Cretaceous, and the second during the Tertiary.

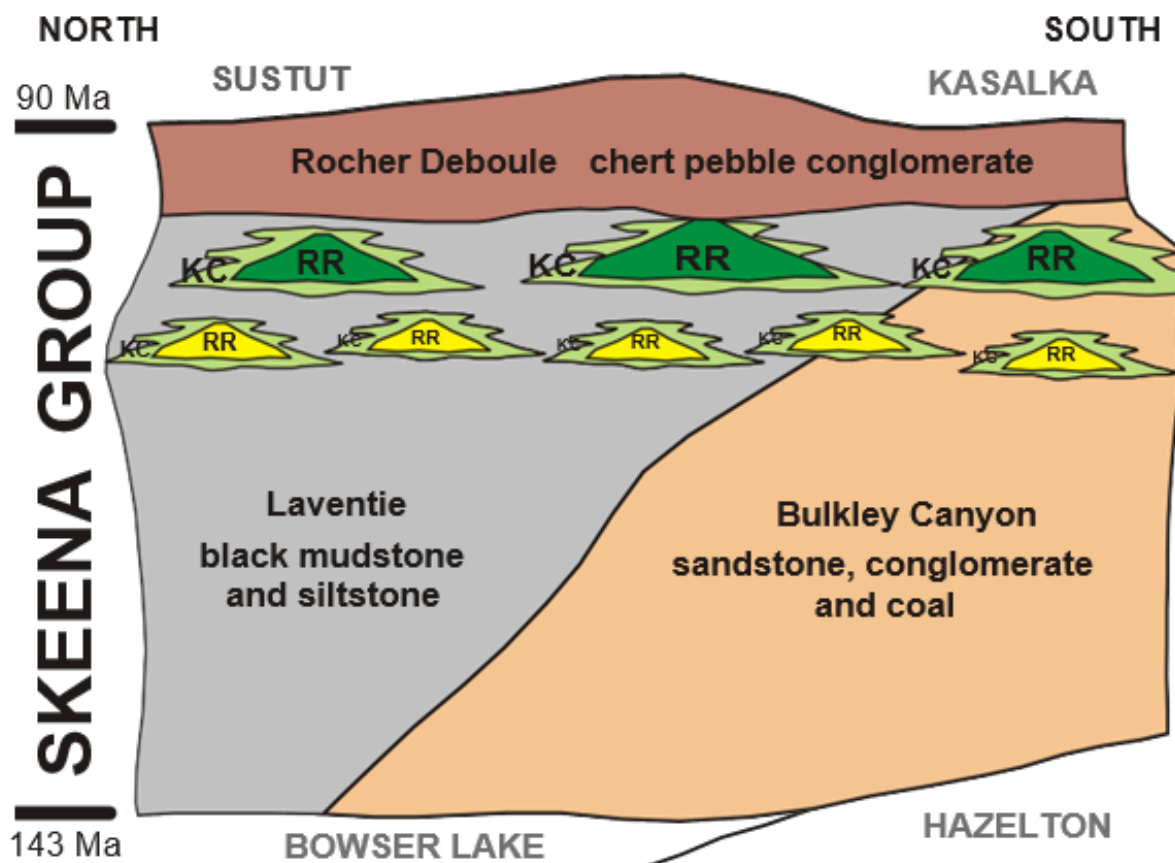
During the Upper Cretaceous the Bowser Basin was subject to tectonic forces where high angle faulting and plutonism were occurring eastward within the Omineca Crystalline Belt, and increasing uplift was occurring to the west. High angle faults trend north-south whereas fold geometries trend NW-SE, with shallow dipping west limbs and steeper east limbs. Porphyritic Late Cretaceous dykes and sills also occur locally within the coal measures.

During the Tertiary a large granodiorite and quartz monzonite intrusion was emplaced north of the Telkwa River. Structural repercussions in the Skeena sediments are represented by high angle faulting, establishing a mosaic of structural blocks that have been rotated and tilted into a variety of orientations. Each of the resource areas identified to date are representations of such fault blocks. Intrusion related faults occur concentric geometries near the intrusive body also appear to crudely radiate from the intrusive edge. Fault displacements have been observed to range from only a few metres to more than 150 m.



Sustut Group		Kasalka Group	
Skeena Group	Rocher Deboule Formation		
	Rocky Ridge Formation		
	Bulkley Canyon Formation	Upper Bulkley Canyon Formation (including Kitsuns Creek Member)	
		Lower Bulkley Canyon Formation	Unit 4
			Unit 3 (coal zones 2-10)
Unit 2			
Unit 1 (coal zone 1)			
Laventie Formation			
Bowser Lake Group		Hazelton Group	

Figure 1.8-2: Table of formations for the Telkwa Property



Source: modified from Bassett and Kleinspehn, 1997). Abbreviations: RR, Rocky Ridge Formation; KC, Kitsuns Creek Member; Ma

Figure 1.8-3: Schematic stratigraphy of Skeena Group for the Telkwa Property

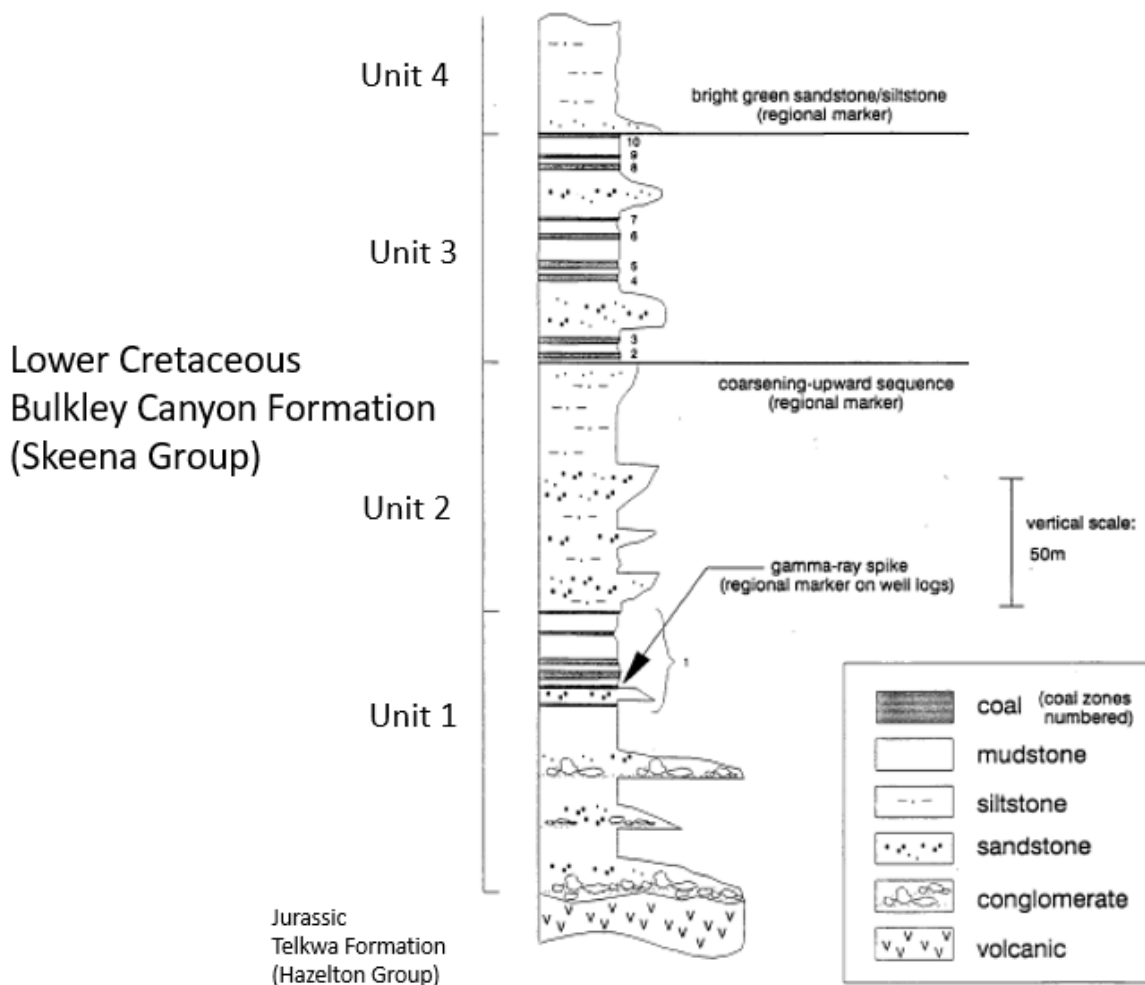
1.8.2.2 Regional Stratigraphy

Deposition of the Bulkley Valley formation was influenced by two (2) regressive/transgressive episodes. As a result, the stratigraphic sequence of the Bulkley Valley formation is divisible into four (4) lithostratigraphic units, Units 1 through 4 (**Figure 1.8-4**). The lithologies within Units 1 and 3 contain the coal bearing strata of economic interest while Units 2 and 4 do not. The sediments of Units 1 through 4 maintain a cumulative thickness of approximately 500 m throughout most of the property.

Marine and non-marine sandstones and siltstones, with lesser amounts of mudstone and conglomerate dominate the stratigraphic sequence. Coal seams of economic interest with thicknesses up to 8 m occur within Unit 1 and Unit 3. Unit 2 contains as much as 140 m of mainly marine sediment separating Unit 1 and 3. Other lithologies present include bentonites and bentonitic mudstones, sandstones, shales, and siltstones commonly found associated with the coal zones at properties in Western Canada.

Bedrock on the property is typically obscured by glacial sediments that form an irregular mantle over much of the area, with exceptions occurring sporadically or along sections of deeply eroded river and stream valleys such as Goathorn Creek. Thick accumulations of Tertiary sands and gravels also commonly occur, underlying glacial tills, particularly on the south side of the Telkwa River near Cabinet

Creek and near the confluence of Goathorn and Tenas Creeks. Till thickness is variable, normally ranging from 1.0 to 25.0 m while Tertiary sediments, where present, range up to 165.0 m in thickness.



Source: Modified after Palsgrove, 1990

Figure 1.8-4: Representative regional stratigraphic section of the Bulkley Canyon Formation for the Telkwa Property

1.8.2.3 Local Geology – Tenas Project

The geological interpretation for the Tenas Area was refined following the 2018, and 2019 exploration programs. Core drilling on seven (7) cross sections specifically served to refine the interpretation of near surface seam 1 coal.

1.8.2.3.1 Bulkley Canyon Formation - Unit 1 Coal Stratigraphy

There are 13 laterally consistent and correlatable seams in Unit 1 of the Bulkley Canyon Formation in the Project Area of which the coal bearing sequence is approximately 55 m in thickness. Seams e and d represent the uppermost correlatable seams in the sequence but are not of economic interest due to their thin nature (**Figure 1.8-5**).

Seam c averages 1.5 m in thickness and is separated from the underlying seam 1 or 1U by approximately 12 m of strata. It was previously thought that this seam was laterally discontinuous but that has been determined not to be the case.

Seam 1 is represented in the central area of the Project Area as one (1) seam, with no internal parting (**Figures 1.8-6** and **Figure 1.8-7**). The interpreted extents of seam 1 have been modified due to detailed modelling which excluded the parting at any thickness (**Figure 1.8-6**) which occurs in the central part of the Tenas Deposit. Elsewhere seam 1 splits into two (2) individual seams, the 1 upper (1U) and the 1 lower (1L). Seam 1's thickness is fairly consistent, averaging 5.7 m. Seam 1 upper (1U) ranges from 1 to 5 m and seam 1 lower (1L) ranges from 1.7 to 6.2 m. **Table 1.8-1** summarizes the range of values and the average seam thicknesses.

In the Project Area, the parting (P1) between seam 1U and 1L is thickest in the west edge of the deposit, reaching up to 4.3 m in thickness.

Unit III, not present in the Project Area, has more than 10 correlatable seams of economic significance, with local variations in Goathorn East, Goathorn West and Telkwa North.

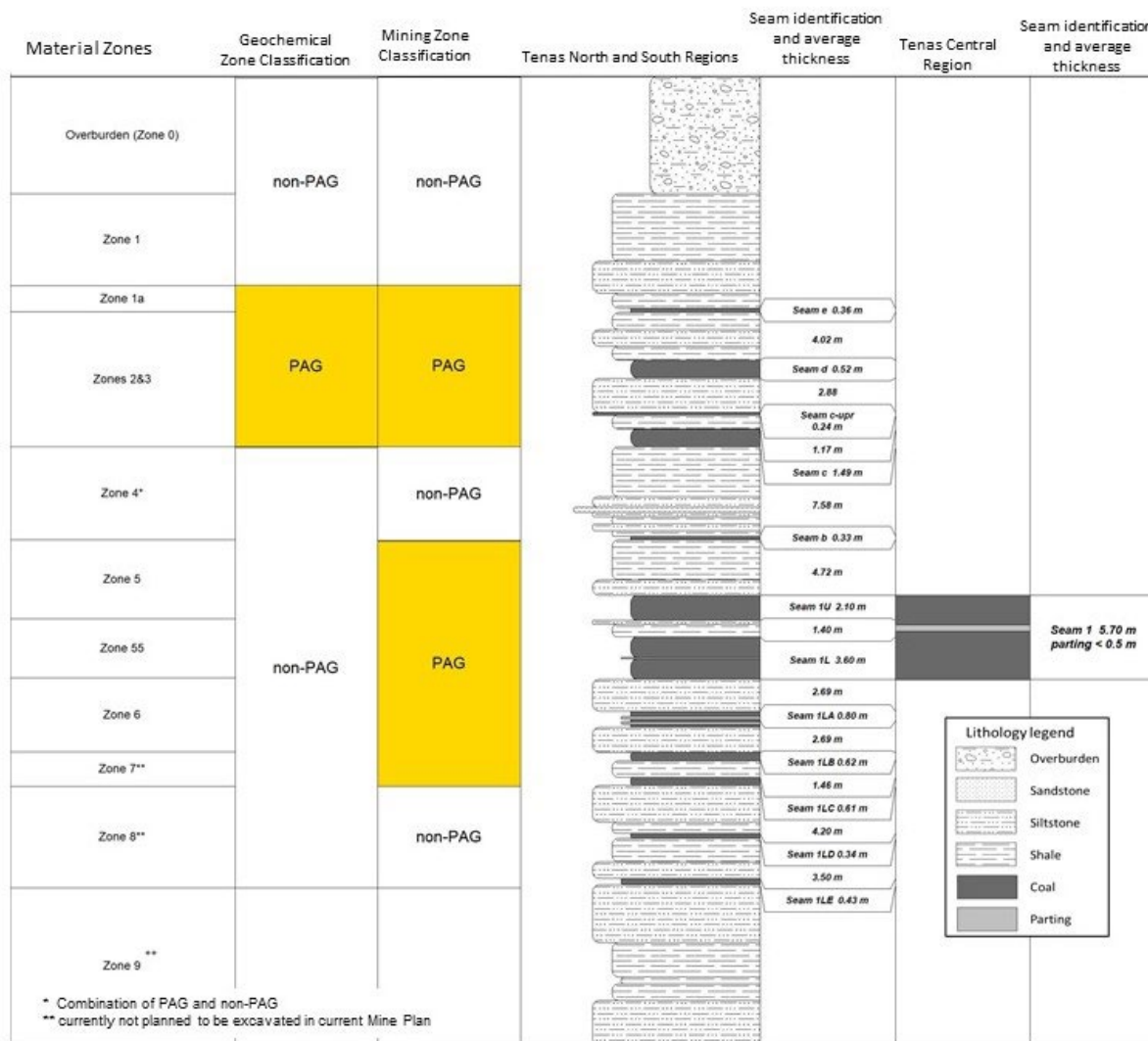


Figure 1.8-5: Stratigraphy of Unit 1 of the Bulkley Canyon Formation in the Tenas Project

Table 1.8-1: Unit 1 Seams of Economic Interest Thickness Data in Metres (m) for Tenas Project

Seam	Minimum	Maximum	Average
c	0.4	3.6	1.6
1L	1.7	6.2	3.6
1U	1.0	5.0	2.1
1	3.4	9.8	5.7
Seam 1 parting	0.3	4.3	1.4

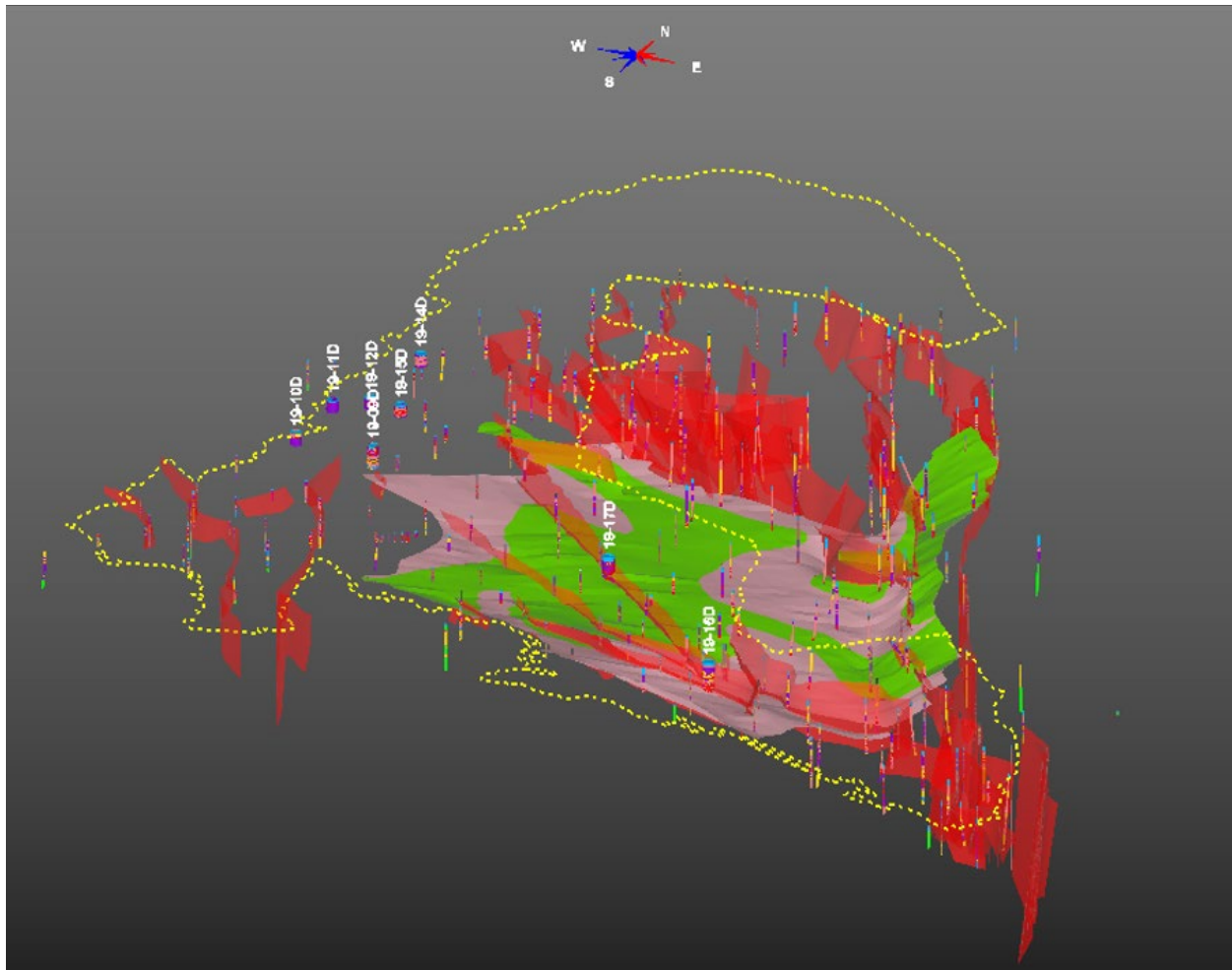
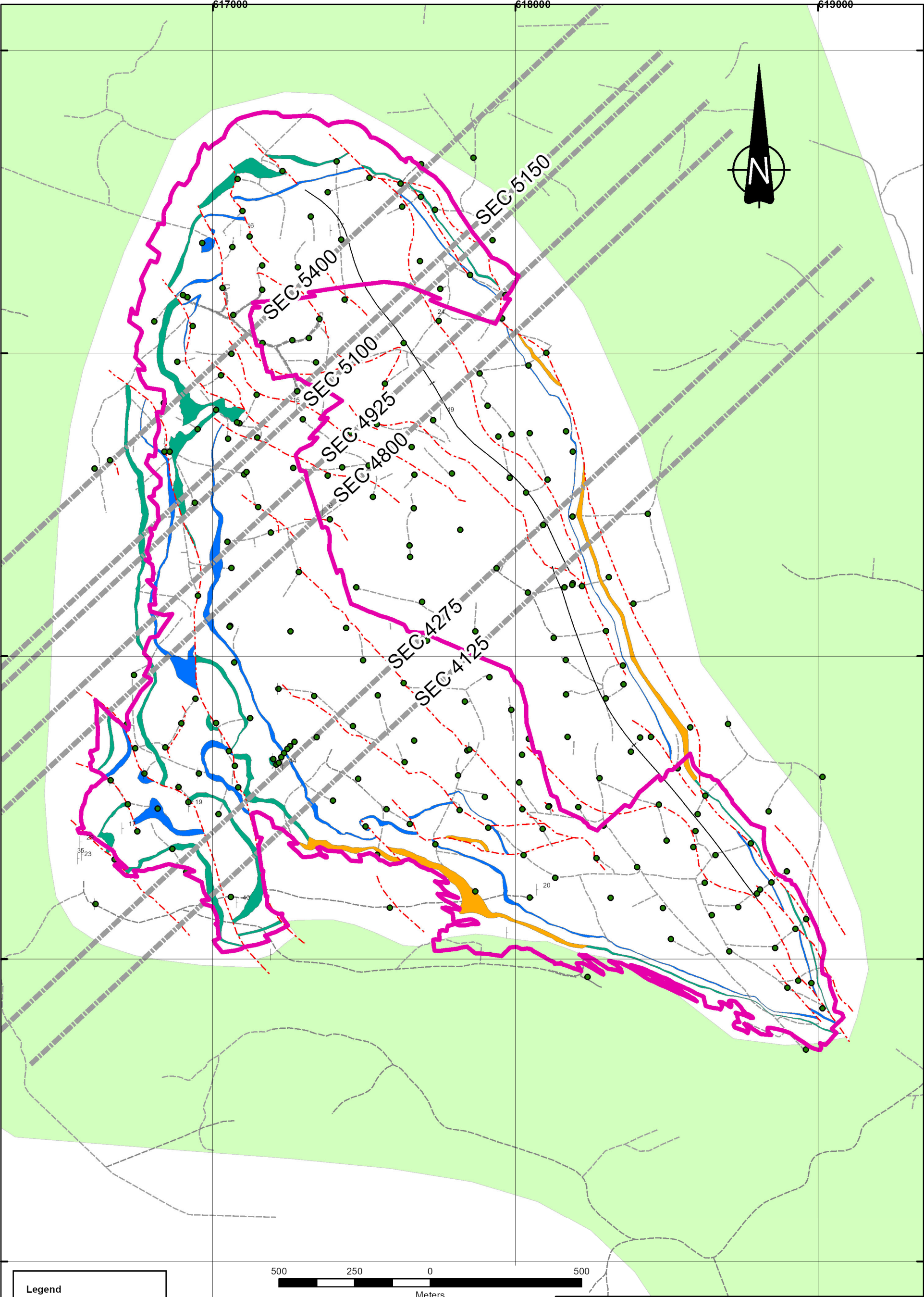


Figure 1.8-6: Seam 1 in green with Seam 1L in pink where it included parting of up to 0.20 metres (m) thick, while red lines are faults



Legend

- Existing drillholes
- bedding
- ▬ geological cross sections
- + syncline
- - - fault
- Seam c
- Sseam 1L
- Seam 1U
- Seam 1
- Telkwa Formation
- 20 m topo contours
- EA Open Pit Boundary

Telkwa Coal Limited

Figure 1.8-7

Tenas Project geology, drillholes, and reference for cross sections

Skeena Mining Division
Telkwa, BC

Date: February 16, 2022



Geographic Projection
UTM NAD83
Zone 9 North

Approved by: Ron Parent, P. Geo.

1.8.2.3.2 *Structural Geology*

Compressional forces directed from the southwest have shaped the Tenas Project's Resource Area such that the deposit lies today as an erosional remnant of Unit 1 stratigraphy within a shallow closed synform disrupted by more than 31 modelled faults based on intercepted stratigraphy (See **Figure 1.8-8** and **1.8-9**).

The syncline axis plunges moderately steep northwards at the south end where abundant faulting occurs, then gently (1 to 7 degrees for over $\frac{3}{4}$ of the deposit length where it flattens and then reverses plunge to 2 degrees south (**Figure 1.8-10**) where the entire structure subcrops beneath a thick glacial sediments 750 m south of Tenas Creek.

Bedding orientations normally range from 9 to 22 degrees, gradually increasing towards the southern limits of the resource area. Dips along the east limb are considerably steeper, ranging up to 45 degrees in a southwest direction

Figure 1.8-11 through **1.8-17** are cross sections illustrating the location of coal seams, topography, overburden, and drilling completed. Cross section lines are shown previously on **Figure 1.8-7**. **Appendix 1.0-C TCL, Tenas Project Geological Cross Sections** attached contains a full set of geological cross sections for the Tenas Project on a 100-m spacing.

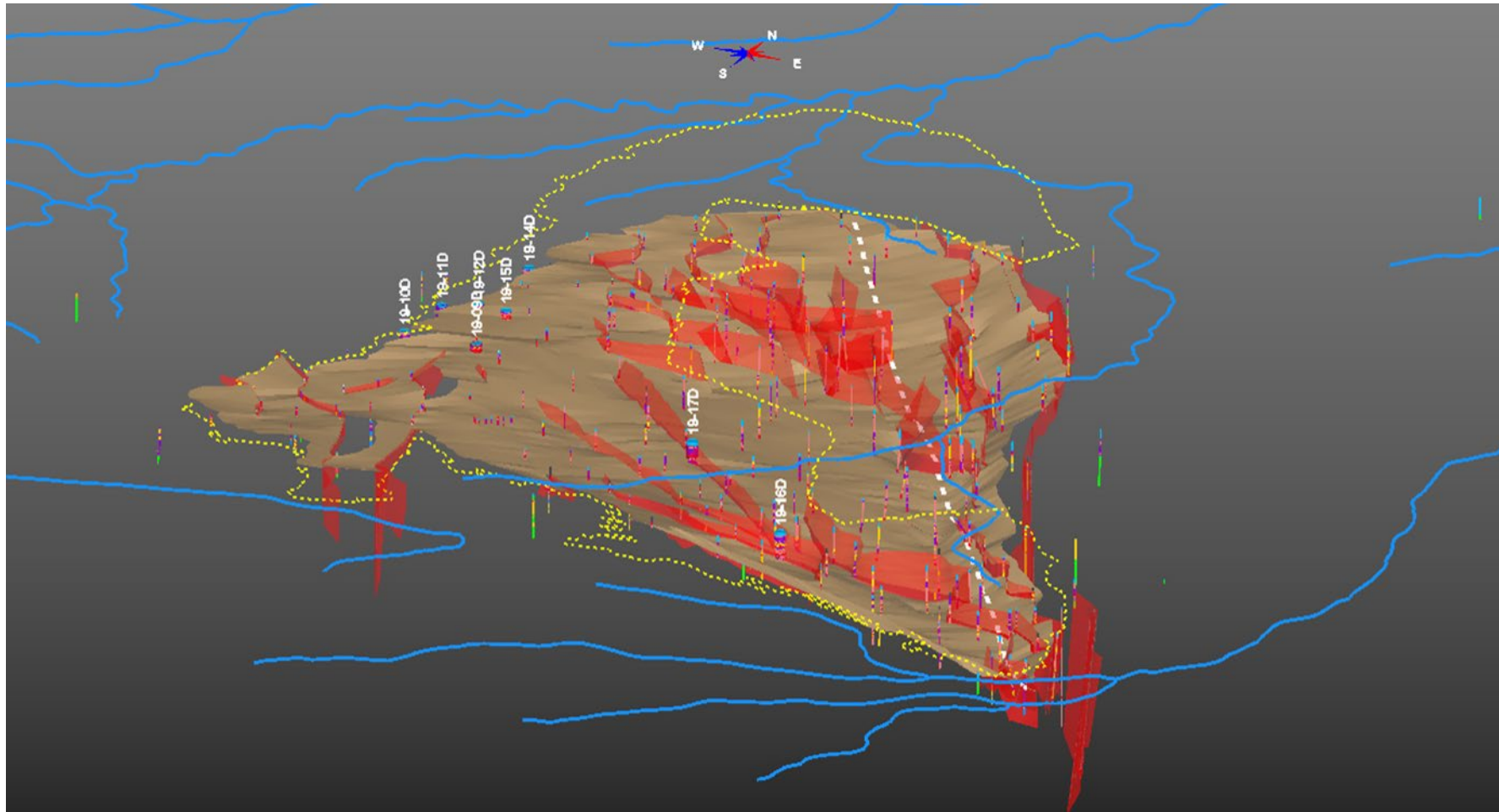


Figure 1.8-8: Isometric view of seam 1 bottom (light brown), faults (red) and 2019 drillhole locations including selected 2019 drillholes looking northwest

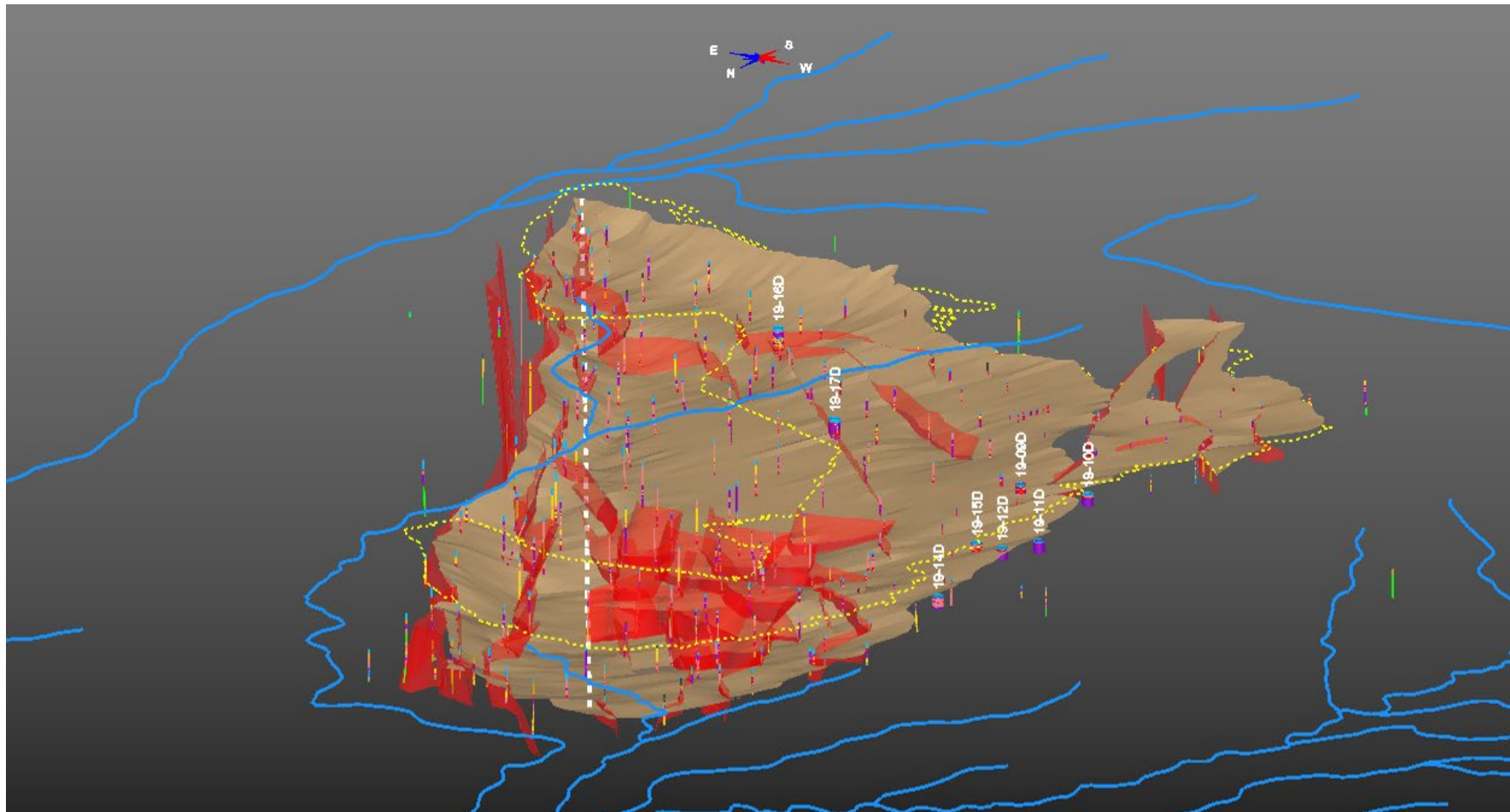


Figure 1.8-9: Isometric view of seam 1 bottom (light brown), faults (red) and 2019 drillhole locations including selected 2019 drillholes looking southeast

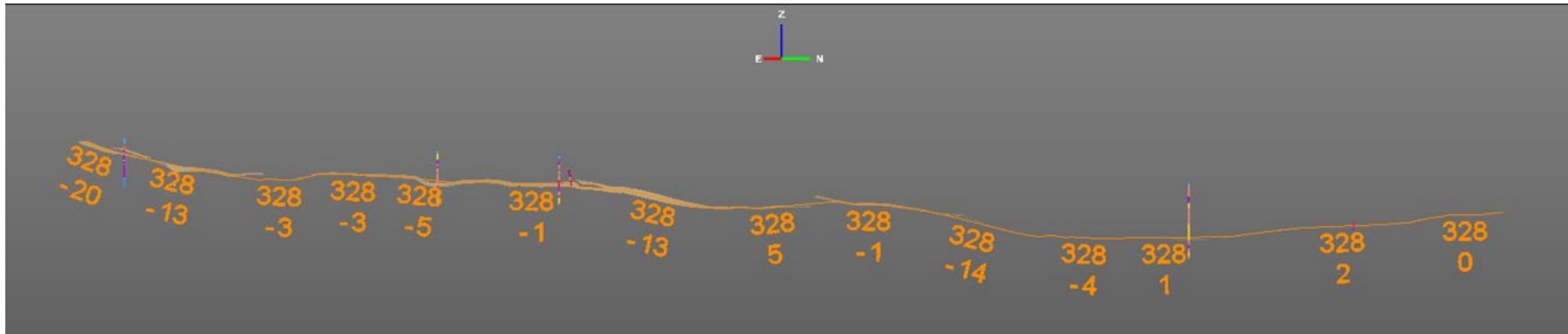
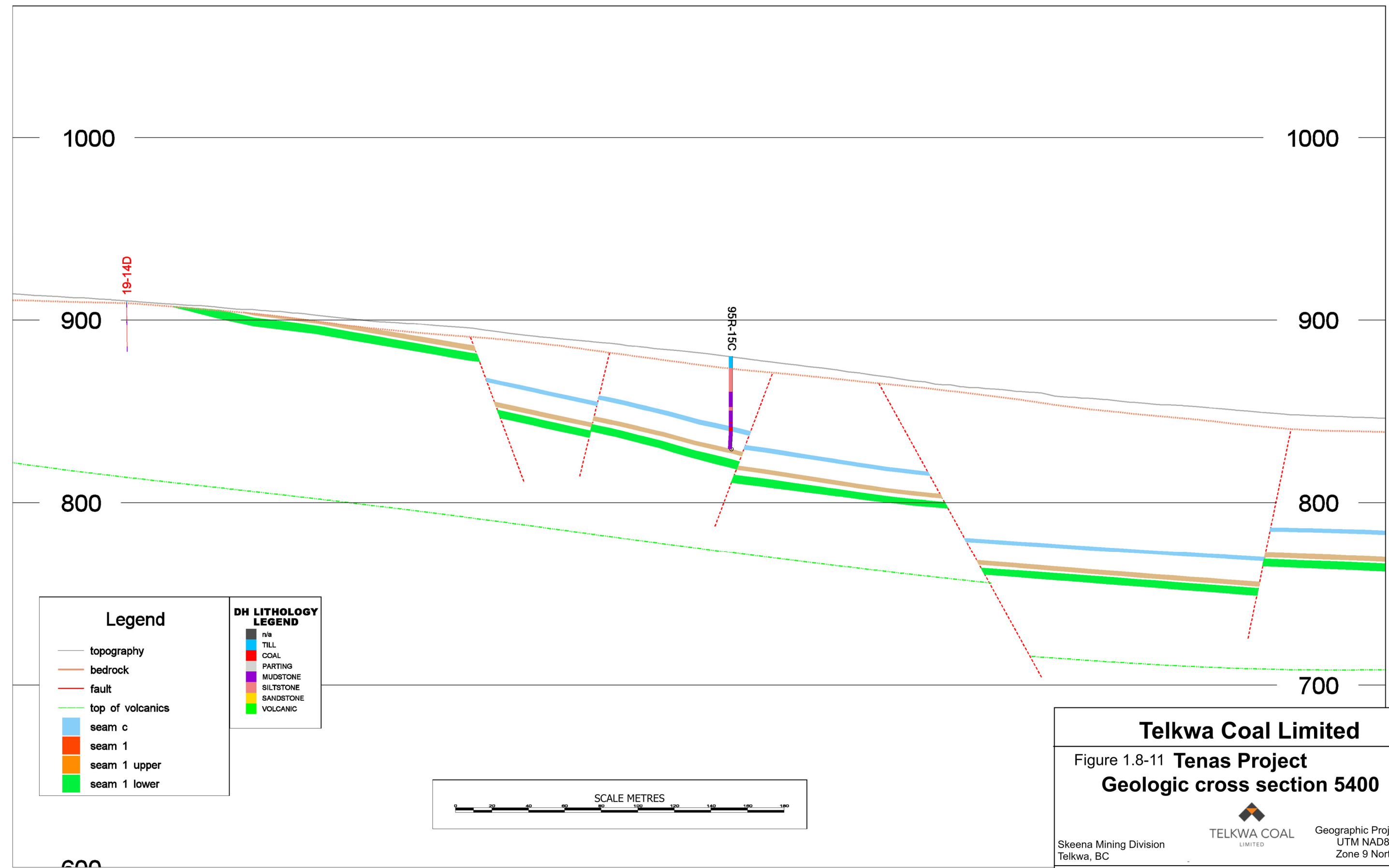


Figure 1.8-10: Longitudinal isometric view of syncline axis with orientation (azimuth and degrees)



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Figure 1.8-11 Tenas Project
Geologic cross section 5400

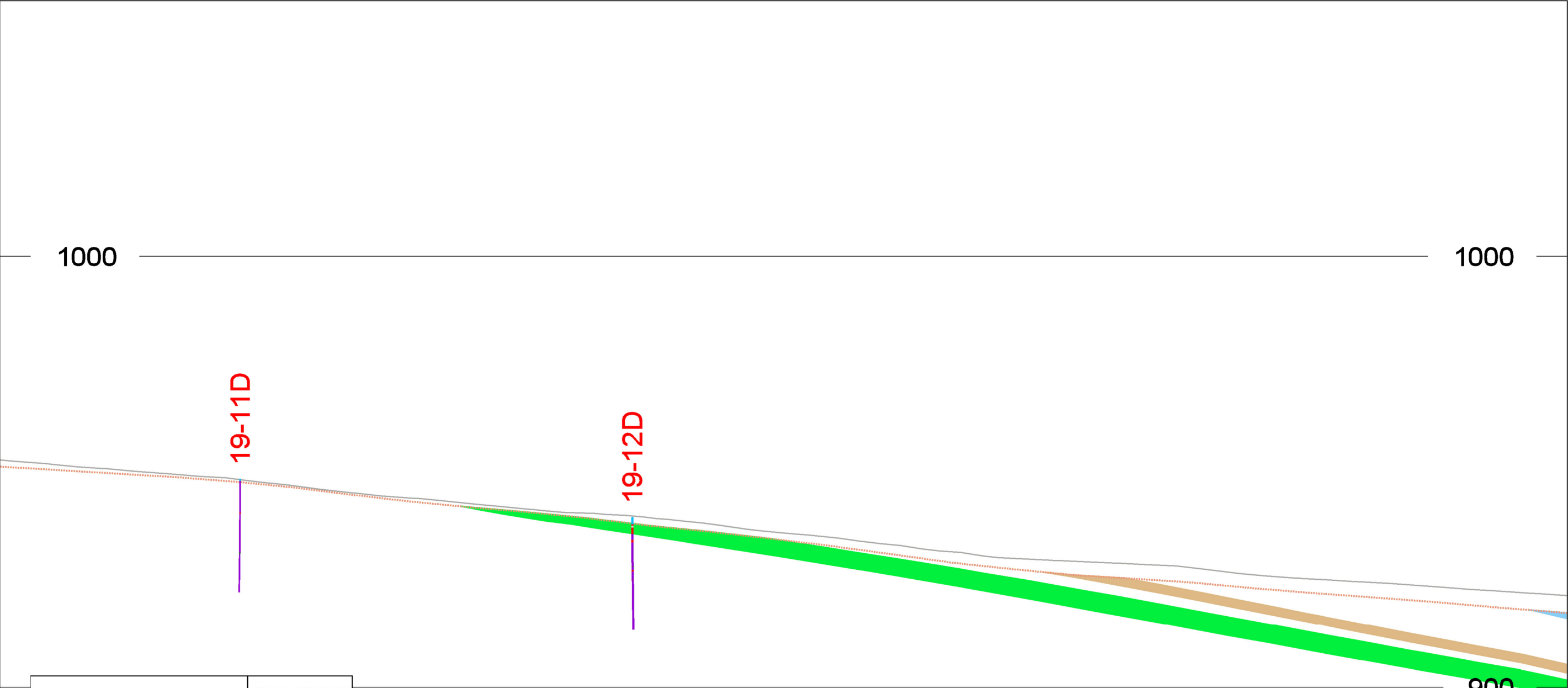
**TELKWA COAL LIMITED**

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

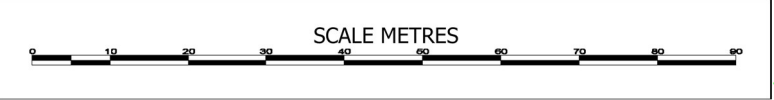


Legend

- topography
- - - bedrock
- fault
- . - . top of volcanics
- seam c
- seam 1
- seam 1 upper
- seam 1 lower

**DH LITHOLOGY
LEGEND**

- n/a
- TILL
- COAL
- PARTING
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC



Telkwa Coal Limited

Figure 1.8-12 **Tenas Project**
Geologic cross section 5150



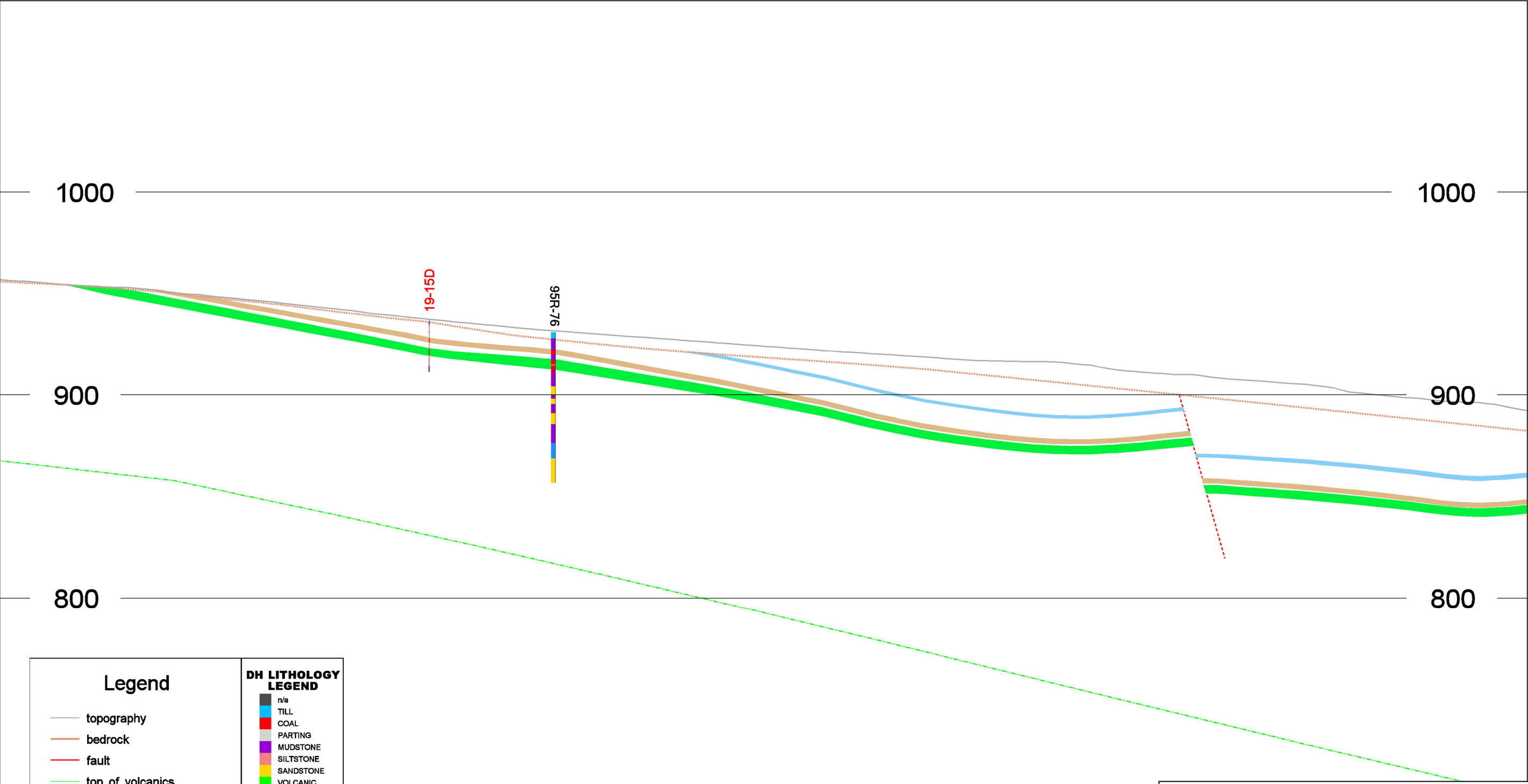
TELKWA COAL
LIMITED

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

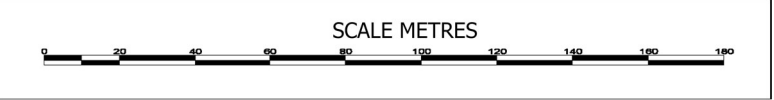


Legend

- topography
- bedrock
- fault
- top of volcanics
- seam c
- seam 1
- seam 1 upper
- seam 1 lower

DH LITHOLOGY LEGEND

- n/a
- TILL
- COAL
- PARTING
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC



Telkwa Coal Limited

Figure 1.8-13 **Tenas Project**

Geologic cross section 5100

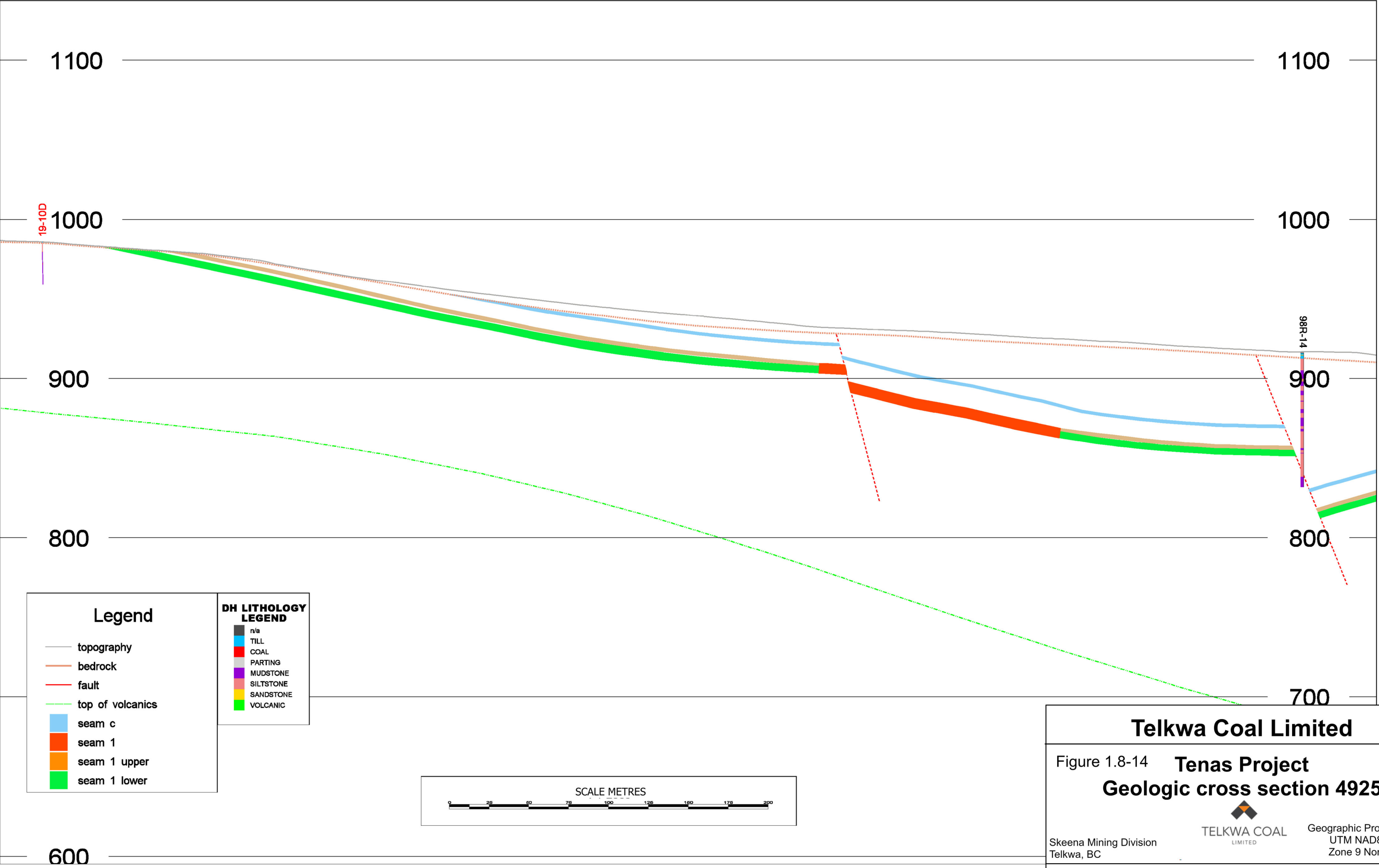

TELKWA COAL LIMITED

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.



Telkwa Coal Limited

Figure 1.8-14 **Tenas Project**

Geologic cross section 4925

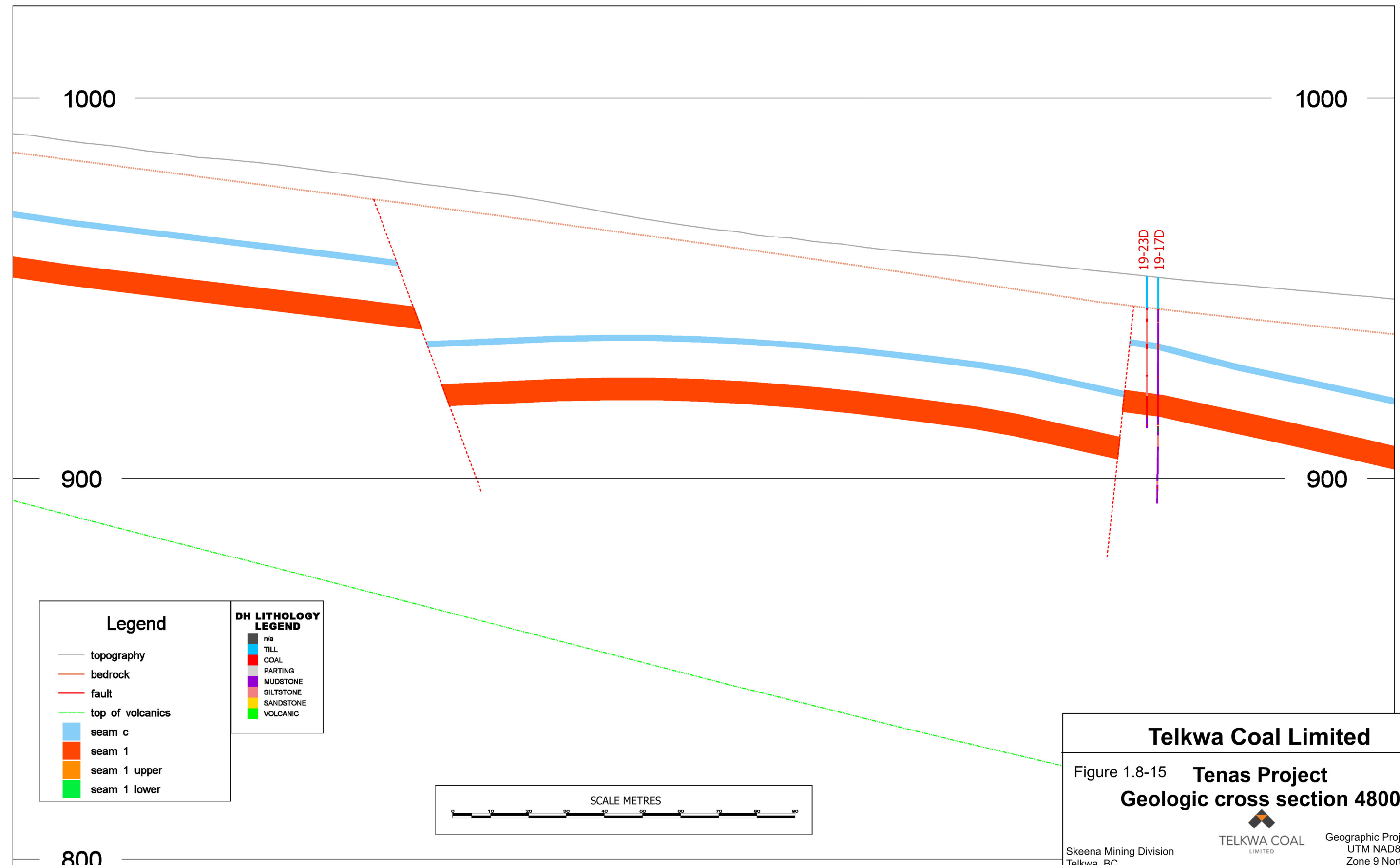


Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

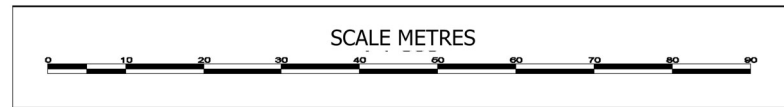


Legend

- topography
- bedrock
- fault
- top of volcanics
- seam c
- seam 1
- seam 1 upper
- seam 1 lower

DH LITHOLOGY LEGEND

- n/a
- TILL
- COAL
- PARTING
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC



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Figure 1.8-15 **Tenas Project**
Geologic cross section 4800



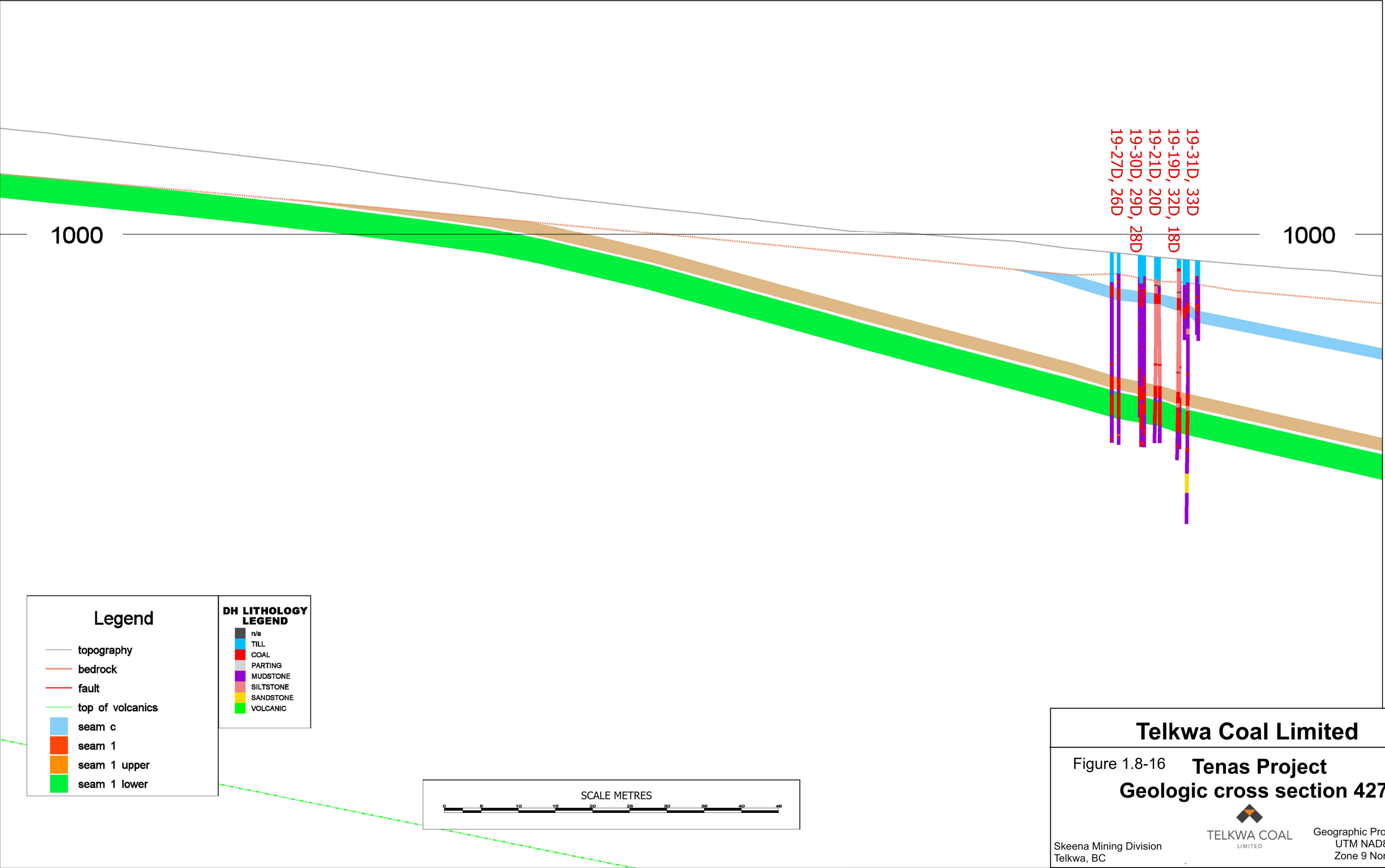
TELKWA COAL LIMITED

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

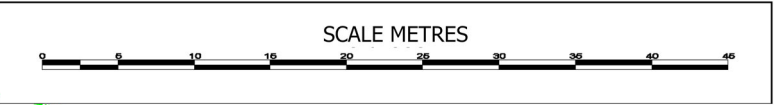


Legend

- topography
- bedrock
- fault
- top of volcanics
- seam c
- seam 1
- seam 1 upper
- seam 1 lower

DH LITHOLOGY LEGEND

- n/a
- TILL
- COAL
- PARTING
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC



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Figure 1.8-16 **Tenas Project**

Geologic cross section 4275

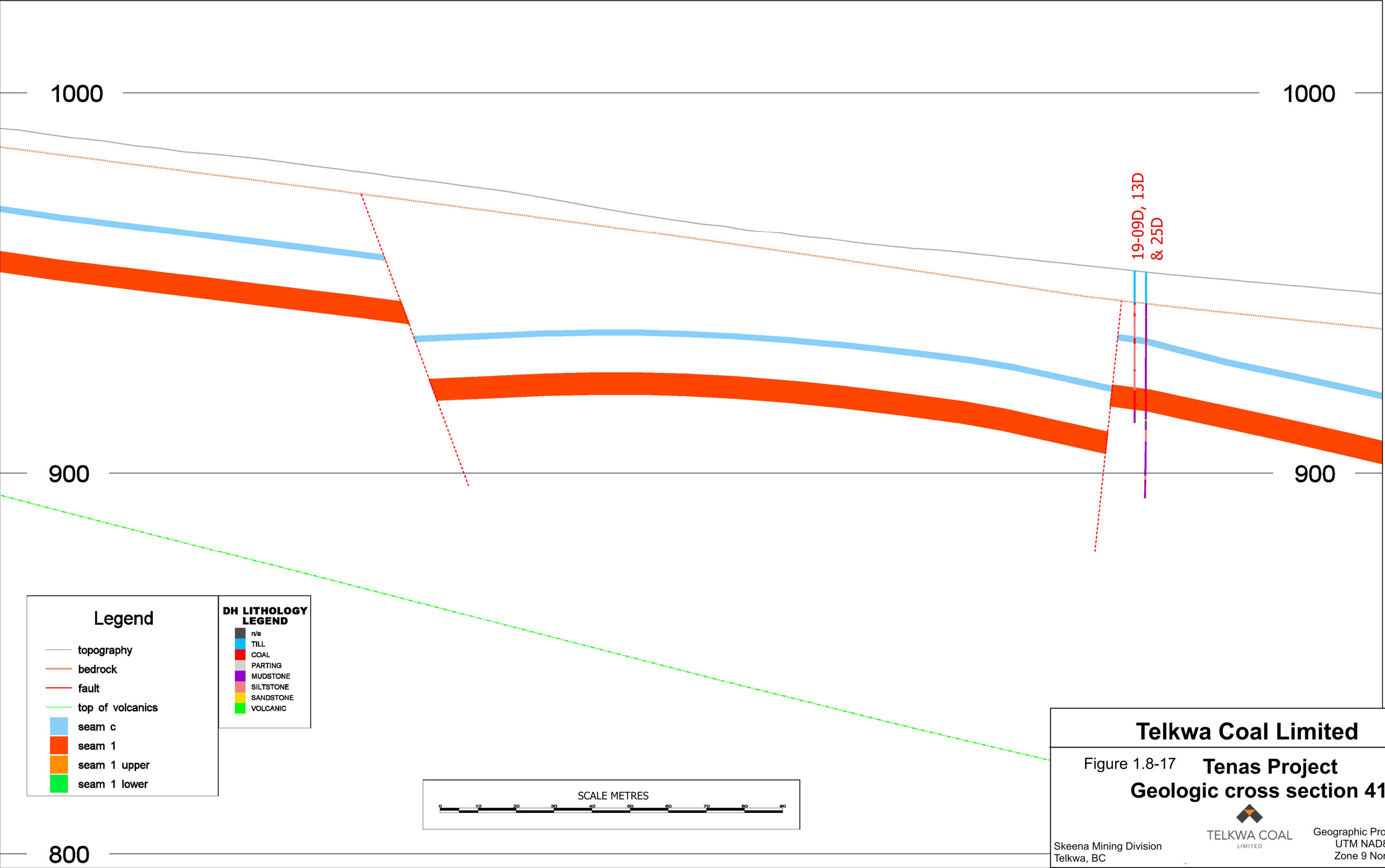


Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

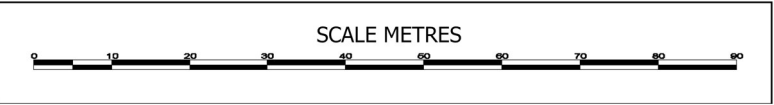


Legend

- topography
- bedrock
- - - fault
- ... top of volcanics
- seam c
- seam 1
- seam 1 upper
- seam 1 lower

DH LITHOLOGY LEGEND

- n/a
- TILL
- COAL
- PARTING
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC



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Figure 1.8-17 **Tenas Project**
Geologic cross section 4125

TELKWA COAL LIMITED

Skeena Mining Division
Telkwa, BC

Geographic Projection
UTM NAD83
Zone 9 North

Date: March 23, 2022

Approved by: Ron Parent, P. Geo.

1.8.2.3.3 Surficial Geology

The sonic drilling carried out during the 2019 exploration program provided additional information regarding the distribution of unconsolidated sediments overlying the bedrock.

Levson, et. al. (1997) describes the primary units found in the Project Area:

“Loose, massive to stratified, sandy diamictons of inferred debris-flow origin are commonly interbedded with gravels and sands that both underlie and overlie till. They often have loaded or gradational contacts with the interbedded sediments. These deposits indicate that debris-flow deposition occurred during both the advance and retreat phases of the last glaciation in both subaerial glaciofluvial and subaqueous glaciolacustrine environments.”

“The sand and gravel sequence are sharply overlain by a massive, matrix supported, dense, silty diamicton interpreted as till. The upper part of the diamicton is less dense, has a gravelly-sand matrix and locally is crudely bedded. This unit probably was deposited as a series of debris flows during deglaciation.”

A geological model was created by TCL to aid in the hydrogeological modelling done by SRK Consulting (Canada) Inc. (SRK) as part of the Definitive Feasibility Study (TCL 2019) (DFS). The modelling simplified the local quaternary stratigraphy into an upper and lower till, separated by lenses and channels of sand and gravel. **Figure 1.8-18** shows an isometric view of the model with reference to 2019 sonic drilling and the proposed open pit extents. Most of the sand and gravel deposits occur in valley bottoms along Tenas, Goathorn and Four creeks, which fits with the description of the local quaternary stratigraphy described by Levson et. al. (1997).

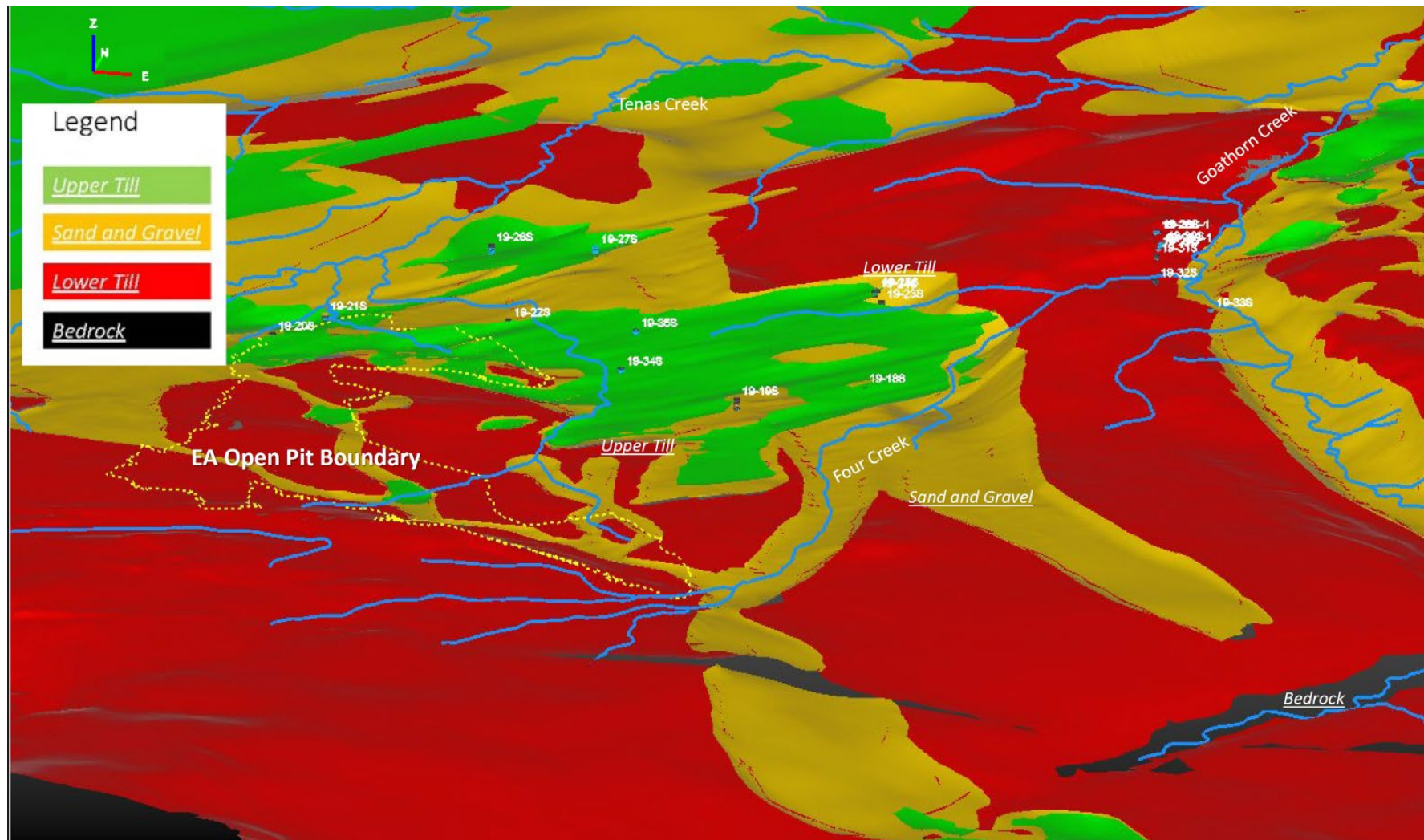


Figure 1.8-18: Isometric view of overburden units showing 2019 sonic drillholes

1.8.2.4 Insitu Coal Quality Tenas Project

In the Project Area, the main seams of economic interest are those of the Seam 1 coal sequence of Unit 1. The coal measures rank is considered medium to high volatile bituminous A as determined by petrographic analysis of four (4) samples in 1989, five (5) samples from the 2018 drill program and four (4) samples from the 2019 drill program. The maximum vitrinite reflectance ranged from 0.89 to 1.29, averaging 0.96. **Table 1.8-2** below summarizes the ranking of coal types versus maximum reflectance values.

Table 1.8-2: Maximum Vitrinite Reflectance as a Function of Coal Rank

Rank	Maximum Vitrinite Reflectance (% Ro max)
Sub-bituminous	<=0.47
High volatile bituminous C	0.47 – 0.57
High volatile bituminous B	0.57 – 0.71
High volatile bituminous A	0.71 – 1.10
Medium volatile bituminous	1.10 – 1.50
Low volatile bituminous	1.50 – 2.05
Semi-anthracite	2.05 – 3.00
Anthracite	>=3.00

Source: Thomas 2013

Notes: ==equal; >=greater than; <=less than; %=percent; Ro max=maximum vitrinite reflectance

The Project coal is suitable for use as a semi-soft coking coal (SSCC) and/or a pulverized coal injection (PCI) coal, both of which are used in steelmaking.

Within the coal measures of the Skeena Group sediments, coal rank generally tends to decrease slightly for coal units situated higher in the stratigraphic column. Localized occurrences of medium-volatile and semi-anthracite coals may have resulted from either post-Cretaceous heat sources, deeper burial, and subsequent uplift of some coal-bearing units, or from localized higher heat flux from the pre-Cretaceous basement.

Increases in coal rank have been observed in coals situated at proximity to the Tertiary intrusive on the northern resource areas (Ledda 1998). The evaluation of coal quality for each of the resource areas of the Telkwa Property's coalfield is based upon the analytical results of core obtained from diamond and rotary drillholes since 1979, and three bulk sample analytical programs (1983, 1989, and 1996). This database has established reliable determinations of the insitu and processed coal quality characteristics of the Telkwa Coalfield (Ledda 1998).

While most Project coals are relatively consistent with respect to insitu Calorific Value (CV), volatile matter (VM) and fixed carbon (FC) values, variations in insitu ash and sulfur values occur between seams. Sulfur content variations between some seams is attributed to periodic infiltration of marine water into the developing peat swamp, while inundations are thought to have terminated development of some of the coal seams (Ledda 1998).

The Project has had several core drilling and bulk sample programs completed between 1992 and 2019 by Manalta Coal Ltd. and more recently by TCL. In total, 94 holes recovered core from 5,612 m of drilling: including 2,542.8 m of 4-inch (") (100 millimetre [mm]) hole diameter core samples, 634 m of wire line bit

size for a hole diameter of 48-millimetre (NQ 48 mm), core samples 1,506 m of wire line bit size for a hole diameter of 85 mm (PQ 85 mm) core samples and 822.6 meters of 6" (150 mm) hole diameter core samples from the Project. See **Figure 1.8-19**.

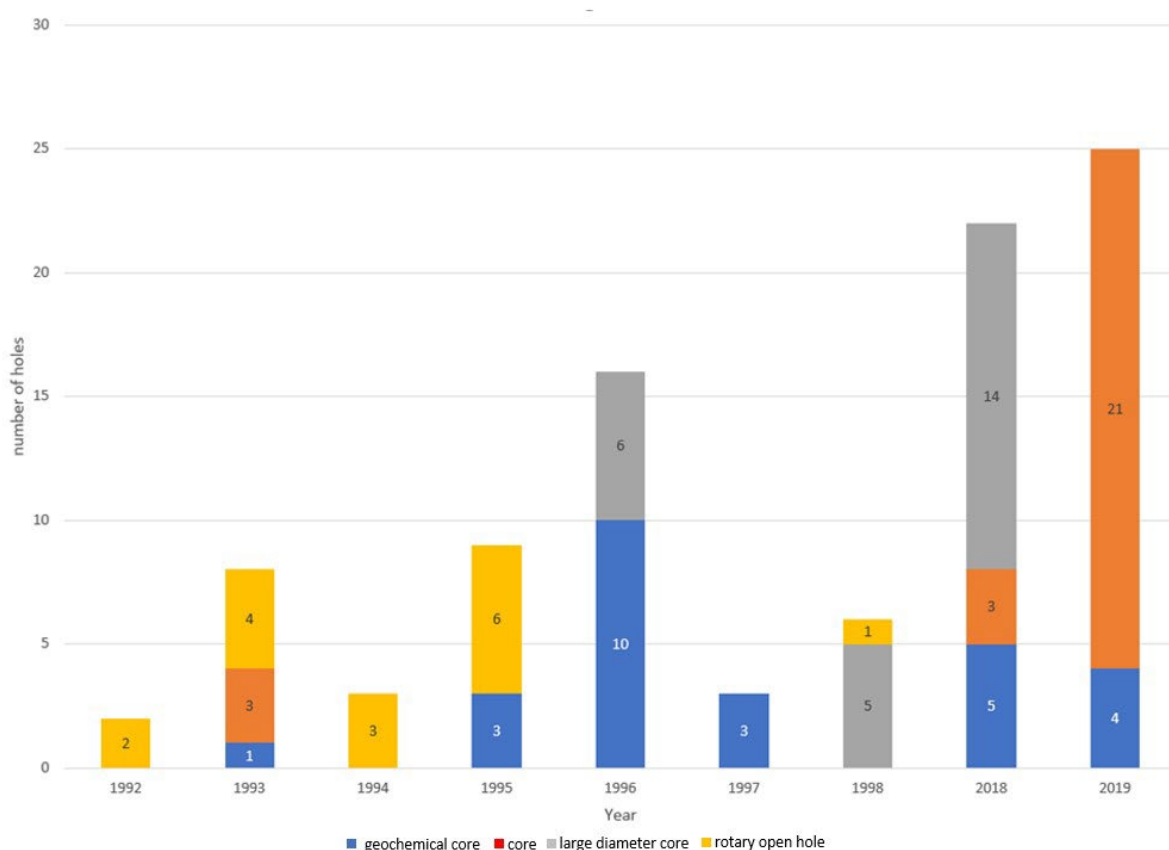


Figure 1.8-19: Coal quality drilling for the Tenas Project

Additionally, an 80-tonne bulk sample was extracted in 1996 for the Project. From the bulk sample and core holes, coal was recovered to undertake coal washability and quality tests and petrographic analysis.

In February 2018, TCL undertook its own 34-hole drill program in the Project Area primarily for environmental and geotechnical analysis, from which TCL also recovered 1,400 kilograms (kg) of coal to undertake coal washability and quality analysis including coke oven tests. In 2019, TCL drilled an additional 47 holes, recovering 550 kg of coal for additional washability and quality analysis including further coke oven tests.

These exploration programs intercepted up to 13 coal seams, from which four (4) were deemed economically recoverable in the DFS and identified from the top down; Seam c; Seam 1U; Seam 1L; and Seam 1.

The completed exploration programs provided over 20 working sections for insitu coal quality analysis in the DFS. Working sections were pre-treated using Australian standard coal testing procedures at the time for dry attrition, wet tumble attrition, coal sizing, followed by float and sink analysis.

Section dilution was based on using an ash of 80.0% for the dilution material, and a density of 2.50 tonnes per cubic metre (t/m³) with dilution sizing being the same as the coal sizing determined from laboratory studies.

Based on the quality information gathered from exploration, the following quality items were then calculated for each block on an air-dried basis (adb) within the geological block model: Moisture, Ash, volatile matter (VM), fixed carbon (FC), calorific value (CV), Total Sulphur (TS), Sulfur forms, and Free Swelling Index (FSI).

At the Project, four (4) coal seams are included in the resource estimate. The seam name and numerical code used in the block model is summarized in **Table 1.8-3** below.

Table 1.8-3: Geological Model Seam Codes

Coal Seam	Numerical Seam Code
c	110
1	109
1 U	108
1 L	107

Average insitu coal quality seam statistics for the entire Project Resource Area from the drillhole composites are presented in **Table 1.8-4** below, while **Figures 1.8-20** through **1.8-22** illustrate the spatial variation of selected insitu coal quality parameters by seam.

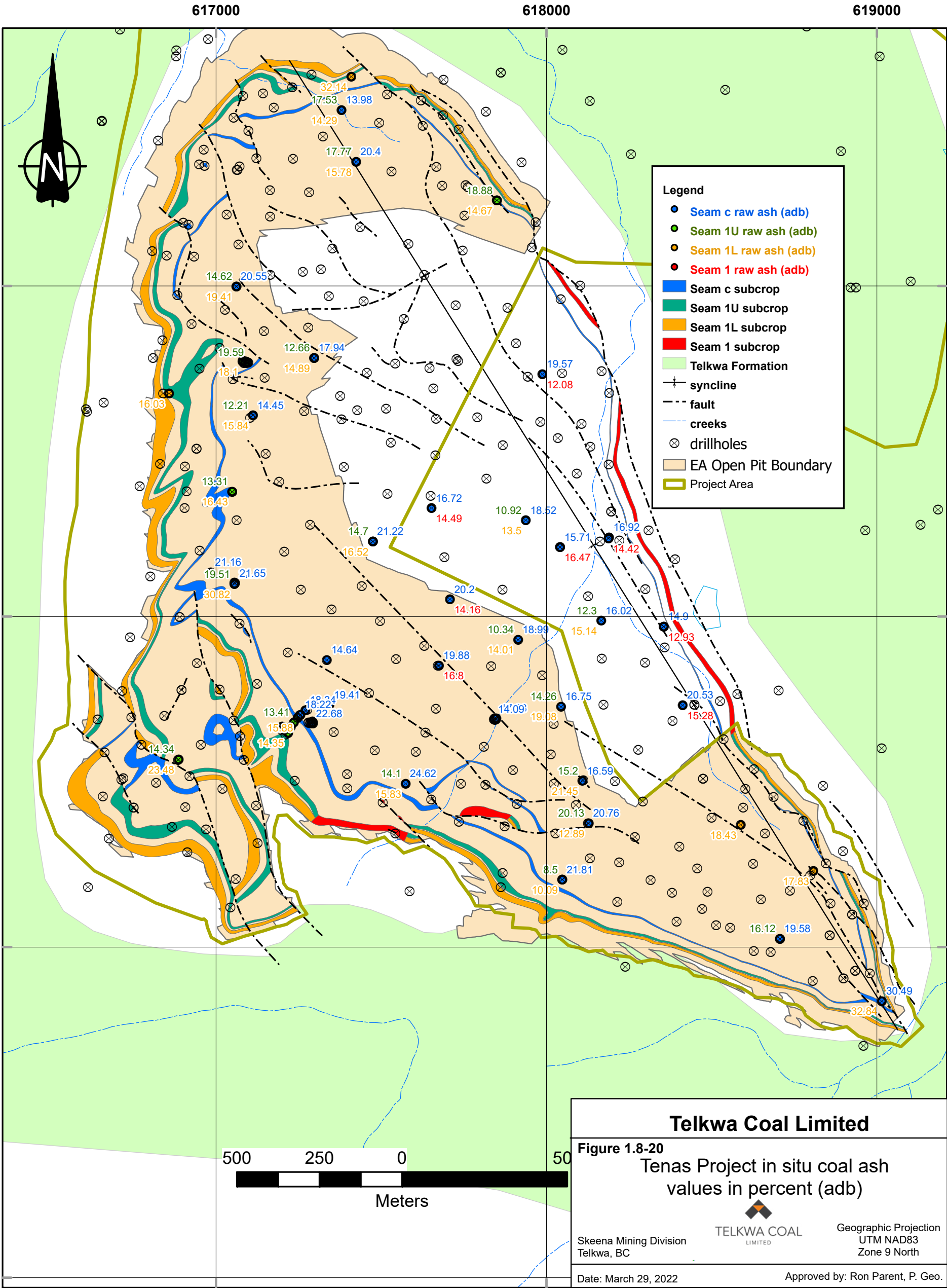
For the Project resource geological model, insitu seam ash (adb) ranges from a high of 18.9% for Seam c to a low of 14.6% for Seam 1U.

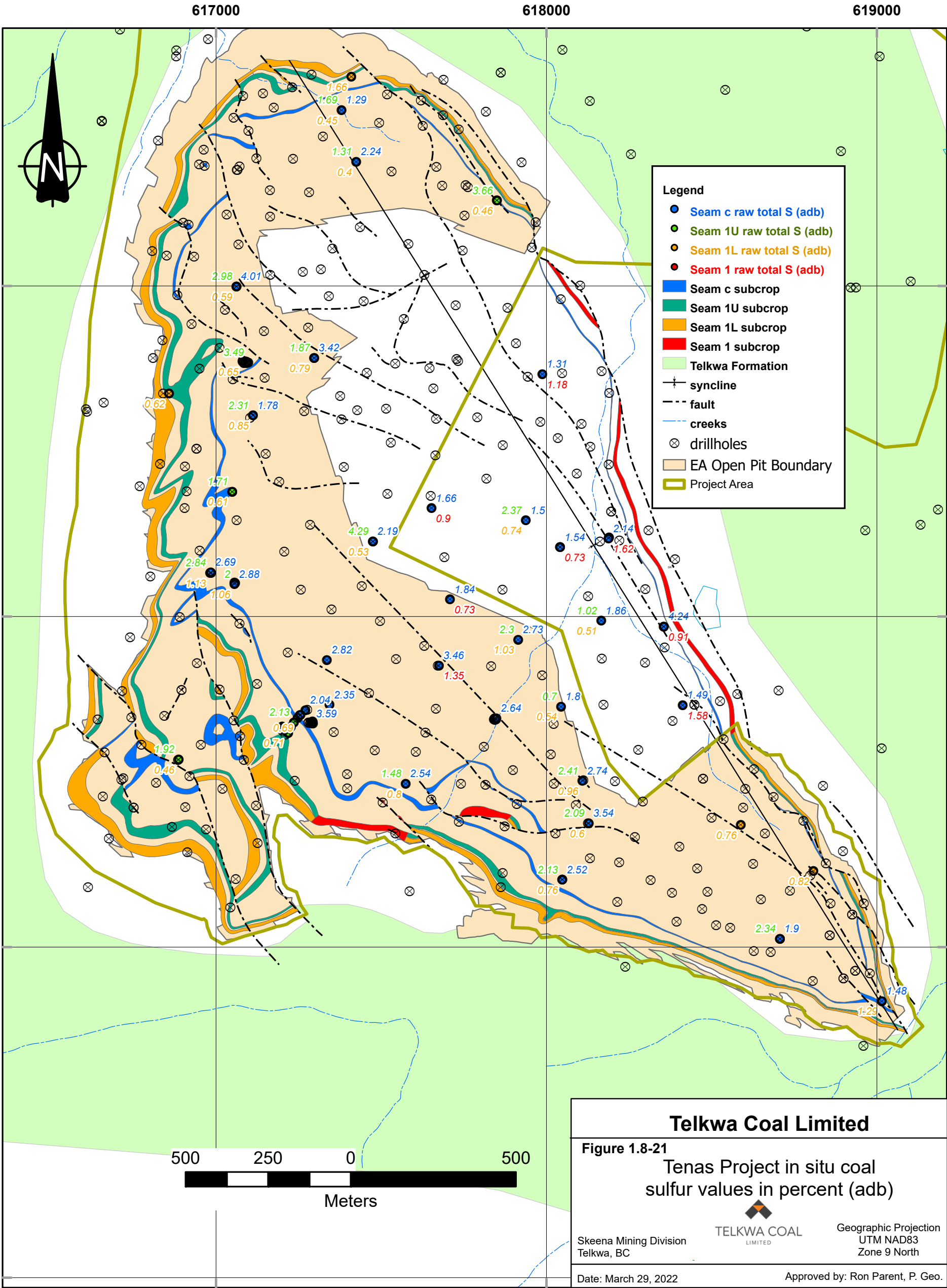
TS (adb) averages range from a low of 0.72% for Seam 1L to a high of 2.33% for Seam c. VM content is the highest for Seam 1U at 24.4% and the lowest for Seam 1L at 23.0%. **Table 1.8-4** below summarizes the insitu coal quality for the overall Tenas Deposit.

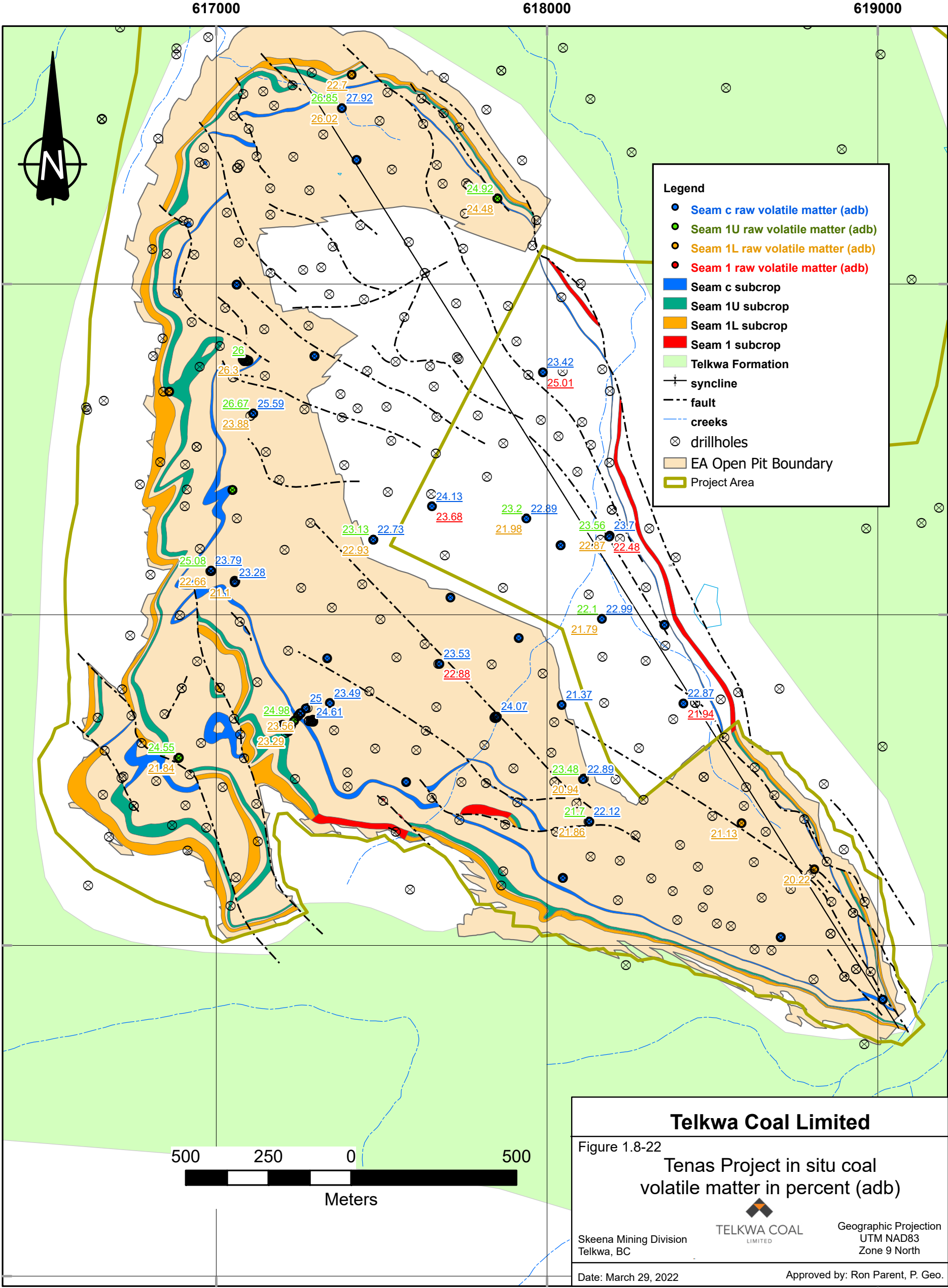
Table 1.8-4: Selected Insitu Coal Quality Parameters from Composites and Geological Block Model Results (air dried basis [adb])

Coal Seam	Ash (adb)	Volatile Matter (adb)	Fixed Carbon (adb)	Moisture (adb)	Calorific Value (adb) (MJ/kg)	Total Sulfur (adb)	Organic Sulfur (adb)	Pyritic Sulfur (adb)	Sulfate Sulfur (adb)
c	18.94	24.00	56.21	0.85	27.80	2.33	0.88	1.38	0.06
1	14.81	23.15	60.99	1.06	28.85	1.12	0.65	0.47	0.01
1 U	14.63	24.39	60.09	0.89	28.83	2.23	1.14	1.07	0.05
1 L	17.76	23.05	58.23	0.95	28.05	0.72	0.48	0.24	0.01

Notes: adb=air dried basis; MJ/kg=megajoules per kilogram; S=sulfur







1.8.3 Project Resources

The following subsection focuses on the key inputs required to understand and calculate resources for the Project coal seams, including:

- ▶ guidelines;
- ▶ resource classification;
- ▶ seam thickness and parting;
- ▶ coal density;
- ▶ insitu moisture; and
- ▶ open pit shell.

1.8.3.1 Resource Guidelines

Coal resource reporting for projects of Canadian-listed proponents is regulated under National Instrument (NI) 43-101 and Australian listed proponents are regulated under the Joint Ore Reserves Committee (JORC).

Both standards recognize the Canadian Institute of Mining and Metallurgy (CIM) Definition Standards for mineral resource estimates and the CIM Definition Standards refer to Geological Survey of Canada (GSC) Paper 88-21 as the guidelines to be adhered to for coal resource reporting. In general, the main criteria for resource evaluation includes the following:

- ▶ geological complexity as it relates to seam continuity: complexities can be related to structure and/or stratigraphy;
- ▶ seam thickness and internal rock partings: minimum included seam thicknesses and minimum separable rock parting for resources depends on the planned mining method (surface or underground) and geological complexity;
- ▶ deposit must be considered potentially of economic interest: coal is in quantities and of acceptable quality that a marketable product will be produced; and
- ▶ GSC Paper 88-21 recommendations: Although GSC Paper 88-21 has recommended a cross-sectional method for classification of resources for complex deposit types, a suitable distance from data points (drillholes) is often used due to the difficulty in applying the cross-sectional parameters in a consistent manner.

1.8.3.2 Resource Classification

To calculate the resources for the Project, TCL had to classify the complexity of the deposit. Given the number of faults within the Project, TCL has classified the deposit as Complex. Using GSC Paper 88-21, TCL applied the parameters listed in **Table 1.8-5** to classify the coal present at the Project.

Table 1.8-5: Tenas Project Resource Classification Criteria

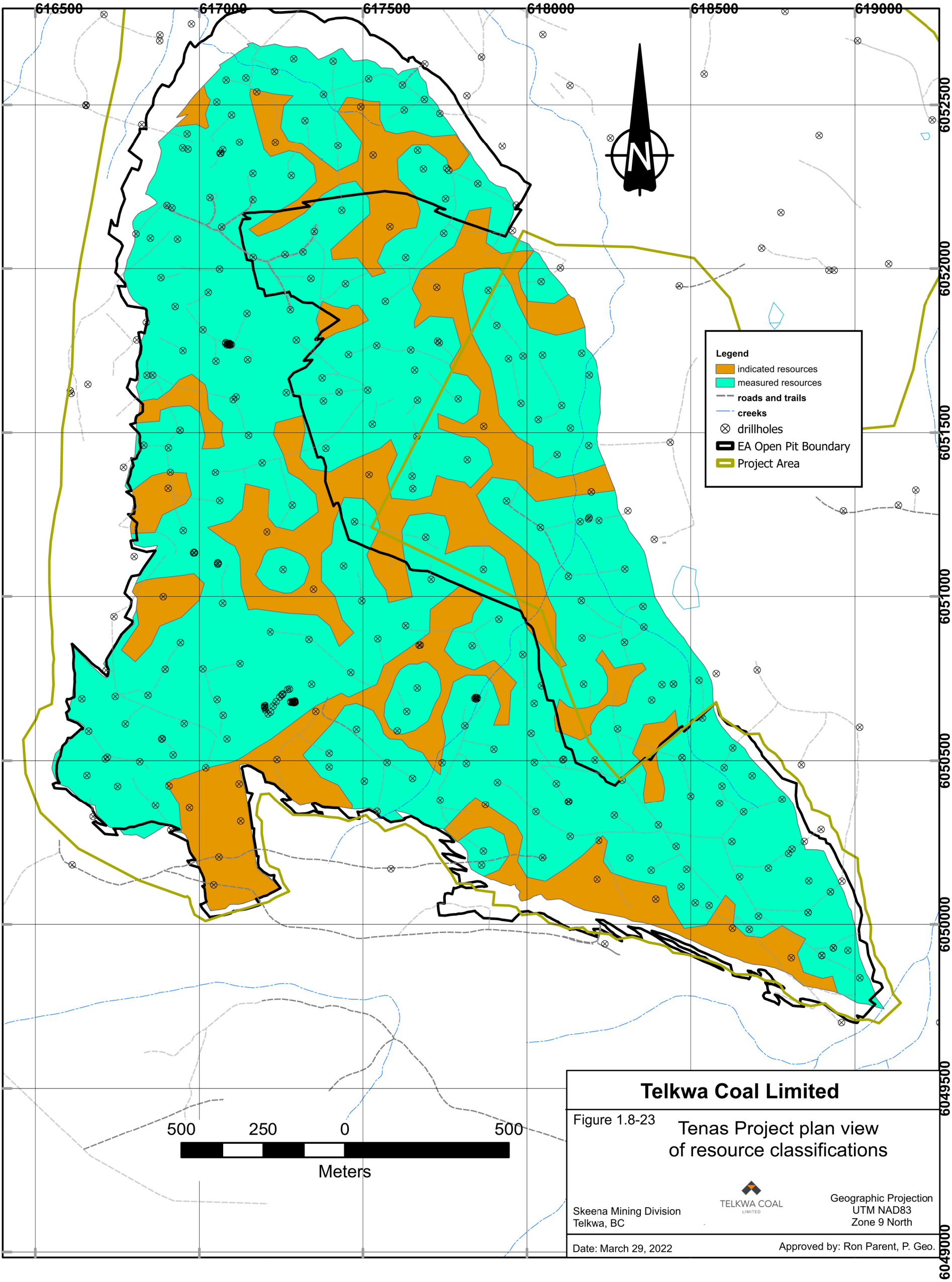
Spacing Between	Structural	Quality
Data points (m)	data point	data point
Measured	≤75 m	≤150 m
Indicated	<150 m	<300 m
Inferred	<300 m	<600 m
Unclassified	≥300 m	≥600 m

Notes: ==equal; ≥greater than or equal to; <=less than; ≤=less than or equal to; m=metre

The average drillhole spacing for Project is 65 m while the average core hole spacing (with quality data) is 117 m.

The surface Resources (those resources considered to have a prospect to be mined by open pit methods) are restricted to within a 20.0 bank cubic metre (BCM) to 1.0 tonne of insitu coal incremental cut-off strip ratio (COSR) from the existing topographic surface, which is considered reasonable for type of coal for this deposit.

Figure 1.8-23 below provides the Measured, Indicated, and Inferred regions for the Project.



1.8.3.3 Mineable Coal Seam Recovery and Separable Parting Thickness

The minimum recommended recoverable coal seam thickness for a deposit classified as Complex is 0.60 m, while the minimum separable rock parting is 0.30 m given the shallow dip of the coal within this deposit. However, given the continuity of the parting in this deposit, and the shallow dip of the coal, a minimum separable rock parting of 0.20 m has been used for the purposes of the resource estimate.

1.8.3.4 Insitu Coal Density Derivation

Coal bulk density (BD) for modelling and resource estimates is calculated from the ash dry basis (adb) contents interpolated into the block model from the drill hole results. This is because the measured specific gravity (SG) data from assays is not an accurate measure of in-place density as it fails to compensate for pore spaces in the coal.

Conversion of coal volumes to weight requires knowledge of the BD of the coal. BD is a function of the inherent SG of the coal (including empty pores), including non-coal material (ash), and the fluid filled porosity within the coal (Hughes et al. 1989).

Coal density and fluid filled pore volumes are also related to coal rank, and measurements of BD in coals of various ranks have been used to determine relationships between BD and insitu ash content.

As measurements of BD are relatively sparse or non-existent for many coal deposits, it is sometimes necessary to assume a constant value for BD, determined from knowledge of the coal rank and average ash content. The GSC (Hughes et al. 1989) provides a relationship for high volatile bituminous coal between ash content and BD which is:

$$BD \text{ (adb)} = 1.2713 + 0.0092 \times \text{ash (db)}.$$

This relationship was used for the Project to determine BD values from the calculated ash contents in the block model. **Table 1.8-6** below summarizes the BD values for the mineable coal seams within the Project.

Table 1.8-6: Insitu Ash and Calculated Bulk Density Values for Mineable Tenas Project Coal Seams

Seam	c	1U	1L	1
Insitu ash% (adb)	18.94	14.63	17.76	14.81
Moisture (adb)	0.85	0.89	0.95	1.06
Bulk density (adb) t/m ³	1.45	1.41	1.43	1.41

Notes: %=percent; adb=air dried basis; t/m³=tonne per cubic metre

1.8.3.5 Insitu Coal Moisture

Metallurgical coals along the foothills belt in western Canada typically have total moisture contents in the 1.2 to the 4.1% range based on an assessment of the equilibrium moisture. For the purposes of resource reporting the adb moisture values measured by laboratory programs was used for the resource calculations which are summarized by **Table 1.8-7**.

Table 1.8-7: Air Dried Moisture Values of Various Coal Seams

Seam	Air Dried Moisture (%)
c	0.85
1	1.06
1U	0.89
1L	0.95

Note: %=percent

1.8.3.6 Resource Open Pit Shell

Resource calculations were based on using an overall pit shell ratio of 20 BCM of non-coal material to 1 tonne of insitu coal (20:1). The open pit shell was based on guidelines set out by the requirements of the NI 43-101. In the case of the Project the entire identified resource falls within this overall ratio. As such the Project only has surface resources.

1.8.3.7 Summary of Resource Tonnages

With the relationship for determining bulk density from insitu coal ash values, and insitu coal moisture values determined from drillhole data, resource tonnages with the two (2) classifications of Measured and Indicated were then determined within the 20:1 resource open pit shell.

A total of 36.6 million metric tonnes (Mt) of coal resources exists in four (4) seams in the Project. Most of the coal in the Project is of sufficient drill density and shallow depth to be classified as a Measured Resource, with the balance being classified as an Indicated Resource. None of the resources for the Project are in the Inferred category.

The Project's resources have been broken down by seam and classification and are summarized by **Table 1.8-8**.

Table 1.8-8: Summary of the Project's Resources (air dried basis) - December 31, 2021; 43-101 and JORC compliant

Seam	Measured (Mt)	Indicated (Mt)	Inferred (Mt)	Total (Mt)
c	1.5	4.8	0.0	6.3
1 (1)	1.8	5.7	0.0	7.5
1 lower (1L)	3.4	11.0	0.0	14.4
1 upper (1U)	2.0	6.3	0.0	8.3
Total	8.7	27.9	0.0	36.6

Note: Mt=million tonnes

1.9 Existing Infrastructure and Project Phases

1.9.1 Existing Infrastructure and Site Development

One of the major advantages for development of the Project is that it is close to existing infrastructure as listed below:

- ▶ A 25 kV BC Hydro grid within 3 km of the Project CPP can provide access to renewable electricity;
- ▶ 138 kV BC Hydro grid intersects with the TAC can provide access to renewable electricity;
- ▶ Two (2) communities are located within 25 km of the Project to provide accommodations, services, and a potential source of labour;
- ▶ Extensive development of FSRs and private roads provide easy access to the Project once the proposed permanent bridge is re-installed over Goathorn Creek;
- ▶ Project is 15 km from an existing Class I railroad, which is owned and operated by CNR;
- ▶ There is favorable (shallow) topography both where the Project's open pit, management ponds, and Rail Infrastructure are located;
- ▶ Existing environmental baseline data that has primarily collected over the past 30 years by various owners and since 2018 by TCL; and
- ▶ Existing geological that has been acquired over the past 50 years by various owners who have worked on this Project and since 2018, by TCL.

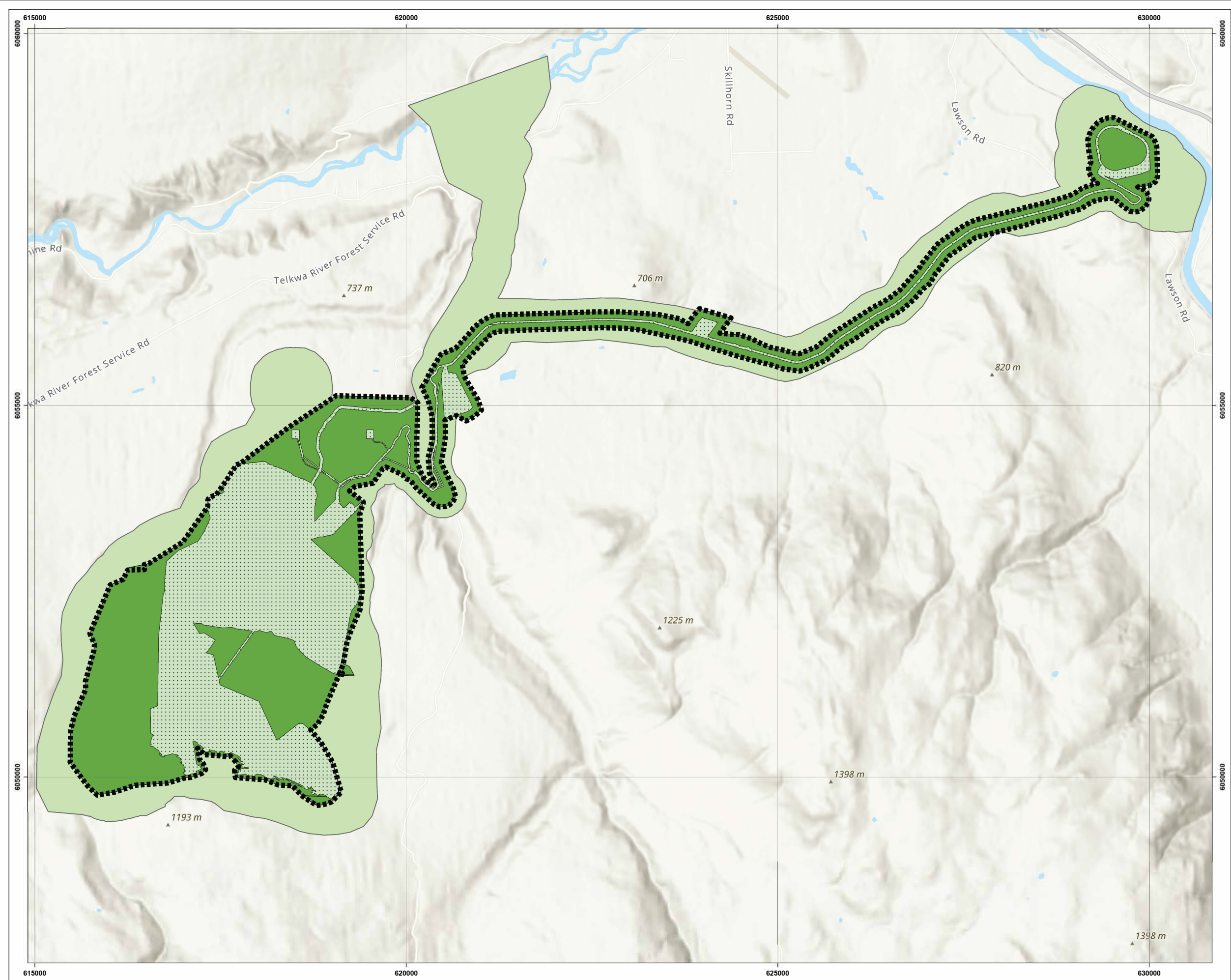
Another existing development of which TCL has been a part of, is providing land and support for Telkwa Coalmine Recreation Camp (TCRC), located in the Goathorn Creek Valley just north of the Project Area. TCL is proud to work with BCHBCNC to provide a safe and high calibre facility for horse riders from all over BC and the local region.

1.9.2 Project Scope and Boundaries

The Project has developed several boundaries for subsequent environmental effects assessments and discussions. The Project Area represents the maximum possible (includes buffers) effect by the Project on vegetation and reclamation materials (surface soils) to allow for possible slight changes to Project components during the subsequent permitting and construction phases for the Project. By selecting a boundary that is actually larger than what is required by the Project ensures that the assessments provided are conservative and allows for any future changes that come as result of the EA process, permitting and subsequent construction if regulatory approvals are granted. The key VCs that use this boundary for assessment are wildlife, avian, terrain and soils, heritage resources, atmospheric environment, land and resource use, and vegetation.

The Project Area has changed from what has been previously provided by the Application Information Requirements (AIR) document due to continued improvements and design modifications that occurred during the preparation of the EA. The main change that occurred during this process was the elimination of the effluent pipeline that went from the Tenas Control Pond to the Telkwa River. This has been replaced by an existing channel that connects with Goathorn Creek. This change removed approximately 10 hectares (ha) of new disturbance on the landscape. The baseline mapping area that was completed for surface soils and Terrain Ecosystem Mapping (TEM) for the majority of the Project is actually larger than the Project Area even to allow for any future changes in Project components.

The Project footprint represents the current expected effect of the Project on vegetation and reclamation materials (surface soils) based on the accepted mine plan with open pit, management and sedimentation ponds. The surface and groundwater, fish and fish habitat, aquatic resources, and visual resources VCs utilize the Project footprint boundary to inform their assessments. **Figure 1.9-1** below illustrates the various Project Areas and Footprint that were used for subsequent discussions.



Tenas Project

Project Area and Footprint

Legend

Project Area

Project Footprint

Project Area used for terrestrial effects assessment

Project Area used in terrestrial baseline studies

1. All mapped features are approximate and should be used for discussion purposes only.

2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

3. Project line features are for display only.

Sources

- Project Features: Allegiance Coal, April 21, 2021.

- Base data: Government of British Columbia

- Basemap: World Topo Base

N

1:50,000

0 0.5 1 1.5 2 2.5

Kilometers

NAD 1983 UTM Zone 9N

TELKWA COAL LIMITED

Figure 1.9-1

Please note that the Project Areas do not match each other exactly and have small differences (less than 2ha) due to the timeframe of when the baseline data was collected, and the timing of the effects assessments conducted as the Project Area has changed slightly over the course of preparing the EAC application. This differences do not constitute a measurable difference to the effects assessments conducted and for the purposes of this application all Project Areas used are considered identical for the purposes of subsequent discussions.

The following VCs used the entire Project Area for their assessment and assumed the entire area would be affected by the Project and are listed below:

- ▶ Wildlife VC;
- ▶ Avian VC;
- ▶ Terrain and Soils VC;
- ▶ Vegetation VC;
- ▶ Heritage Resources VC; and
- ▶ Land and Resource Use VC.

The following VCs were primarily dependent on the EA mine plan or Project footprint proposed, or other VCs as follows:

- ▶ Mine plan or Project footprint dependent:
 - ▶ Surface Water VC;
 - ▶ Groundwater VC;
 - ▶ Atmospheric Environment VC;
 - ▶ Visual Resources VC;
 - ▶ Labour Market VC;
 - ▶ Economic Development;
 - ▶ Demographics VC; and
 - ▶ Infrastructure and Services VC.
- ▶ Other VC dependencies:
 - ▶ Human Health dependent on surface and groundwater, atmospheric environment;
 - ▶ Community Well-being dependent on Human Health VC;
 - ▶ Fish and Fish Habitat dependent on Surface VC and Groundwater VC; and
 - ▶ Aquatic resources is dependent on Surface VC and Groundwater VC.

1.9.3 Project-wide Mitigations

As part of the overall Project TCL has put in place a number of mitigations by design to reduce the effects of the Project:

TCL has incorporated several mitigation measures in the Project design and/or operational procedures to reduce the magnitude, duration, and extent of effects due to the Project. These Project mitigation measures are outlined below. Where Project mitigation measures are relevant to minimizing a potential Project-related effect on a VC, the mitigation measure has been included in the VC assessment.

Furthermore, if there were VC specific mitigation measures required, these are provided in each VC environmental effects assessment chapter. See **S4.0** to **S8.0** for Project and VC-specific mitigation measures relevant to each VC.

1.9.3.1 Avoid Sensitive Environments

The Project has been designed to:

- ▶ avoid known or previously documented archaeological, cultural, and heritage sites;
- ▶ avoid known wetlands and sensitive ecosystems (such as riparian areas, raptor nests); and
- ▶ avoid activities within watercourses.

1.9.3.2 Limit Project Footprint and Project Area

To limit the Project footprint and Project Area the Project has been designed to:

- ▶ Cluster Project components, including the open pit, stockpiles for ROM coal, processed coal and processed rock, CPP, management ponds, and ancillary facilities such as the Maintenance Facility, and Administration Building;
- ▶ Align linear Project features (such as powerlines, roads, water distribution) into a common right-of-way (ROW);
- ▶ Place Project features within existing or planned Project component footprints to limit the clearing of vegetation and the salvage of reclamation materials (surface soil, woody debris, and overburden). For example, the Minesite buildings will be built in areas previously cleared by forestry activity;
- ▶ Minimize the length of haul roads, access roads, and rail line where possible. Use or improve existing roads where practical;
- ▶ Utilize a loop design configuration for the rail that requires half the space and subsequent footprint compared to the standard teardrop shape seen at other operating or proposed coal mines in western Canada;
- ▶ Place reclamation material (surface soil and woody debris) stockpiles within development areas such as the open pit and haul roads to avoid disturbance, while overburden is directly placed on Project components for future reclamation activities;
- ▶ Limit the TAC to a single lane width for long distances and utilize existing FSRs or private roads where appropriate;
- ▶ Backfill approximately 50% of non-coal material back into the open pit; and
- ▶ Place processed rock from the CPP within the management ponds versus a separate permanent pile to avoid any potential acid rock drainage (ARD) from this material and reduce the Project footprint.

1.9.3.3 Reclamation Measures

The following reclamation measures have been incorporated into the mine design:

- ▶ Use progressive reclamation techniques to limit the amount of disturbance at any given time by sequencing the open pit and stockpiles to the extent feasible, backfilling of open pit where possible, directly placing reclamation materials, and placing excavated materials on previously disturbed areas;

- ▶ Salvage reclamation materials (surface soil, woody debris, and overburden), for later use in accordance with the **RCP**;
- ▶ Vegetate all temporary surface soil and overburden stockpiles to minimize the potential for erosion and sediment generation, to prevent subsequent potential effects on water quality, and to prevent losses of surface soils;
- ▶ Implement progressive reclamation on embankments, buttresses, backfills, TAC cut and fill slopes, and other Project components where possible to minimize fugitive dust emissions and reduce erosion and sediment generation;
- ▶ The reclaimed landscape will be shaped and contoured to achieve variations of slope steepness, slope length, aspect, and form to assist in creating landform diversity suitable for the establishment of varied plant communities and to reduce visual effects;
- ▶ PAG material deposited in the management ponds will be flooded to prevent acid mine drainage but will also be covered with an engineered cover consisting of non-PAG rock, overburden, and surface soils to allow for terrestrial revegetation;
- ▶ Majority of open pit features (e.g., highwalls and footwalls) are covered/resurfaced/recontoured with non-PAG rock and overburden; and
- ▶ Revegetate with native plant species appropriate for the target ecosystems, which will include species for merchantable timber, subsistence foods, and ceremonial purposes in consultation with the Wet'suwet'en.

1.9.3.4 Project Footprint Boundaries

The following apply to Project footprint boundaries:

- ▶ Implement “No Activity” buffers for identified features such as riparian areas and watercourses that were previously documented or identified by methodologies provided in the related management plans (e.g., **Construction Environmental Management Plan (S13.0-C4) (CEMP)**, **WMP**, **Vegetation Management Plan (S13.0-C18) (VMP)**);
- ▶ Clearly delineate the boundaries of “No Activity” buffers for sensitive features in the proximity of planned disturbances to facilitate avoidance during all phases of the Project, where possible; and
- ▶ Clearly delineate Project footprint boundaries adhering to construction plans and restricting identified machine use to defined areas within the Project footprint.

1.9.3.5 Transport Measures

The following mitigation measures refer to transport measures:

- ▶ Build, maintain, and use the TAC for hauling processed coal to the Rail Infrastructure for the duration of all Project phases after the Construction Phase to minimize traffic on existing, residential roads;
- ▶ Build, maintain, and use the TAC for transport of personnel, goods, and services for the duration of all Project phases after the Construction Phase to minimize traffic on existing, residential roads;
- ▶ Repair and/or replace and/or upgrade existing FSRs or private roads that will be used as part of the TAC;
- ▶ Repair and replace new and existing culverts as required for all Project related transport corridors including the TAC;

- ▶ Design and build a permanent clear span bridge over Goathorn Creek and Helps Creek and its related tributaries to provide vehicular access to the Project that will be controlled by TCL;
- ▶ Use buses and/or vans for employees and contractors as much as practical to reduce the risk of traffic incidents, and to reduce noise and fugitive dust emissions generated by the Project. Bussing options to Witset and/or Houston to be provided (if requested and based on sufficient employees in these locations) to facilitate potential employees accessing employment opportunities with the Project;
- ▶ Use dust suppression agents on the rail cars to reduce fugitive dust emissions;
- ▶ Cover super B-train trucks when hauling processed coal from CPP to Rail Infrastructure to reduce fugitive dust emissions from trucks;
- ▶ Use water and chemical agents on the TAC to reduce fugitive dust emissions, where and when appropriate;
- ▶ Use water and chemical agents, as required, on processed coal and ROM coal stockpiles to reduce fugitive dust emissions resulting from storage and handling;
- ▶ Use privately controlled Rail Infrastructure so that there are no train whistles generated from Rail Infrastructure;
- ▶ Utilize low train speeds (10 kilometres/hour [km/hr] within the Rail Infrastructure, and up to 20 km/hr while entering and exiting the Rail Infrastructure) to mitigate vibration and noise;
- ▶ Post a speed limit of 50 km/hr on the TAC, 70 km/hr on Minesite haul roads, and 30 km/hr on Project service roads. Mine haul trucks within the Minesite portion of the Project footprint will have a maximum operating speed of approximately 35 km/hr, given their size and weight;
- ▶ Investigate implementing a no train whistle requirement at the existing level rail crossing in the Village of Telkwa based on consultation with and approval of the CNR;
- ▶ Avoid (i.e., with appropriate “No Activity” buffers) known raptor nests along the route of the TAC (where identified during baseline studies); and
- ▶ TCL will meet annually with BC MOTI to review effects to BC MOTI roads that are directly a result of the Project and determine further mitigations if any that are required or support that TCL can offer BC MOTI.

1.9.3.6 Project Component Design

The following apply to Project component design:

- ▶ Select tonal values and low chroma colours to paint buildings and related infrastructure to create low contrast to existing background conditions throughout the spring, summer, and fall months when viewers are more likely to be outdoors;
- ▶ Select tonal values best suited for the dominant building face where visible from the priority viewpoints;
- ▶ Select non-reflective building and infrastructure surfaces to eliminate glare from reflected sunlight;
- ▶ Avoid sharp and linear changes in the slope or aspect of the stockpile, pile, embankment, buttresses, and excavated surfaces;
- ▶ Contour benches within backfilled material and embankments and buttresses to prevent obvious and easily discernable linear shapes;

- ▶ Landscape (e.g., add small hills, swallows) the tops of material stockpiles to create non-linear silhouettes;
- ▶ Manage light effects using acceptable best management practices (BMPs) and engineering design;
- ▶ TCL will also incorporate the following mitigation measures associated with effects from lighting:
 - ▶ For areas visible to the public from sensitive viewpoints investigate eliminating night lighting of buildings and structures and block light from windows where possible considering safety requirements;
 - ▶ Direct lighting shall be directed towards the ground and have appropriate covers to avoid fugitive light emissions; and
 - ▶ Lighting should be sensitive to environmental conditions and automatically shut off during daylight hours.

1.9.3.7 Blasting Measures

The following mitigation measures apply to blasting:

- ▶ Use best management stemming techniques (e.g., type of material, size consistency, loading method, and thickness) that will minimize effects of noise and fugitive dust from blast patterns and assist in the complete detonation of drill holes to reduce the introduction of nitrogen species into the surrounding rock per the **EMP**;
- ▶ Correctly time blasts to minimize effects of noise, vibration, and fugitive dust from blast patterns;
- ▶ Keep blast patterns small to minimize effects of noise, vibration, and fugitive dust and to reduce the time that patterns need to sleep or wait until they are blasted which reduces the introduction of nitrogen species into the surrounding rock;
- ▶ Monitor actual blast results and implement improvements as required as per the adaptive management process to reduce effects of noise, vibration, fugitive dust and reduce the introduction of nitrogen species into the surrounding rock;
- ▶ Use electronic detonators to minimize effects of noise, vibration, and fugitive dust from blast patterns, and manage misfires to reduce the introduction of nitrogen species into the surrounding environment; and
- ▶ Use noiseless lead lines on the surface to minimize the effects of noise from blasts.

1.9.3.8 Coal Processing Measures

The following mitigation measures apply to process design:

- ▶ Use centrifuges for processed coal dewatering versus coal and/or natural gas fuelled coal dryers to minimize greenhouse gas (GHG) and dust emissions;
- ▶ Use BMPs in flowsheet design to maximize the reuse of process water by the CPP and allow the recirculation of grey water from Project equipment wash bays in the Maintenance Facility by the CPP; and
- ▶ Use belt filter presses to dewater fine processed rock material versus conventional slurry fine processed rock to reduced water consumption by the CPP.

1.9.3.9 Forest Management Practices

The following refers to forest management practices:

- ▶ Follow guidelines and requirements for clearing, handling, and hauling any beetle infested wood such as: Guidance on Landscape and Stand-level Structural Retention in Large-scale Mountain Pine Beetle, Salvage Operation (British Columbia Ministry of Land, Natural Resource Operations and Resource Development [BC MFLNRORD] 2005) and Bark Beetle Management Guidebook (BC MFLNRORD 1995), Spruce Beetle Management in BC (BC MFLNRORD n.d.); and
- ▶ Follow guidelines and requirements for clearing, handling, and hauling merchantable timber resources within the Project Area in consultation with the tenure holders.

1.9.3.10 Management, Control and Water Storage Pond Designs

The Project will incorporate the following pond design measures:

- ▶ The North, East, West Management Ponds, and Tenas Control Pond have been designed with low permeability liners to minimize the seepage of contact water underneath these facilities into the groundwater system, as well as channels along their peripheries to maximize the interception of water discharges downgradient of their dams;
- ▶ Liners will cover the entire internal footprints of all ponds, except the West Management Pond where approximately 57% of the pond's internal footprint will be lined (i.e., the liner will cover the overburden portions outside of and within the open pit boundary. The open pit walls and open pit floors comprised of bedrock will not be lined);
- ▶ Liners for the North, East, and West management ponds will consist of overburden bentonite mixed materials while the Tenas Control Pond liner will consist of a bituminous geomembrane. The designs of the management ponds and the Tenas Control Pond are documented in **S1.0-1.22.4 Liners** of the **EAC Application**;
- ▶ Project is phased to allow groundwater recharge to commence from the Tenas Control Pond and North Management Ponds early in the Project to offset groundwater drawdown from the open pit;
- ▶ The Potable Water Storage Pond will be lined with either a geomembrane or other appropriate type of liner to reduce seepage and the amount of water required by the Project; and
- ▶ The Wastewater Storage Pond will be lined with either a geomembrane or other appropriate type of liner to minimize the amount of water entering the groundwater system.

1.9.3.11 Seepage Management Measures

In addition to the pond design measures outlined above, the following mitigation measures are associated with seepage management:

- ▶ Use overburden bentonite liners for management ponds to reduce the amount of groundwater seepage and potential effects on surface and groundwater quality;
- ▶ Use liners in the Tenas Control Pond, Wastewater Storage Pond, Soil Treatment Facility, Potable Water Storage Pond, and sedimentation pond at the CPP site to minimize the risk of seepage to groundwater and potential effects on surface water and groundwater quality;
- ▶ Monitor seepage, groundwater, and surface water levels, and quality/quantity downstream and upstream of the Project as per the monitoring programs set up in the **Minesite Water Management Plan (S13-C11) (MWMP)**; and

- ▶ Establish trigger levels that require the implementation of contingency mitigation measures described in the **Discharge Management Plan (S13.0-C5) (DMP)** to protect surface and groundwater quality and maintain minimum flow levels downstream of the Project.

1.9.3.12 Water Capture Measures

The designs of the management ponds, sedimentation ponds, collection and diversion channels, and all other water management structures are documented in **S1.0-1.22 Management Ponds (Tailings Storage Facility) and Control Pond Aspects, Appendix 1.0-G Tenas Project Water Management Technical Design Report** (which is presented in **1.11.2.0 Pit Geotechnical Considerations**), and the **MWMP**. The following mitigation measures apply to water capture:

- ▶ Construct diversion channels, where practical, to prevent non-contact water from entering the Project Area and remain as non-contact water;
- ▶ Sedimentation and control ponds will have sufficient storage capacity to allow fine sediments to settle out for 1 in 10 year storm events and will be designed to structurally withstand a 1 in 200-year storm event; total suspended solids (TSS) and/or turbidity will be monitored prior to release;
- ▶ Establish flocculent addition systems for sedimentation and/or control ponds that will discharge directly to surface waters to provide additional sedimentation control to reduce potential effects on surface water quality;
- ▶ If monitoring indicates, construct wetlands within or downstream of sedimentation and/or control ponds to reduce potential effects on surface water quality;
- ▶ Include a control structure on the outflow from the C02 diversion channel south of the East Management Pond to control high flow events discharging into the upstream portion of Four Creek by enabling overflow to the East Management Pond directly in the Post-closure Phase or to a channel going into the Tenas Control Pond in the Operation, and Decommissioning and Reclamation phases;
- ▶ Maintain sufficient capacity in the Tenas Control Pond to store up to a 1 in 10-year storm event to control discharge;
- ▶ Monitor and control water discharges from Tenas Control Pond to a tributary of Goathorn Creek based on downstream water flow rates and water quality to meet in-stream guidelines and flow requirements during the Operation, and Decommissioning and Reclamation phases; and
- ▶ Develop the open pit in a manner that will allow it to collect water in the Decommissioning and Reclamation, Post-closure phases to provide additional sedimentation control.

1.9.3.13 Project Use of Water

The following mitigation measures apply to water use:

- ▶ Maximize the use of contact water for Project water needs (i.e., use contact water for process water for the CPP and equipment washbays before withdrawing additional water from streams);
- ▶ Incorporate a contingency water supply of 2.5% of Goathorn Creek's mean annual monthly flow which was part of the effects assessment (effect is included in the flow rate of Goathorn Creek downstream of intake location) but this contingency is not incorporated into water cover simulations or the overall Project water balance;
- ▶ Use dewatered fine processed rock in the CPP to reduce Project water consumption;
- ▶ Direct water from the Maintenance Facility to the CPP to reduce Project water consumption;

- ▶ Use process water from the Tenas Control Pond, management ponds, and CPP sedimentation pond for the CPP to limit water consumption;
- ▶ Design of the CPP allows for the introduction of additional equipment to be installed within 18 months to further reduce water consumption in the Operation Phase, if required;
- ▶ Use process water from the Tenas Control Pond for toilets in the Minesite Administration Building to reduce potable water consumption; and
- ▶ Construct engineered covers for the management ponds in the Operation, and Decommissioning and Reclamation, and Post-closure phases to limit the consumption of water through evaporation losses.

1.9.3.14 Water Quality Monitoring and Reporting Measures

The following refer to water quality and monitoring measures:

- ▶ Provide results of water quality sampling and quantity monitoring per the **MWMP** via the British Columbia Ministry of Environment and Climate Change Strategy (BC MECCS) website, as was completed for baseline sampling activities, in addition to annual reporting required as part of regulatory permits. Annual reports regarding *Mines Act*, RSBC 1996, c 293, and *Environmental Management Act*, SBC 2003, c 53 (*MA/EMA*) permits will be sent to Indigenous groups and the public based on final permit conditions.

1.9.3.15 Management of Metal Leaching/Acid Rock Drainage (ML/ARD)

The following mitigation measures apply to preventing potential ARD:

- ▶ Identify and segregate PAG material while mining the open pit, and place PAG material in management ponds and submerge PAG material under a minimum of 1.0 m of water within an average of six (6) months after excavation but no longer than 12 months and under at least two (2) m of water once the management pond has met its PAG material storage requirements (North Management Pond is completed first, followed by the East Management Pond and finally the West Management Pond) to prevent potential ARD and subsequent effects on surface water quality;
- ▶ Place approximately a one (1) to two (2) m layer of non-PAG rock on top of the submerged PAG material below the active water level of the respective management pond, followed by approximately one (1) to three (3) m layer of overburden to create a dry landform above water, followed by an approximately 30 centimetre (cm) layer of reclamation materials (surface soil) to reduce evaporative losses from the management ponds and provide a landscape more similar to pre-Project development;
- ▶ No PAG material will be used in construction of any external piles, pads, roads, embankments, buttresses, or for backfilling the open pit, to prevent potential ARD and subsequent effects on surface water quality;
- ▶ Open pit walls will be covered by non-PAG material to limit oxygen and water ingress into the open pit walls and provide a neutralizing effect on the open pit wall material below;
- ▶ Some of the open pit walls will be flooded with water to further reduce the likelihood of ARD from the covered open pit walls;
- ▶ Establish a material geochemical testing program for future Project exploration drillholes and Operation Phase blast holes as part of the blasting program to verify PAG versus non-PAG

materials. Maintain a PAG geological model while the open pit is being mined to reflect any changes observed;

- ▶ Maintain a database of geochemical testing results and material placement to avoid the incorrect placement of PAG material and potential ARD with subsequent effects on surface water quality;
- ▶ Establish a material tracking system to document the location and type of material being excavated and hauled to avoid misplacement of material and/or remediate any misplacement that may occur;
- ▶ Controlled open pit wall blasting will be conducted on both the highwall and footwall to limit the amount of damage to the open pit wall to minimize the potential for particle size reduction and provide pathways for water and oxygen to enter the open walls prior to them being covered;
- ▶ Majority of material near the open pit footwall will not be blasted again to minimize the potential of water and oxygen accessing this material;
- ▶ Progressive reclamation will be undertaken to reduce the infiltration of water and oxygen into the open pit walls by placing non-PAG rock and overburden on the open pit walls once mining is completed for an open pit wall section in question and people operating equipment have moved at least 100 m away from proposed backfilling operation. Furthermore, this non-PAG material is expected to provide a permanent high neutralization potential (NP) water source to prevent ARD generation from PAG material present in the open pit walls; and
- ▶ Provide annual reports to British Columbia Ministry of Energy, Mines and Low Carbon Innovation (BC MEMLI) and BC MECCS and designated Indigenous groups summarizing the results of geochemical testing.

The following mitigation measures for minimizing potential metal leaching (ML):

- ▶ Progressive reclamation will be undertaken to reduce the infiltration of water and oxygen into the non-PAG backfills, buttresses, and embankments;
- ▶ Non-PAG rock will be covered with overburden as much as material constraints allow to reduce the infiltration of water and oxygen;
- ▶ Place some non-PAG rock into management ponds that are characterized as PAG because of the mine planning process using a neutralization potential ratio (NPR) value of 2NP (neutralizing potential):1AP (acid potential [AP]) to classify non-PAG material from PAG material versus the geochemistry NPR value of 1.2NP:1AP used for classifying non-PAG material from PAG material; and
- ▶ In the Post-closure Phase, approximately half of non-PAG material will be flooded with water in the open pit to prevent oxygen ingress and further oxidization of this material resulting in a reduction of metal leaching once this occurs.

1.9.3.16 People, Employees, Contractors, and Onsite Policies

The following mitigation measures apply to people, employees, contractors, and onsite policies:

- ▶ Establish and implement an onsite policy prohibiting alcohol consumption, smoking, vaping, and drug use;
- ▶ Establish and implement an onsite policy prohibiting shooting, hunting, and fishing within the Project Area;

- ▶ Establish an Indigenous Cultural Awareness Induction Program for employees, visitors, and contractors in collaboration with the Wet'suwet'en; and
- ▶ Establish and implement policies to promote: no workplace harassment of any kind; environmental protection and awareness; whistle blower protection; health, safety, and security; and multicultural and multi-generational workforce considerations.

1.9.3.17 **Occupational Health and Safety Program (OHSP)**

The following is related to health, safety, and wellness:

- ▶ TCL will meet all regulatory requirements by implementing the **Occupational Health and Safety Program (S13.0-C13) (OHSP)**. Maintain safety records, incident reporting and investigation documentation, and report results to BC MEMLI and designated Indigenous groups;
- ▶ Implement a Health and Wellness Program (Employee and Family Assistance Program) for employees and selected contractors to promote health and wellness aspects (e.g., sleep habits, exercise, healthy eating), including resources related to addiction, family planning, stress, abusive relationships, and financial planning. The Health and Wellness Program is part of the Project's **OHSP**;
- ▶ Implement a third-party phone line for employees via the Employee and Family Assistance Program that can be used by all personnel to report issues related to TCL employees on discrimination, harassment, financial irregularities, abuse, and bullying incidents; and
- ▶ Work with local agencies to assist in monitoring community well-being and take corrective actions where appropriate, including developing a health and well-being program based on guidelines from Northern Health.

1.9.3.18 **Public Access Management**

Per the *Mines Act*, RSBC 1996, c 293 (GovBC 1996c), and *Land Act*, RSBC 1996, c 245 (GovBC 1996b) requirements, a "No Unauthorized Entry, Hunting, and Fishing" boundary will be established at the outset of the Construction Phase around the Project Area to prevent unauthorized access. It will be in effect throughout the Project life. It is currently envisioned that the public will be allowed access through and beyond the Project Area to reach identified cultural, subsistence foods, ceremonial, recreational and hunting areas during the Construction, Operation, Decommissioning and Reclamation, and Post-closure phases, the following will apply to the management of public access:

- ▶ Establishing a **Public Access Management Plan (S13.0-C14) (PAMP)** to mitigate potential safety issues related to public access to/through the Project Area. The **PAMP** was developed for the purpose of public, contractor, visitor, and employee safety, and Project security. The **PAMP** aims to minimize restricted areas and provide opportunities for reasonable and safe access to areas adjacent to and beyond "No Unauthorized Entry, Hunting and Fishing" boundary areas. The Wet'suwet'en will be engaged regarding the final implementation of the **PAMP**;
- ▶ The **PAMP** includes details on an access control procedure to maintain public access through the Project Area to allow access to recreational locations. Two (2) types of access will be provided:
 - ▶ **Escorted Access:** TCL will provide guided access via operation of a lead vehicle to escort users of the Project Area roads from either the TCL office in Telkwa, or from the Sandpit Muster Station just south of the TAC to the TCRC; TCL will also escort vehicles from the above two (2) locations across the bridge constructed over Goathorn Creek to a parking area on the west side of Goathorn Creek;

- ▶ No-Escort Access: From the parking area near the TCRC, a new trail will be established along the east side of Goathorn Creek that can be used by hikers, horseback riders, bikers, and approved motorized use such as quads, trucks, cars, SUVs and motorbikes, but not including campers. This trail will allow access underneath the TAC via a dedicated public underpass to get to the south side of the TAC. From there the public will be able to use a trail that accesses a divided two (2)-lane bridge installed over Goathorn Creek that allows them to be separated from Project vehicles. After users cross the Goathorn Creek, an existing access trail on the west side of Goathorn Creek can be used as an alternate access trail to Hunter Basin and other recreational sites. Alternately, from Parking Area 2, vehicles will be able to access this same alternate trail on the east side of the Project to recreational areas. Additional details and maps are provided in the **PAMP**;
- ▶ With the **PAMP** in place, the Project will improve legal access to recreational facilities via the re-establishment of a bridge over Goathorn Creek;
- ▶ Access to the Project Area by the Wet'suwet'en for land use and resource harvesting purposes, will be discussed with the Wet'suwet'en, and facilitated provided that safe access can be accommodated; and
- ▶ Tenure holders that overlap with the Project Area will continue to be consulted through the Construction and Operation phases to consider how operational plans can incorporate other land uses with the results being reported to BC FLNRORD on an annual basis.

1.9.3.19 Enhance Local and Regional Benefits Including Employment

The following mitigation measures are intended to enhance local and regional benefits and are relevant to the effect of a change in the capacity of local or regional businesses to supply goods or services:

- ▶ Enhance local and regional benefits by identifying opportunities to promote direct employment and procurement of Project goods and services acquired from the Socio-economic Regional Study Area (RSA);
- ▶ Provide incentives and inducements to workers to move permanently to a location within the Socio-economic RSA and require the Project management team to reside within the Socio-economic RSA to benefit the local and regional economy;
- ▶ Work with Indigenous groups to develop a strategy to identify and reduce barriers to employment and training, and report progress annually to designated Indigenous groups;
- ▶ Establish and implement plans that include training opportunities (see **SEMP**), such as:
 - ▶ Work with training institutions such as local colleges and education providers to provide training programs and skills upgrading;
 - ▶ Partner with local contractors to provide TCL apprenticeship programs;
 - ▶ Identify and train under-represented groups;
 - ▶ Offer scholarships and bursaries to encourage high school graduation and encourage groups to participate in science, technology, engineering, and mathematics (STEM) programs at a college, and/or university level;
 - ▶ Offer scholarships and bursaries to encourage people to participate in recognized trade programs;
 - ▶ Offer scholarships, bursaries, and employment opportunities for dependents of TCL employees in post-secondary education institutions;
- ▶ Offer employment opportunities for students in local post-secondary education institutions;
- ▶ Support apprenticeship programs both onsite and offsite with other industry partners; and

- ▶ Report progress in implementing these plans annually to designated Indigenous and stakeholder groups.

1.9.3.20 *Housing Measures*

TCL is aware of the current housing shortage and lack of housing stock and diversity within the Socio-economic RSA determined for the Project. The following measures are intended to promote local housing opportunities:

- ▶ Provide incentives and inducements to employees to move permanently to a location within the Socio-economic RSA and require the Project management team to reside in the Socio-economic RSA to benefit the local and regional economy (refer to the **SEMP**); and
- ▶ Provide incentives and inducements to developers and partner with government to encourage the development of additional housing stock/supply and diversity of housing in the Socio-economic Local and Regional Study Areas (LSA/RSA).

1.9.3.21 *Indigenous Consultation and Engagement*

The following commitments apply to Indigenous consultation and engagement:

- ▶ Discuss and facilitate access to the Project Area by designated Indigenous groups for land use and resource harvesting purposes, provided safe access can be accommodated;
- ▶ Develop an Indigenous-led monitoring program(s) as prescribed in the environmental management plans, in consultation with the Wet'suwet'en;
- ▶ Continue consultation and engagement with Indigenous groups with respect to design and implementation of the Project components, monitoring, decommissioning, and reclamation, and
- ▶ Continue consultation and engagement with Indigenous groups with respect to the design and implementation of the **PAMP**.

1.9.3.22 *Consultation with Tenure Holders*

The following commitments apply to consultation with tenure holders:

- ▶ Continue to consult through Construction, Operation, and Decommissioning and Reclamation phases with tenure holders that have tenures overlapping with Project components to consider how operational plans can incorporate other land uses with the results being reported to BC FLNRORD on an annual basis; and
- ▶ Obtain agreements with tenure holders to allow for Project components to overlap with other existing tenures or allow road use or road/tenure crossings;

1.9.3.23 *Compensation for Affected Commercial Tenure Holders*

The following commitment is intended to address affected commercial tenure holders:

- ▶ Compensation of affected trapline holders in accordance with industry and provincial protocols (e.g., registered trapper compensation program for oil and gas, BC MEMLI).

1.9.3.24 *Heritage Resources Management Plan (HRMP)*

The following mitigation measures are applicable to heritage resources:

- ▶ A **Heritage Resources Management Plan (S13.0-C8) (HRMP)** will be implemented the will:
 - ▶ Inform employees, contractors, and visitors of identified cultural areas, Chance Find Procedures, and the process for reporting to applicable Indigenous and regulatory groups; and
 - ▶ Establish processes to record, analyze and mitigate physical evidence of cultural sites, such as cabins, archaeological sites, culturally modified trees (CMTs), and trails identified through the Heritage Resources effects assessment.

1.9.4 Project Phases

There are four (4) main phases of the Project:

1. Construction;
2. Operation;
3. Decommissioning and Reclamation; and
4. Post-closure.

The Project LOM is expected to be approximately 26.5 years including the first three (3) phases (Construction, Operation, Decommissioning and Reclamation) which are somewhat predictable based on production and construction schedules while the Post-closure Phase is controlled by regulatory approvals and actual reclamation results and has been set at 25 years for this Project for planning purposes.

These phases are described in **Table 1.9-1**, which outlines the temporal boundaries of the Project, as well as providing a summary of the activities that will occur in each phase. The subsections that follow provide additional details for each phase.

Table 1.9-1: Temporal Boundaries for the Tenas Project

Phase	Year	Duration (years)	Description of Activities
Construction	-0.5 to 0	1.5	Site clearing, soil salvage, open pit development, building construction, service and haul road development, Rail Infrastructure construction, bridge construction and development of onsite utilities and services. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as surface soils, overburden, woody debris, and any other materials suitable for reclamation. Development of water management systems and management ponds for storage of potentially acid generating (PAG) materials.
Operation	1 to 21	21	Development of the open pit through drilling, blasting, loading, and hauling functions. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as surface soils, overburden woody debris and any other materials suitable for reclamation. Development of water management systems and management ponds for PAG storage. Conducting coal processing, stockpiling of raw coal prior to processing, and stockpiling of processed coal prior to shipping. Progressive reclamation will be accomplished during the Operation phase as well such as sloping, placement of reclamation materials (surface soils, overburden, and

Phase	Year	Duration (years)	Description of Activities
			woody debris) and revegetation.
Decommissioning and Reclamation	22 to 25	4	Tear-down of infrastructure onsite plus reclamation activities, including sloping of storage piles, backfill materials, and placement of reclamation materials including surface soils, overburden and non-PAG rock for management pond covers and revegetating surfaces that are planned to be reclaimed.
Post-closure	26 to 50	10	Active: This involves the filling of the open pit with water, monitoring of vegetation growth and water quality for both groundwater and surface water and wildlife. Control and sedimentation ponds may still be needed for settling of total suspended solid levels. The management ponds are left as dry land reclamation except for portions that will be left as open water.
		15	Passive: This stage is when the control and sedimentation ponds are no longer required for settling of total suspended solid (TSS) levels and the management ponds are left as dry land reclamation except for portions that will be left as open water. Telkwa Coal Limited (TCL) is now simply monitoring the site.

1.9.4.1 Construction Phase

Planning for construction began with the completion of the DFS and is ongoing with the submission of this EAC Application. Once the required authorizations, permits, and licenses have been obtained, TCL anticipates that the Project Construction Phase beginning in the third quarter (Q3) of 2024 which is dependent on the approval processes of governmental and Indigenous groups and a final commercial development decision by TCL. The Construction Phase will continue for approximately one (1) and a half years.

1.9.4.1.1 Installation of Mine Infrastructure and Facilities

As this a greenfield operation, all required Mine Infrastructure and facilities needs to be constructed. However, TCL will leverage off existing infrastructure such as office space in the Village of Telkwa and nearby infrastructure such as grid power, and a Class I rail line. For further details of the Project components constructed and maintained during the mine life, see the listing in **1.10 Project Components Summary**, and the discussions in **1.11 Open Pit** to **1.22 Management Ponds (Tailings Storage Facility) and Control Pond Aspects**. In all cases, opportunities to reuse and relocate new facilities to support the Project in the future was a consideration in the design of the features for the mine.

Construction Phase activities will be undertaken largely by contractors hired by TCL. The Construction Phase ends with the CPP achieving commercial production which it is expected in Year 1. Some additional construction activities will continue during the Operation Phase, such as logging, salvage of reclamation materials (surface soils and woody debris), onsite powerline extensions, fuel bay relocations and additional water management and erosion control measures.

1.9.4.1.2 Site Preparation

Site preparation activities will begin in Year -0.5 and continue into Year 1 of the Operation Phase after the receipt of all the necessary regulatory authorizations. The following are the main site preparation activities:

- ▶ logging of merchantable timber for sawmills in the region;
- ▶ logging of timber for pellet mills in the region;
- ▶ grubbing;
- ▶ reclamation material (surface soils, woody debris) salvage where required;
- ▶ construction of erosion and control facilities to allow for the construction of the Tenas Control Pond;
- ▶ construction of collection and diversion channels to allow for subsequent mining activities;
- ▶ removal of any poor-quality foundation materials (e.g., peat, clay, or other weak soil materials) within the management pond dam and buttress footprints; and
- ▶ dozing and establishing the initial bench working area for the mining equipment selected for the Project.

Merchantable timber being cleared for Project development belongs to West Fraser (Pacific Inland Resources [PIR]) as they hold the timber rights on Crown lands within the Project footprint.

TCL will develop a clearing schedule for the Project in consultation with West Fraser and will secure the necessary approvals to log the merchantable timber. A road use agreement will be put in place for TCL and any contractor that requires access through to the Project Area.

Merchantable timber will be logged before the advancement of Minesite development such as access development, water management, open pit, and piles. With the recent addition of pellet plants in the region, most of the non-merchantable timber for dimensional lumber applications can now be directed to these facilities. Again, the same process for this timber will be used as for merchantable timber and it will likely be harvested at the same time using the same contractors as for merchantable timber. Other vegetation will be left to be incorporated into the reclamation materials (surface soils only) recovered during the reclamation material (surface soils and woody debris) salvage process.

1.9.4.1.3 Reclamation Materials (Surface Soils) Salvage

A **RCP** has been developed to manage the soil/reclamation salvage activities for disturbed areas within the Project Footprint. The reclamation material (surface soils) planning horizons were based on field surface soil sampling activities and subsequent ecohydrological modelling will be utilized for all planned disturbances onsite. The **RCP** assesses the feasibility of salvaging reclamation materials (surface soils) on areas designated for development. The use of salvaged reclamation materials (surface soils) has the potential to increase the successful re-establishment and long-term success of native vegetation communities on the reclaimed landscape. Secondary objectives of the **RCP** include guiding the prioritization of reclamation materials (surface soils, woody debris, and overburden) placement activities to maximize the benefit of the resource and providing a consistent approach to developing site specific reclamation material (surface soils) salvage plans.

1.9.4.1.4 *Surface Water Management*

Project construction activities will occur in the Telkwa River and Bulkley River watersheds, with most of the Minesite components being either in the Tenas, Goathorn, and/or Four Creek watersheds. As much as possible temporary clean water diversions will be constructed prior to construction starting to limit the amount of water that can encounter construction activities. The water management system during the Construction Phase will involve a temporary storage and flocculation system to deal with any 1 in 2.5-year rain events that may occur during the Construction Phase.

Figures 1.9-2 and 1.9-3 below present the water management activities during the Construction Phase within the Minesite until the main sedimentation pond is operational. The plan involves the following key components:

- ▶ phasing of Construction Phase activities to reduce disturbance footprint;
- ▶ diversion of non-contact water around and away from the construction site;
- ▶ installation of temporary diversion berms around the Tenas Control Pond construction area to divert non-contact water around working area;
- ▶ placement of erosion control materials on disturbed ground to reduce sediment generation;
- ▶ use of contingency active sediment treatment facilities along channel C-04 downstream of the Tenas Control Pond dam; and
- ▶ lining of the sedimentation pond internal area to reduce erosion and sediment generation.

The **MWMP** has been designed to incorporate current water quality management objectives set by the provincial government.

