



BC EAO EAC Application – Tenas Project

Section 7.0 Heritage Effects Assessment

Chapter 1 Heritage Resources Valued Component

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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

Section 7.0 Heritage Effects Assessment Chapter 1 Heritage Resources Valued Component

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ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
AIA	Archaeological Impact Assessment
AIR	Application Information Requirements
AOA	Archaeological Overview Assessment
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC MOF	British Columbia Ministry of Forests
BC MFLNRORD	British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development
BC MOM	British Columbia Ministry of Mines
BGC	biogeoclimatic
C	Chapter
CEA	cumulative effects assessment
CMT	culturally modified tree
CUS	Cultural Use Study (Appendix 7.1-B)
EA	environmental assessment
EAA	<i>Environmental Assessment Act</i> , SBC 2002, c 43 (Government of British Columbia [GovBC] 2002)
EAC	Environmental Assessment Certificate
FIA	Fossil Impact Assessment
FSR	Forest Service Road
GovBC	Government of British Columbia
GPS	global positioning system
GTPR	Grand Trunk Pacific Railway
HCA	<i>Heritage Conservation Act</i> , RSBC 1996 c 187 (GovBC 1996b)
HRMP	Heritage Resources Management Plan (S13.0-C8)
IEM	Independent Environmental Monitor
LRMP	Land and Resource Management Plan
LSA	Local Study Area
LTSA	Land Title Survey Authority
OW	Office of the Wet'suwet'en
PAG	potentially acid generating
PFR	Preliminary Field Reconnaissance
Project	Tenas Project
RAAD	Remote Access to Archaeological Data

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
RCMP	Royal Canadian Mounted Police
ROM	run-of-mine
ROW	right-of-way
RSA	Regional Study Area
S	Section
TAC	Tenas Access Corridor
TCL	Telkwa Coal Limited
TK	Traditional Knowledge
TU	Traditional Use
VC	Valued Component

UNITS OF MEASURE

Abbreviation	Long form of Abbreviation or Acronym
%	percent
km	kilometre
kV	kilovolt
m	metre
V	volt

EXECUTIVE SUMMARY

This chapter presents the assessment of the potential interactions between the Tenas Project (Project) and the Heritage Resources Valued Component (VC) in a thorough, rigorous, and concise manner. For this Environmental Assessment Certificate (EAC) Application, Heritage Resources includes two (2) subcomponents: Archaeological Resources, and Historic and Cultural Sites. The Heritage Resources VC was identified as having value to local communities, Indigenous and non-Indigenous groups, and may be afforded protections under legislation.

The assessment of Heritage Resources is based on available Traditional Knowledge (TK), previous studies, and Project specific baseline reports. There are no known Archaeological Resources within the Local Study Area (LSA); however, there may be as-yet unknown Archaeological Resources. There are Historic and Cultural Sites within the LSA, including three (3) culturally modified trees (CMTs), three (3) areas with evidence of historic mining activity, and the Hubert town site. There are also four (4) known fossil sites within the LSA. There may also be as-yet unknown Historic and Cultural Sites. By committing to site avoidance or mitigation through data recovery and/or monitoring, in consultation with community stakeholders as appropriate, Historic and Cultural Sites will be avoided or adequately curated.

The assessment of effects on the Heritage Resources VC incorporates mitigation measures and accounts for both known and as-yet unknown Heritage Resources that may be affected by the Project. Following the implementation of mitigation measures, negligible effects from the Project on both the Archaeological Resources, and Historic and Cultural Sites subcomponents of the Heritage Resources VC are expected. Therefore, it has been determined that there are no adverse residual effects or adverse cumulative effects for the Heritage Resources VC.

1. INTRODUCTION

This chapter presents the assessment of the potential interactions between the Tenas Project (Project) and the Heritage Resources Valued Component (VC) in a thorough, rigorous, and concise manner. For this Environmental Assessment Certificate Application (EAC) Application, the Heritage Resources VC includes the following subcomponents: Archaeological Resources, and Historic and Cultural Sites (which includes palaeontological resources). Heritage resources have been identified as having value to local communities, Indigenous and non-Indigenous groups, and may be afforded protections under legislation. The assessment includes:

- ▶ **Regulatory Context:** A description of the applicable legislation, policies, standards, and guidelines pertaining to the protection of the Heritage Resources VC;
- ▶ **Scoping:** A description of the assessment scope including, issues scoping, the rationale for inclusion of Heritage Resources as a VC, the subcomponents and indicators, and definition of the assessment boundaries;
- ▶ **Existing Conditions:** A description of the baseline studies undertaken for the Project, other relevant information, and descriptions of known Archaeological Resources, and Historic and Cultural Sites within the spatial boundaries;
- ▶ **Project-related Effects:** A description of the potential interactions between the Project and the Heritage Resources VC, potential adverse effects, proposed mitigation measures, an evaluation of the proposed mitigation measures, and an evaluation of potential adverse residual effects that remain following implementation of the proposed mitigation measures, and an assessment of their significance;
- ▶ **Cumulative Effects:** A description of the cumulative effects on the Heritage Resources VC considering the adverse residual effects of the Project in combination with the adverse residual effects of past, present, and reasonably foreseeable future projects and activities, a characterisation of the effects and their significance, and, if necessary and appropriate, the development of additional mitigation measures to eliminate, reduce, or control cumulative effects;
- ▶ **Summary:** A summary description of the residual Project effects and cumulative effects, mitigation, and the significance of the residual and cumulative effects on the Heritage Resources VC following the application of all mitigation measures; and
- ▶ **Follow-up Strategy:** A presentation of monitoring programs to verify assessment predictions and evaluate mitigation effectiveness, and a discussion of adaptive management program(s) to be implemented to address any unexpected Project effects on the Heritage Resources VC.

2. REGULATORY CONTEXT

The Tenas Project Application Information Requirements (AIR) for the Project, approved by the British Columbia Environmental Assessment Office (BC EAO) in 2022, outlines the requirements for the assessment of the Heritage Resources VC to meet the provincial EA requirements under the BC *Environmental Assessment Act*, SBC 2002, c 43 (Government of British Columbia [GovBC] 2002) (EAA). The environmental assessment (EA) for the Heritage Resources VC follows these guidelines and legislated requirements and is consistent with the requirements of the Project AIR. Applicable legislation, policy, standards, and guidelines pertaining to the protection of heritage resources are presented in **Table 2-1**.

An Archaeological Impact Assessment (AIA) for the Project was conducted under *Heritage Conservation Act*, RSBC 1996 c 187 (GovBC 1996b) (HCA) Heritage Inspection Permit 2018-0338.

Table 2-1: Summary of Applicable Regulatory and Policy Framework for the Heritage Resources Valued Component (VC)

Name	Year	Jurisdiction	Description
British Columbia Archaeology Inventory Guidelines (Archaeology Branch 2000)	2000	Provincial	These guidelines detail the criteria for conducting archaeological inventory studies in British Columbia (BC). In order to obtain a heritage inspection permit under the <i>HCA</i> , the guidelines must be followed.
Bulkley Valley Land and Resource Management Plan (Government of British Columbia [GovBC] 1998)	1998	Local	Contains local guidance for the management of heritage resources.
<i>Environmental Assessment Act</i> , SBC 2002, c 43 (GovBC 2002)	2002	Provincial	The environmental assessment (EA) process addresses a broad range of topics, including heritage issues, through a single, integrated process.
<i>Freedom of Information and Protection of Privacy Act</i> , RSBC 1996, c 165 (GovBC 1996a)	1996	Provincial	Prevents the locations of archaeological sites to be included in public documents.
Archaeological Impact Assessment Guidelines (Archaeology Branch 1998)	1998	Provincial	Provides guidance on conducting Archaeological Impact Assessments (AIA) in British Columbia (BC).
<i>Cremation, Interment, and Funeral Services Act</i> , SBC 2004, c 35 (GovBC 2004a)	2004	Provincial	Protects burials and gravesites in BC.
Fossil Impact Assessment (FIA) Guidelines for Industry (GovBC 2021)	2021	Provincial	Provides guidance related to fossil management in BC.
<i>Heritage Conservation Act</i> , RSBC 1996 c 187 (GovBC 1996b)	1996	Provincial	Section 12 of the Act prohibits the disturbance of archaeological sites and provides the BC Archaeology Branch with the authority to issue permits authorizing archaeological studies and alterations to archaeological sites. Section 36 describes the penalties associated with contraventions of the Act.

Name	Year	Jurisdiction	Description
<i>Land Act</i> , RSBC 1996, c 245 (GovBC 1996c)	1996	Provincial	Can be used to protect public interests, through reservations or designations, for the conservation of natural or heritage resources (such as palaeontological sites). Can also prohibit specific use of Crown land in designated areas.
<i>Local Government Act</i> , RSBC, c 1 (GovBC 1996d)	1996	Provincial	Can provide protection and/or other conditions for sites listed on a heritage registry that may be established under the Act.
<i>Mineral Tenure Act</i> , RSBC 1996, c 292 (GovBC 1996e)	1996	Provincial	Conditional reserves can be placed over sites that prevent the staking of mineral claims that interfere with palaeontological materials. Conditions can also allow for mineral claims as long as the claim holder does not obstruct or endanger palaeontological materials.
<i>Mines Act</i> , RSBC 1996, c 293 (GovBC 1996f)	1996	Provincial	Section 10(1) of the Act requires a mine to submit a plan for the conservation and protection of “cultural heritage resources” that will be impacted by the mine to the chief inspector. Section 10(4) gives the chief inspector the power to require a security to protect or mitigate damage to cultural heritage resources as a condition of a permit.
<i>Forest Act</i> , RSBC 1996, c 157 (GovBC 1996g)	1996	Provincial	Defines a cultural heritage resource as an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to BC, a community or an aboriginal people.
Forest Planning and Practices Regulation, BC Reg 14/2004 (GovBC 2004b)	2004	Provincial	Protections for cultural heritage resources that are the focus of a traditional use by an aboriginal people that is of continuing importance to that people, and not regulated under the <i>Heritage Conservation Act</i> , RSBC 1996, c 187 (GovBC 1996b)

3. SCOPE OF THE ASSESSMENT

The assessment of the Heritage Resources VC was conducted according to the methods set out in **Section (S) 3.0 Assessment Methodology** of the **EAC Application**. The assessment boundaries specific to the Heritage Resources VC are provided in **3.2.4 Assessment Boundaries** below.

The scope of the assessment was informed by archaeological assessments, including an Archaeological Overview Assessment (AOA), a Preliminary Field Reconnaissance (PFR), and an AIA conducted under Section 12.2 of the *Heritage Conservation Act*, RSBC 1996 c 187 (GovBC 1996b) (*HCA*) and summarized in the **Tenas Project Archaeology Baseline Report (Appendix 7.1-A)**. A **Cultural Use Study (CUS) (Appendix 7.1-B)** conducted for the Project informed the assessment of potential Project effects on both Archaeological Resources, and Historic and Cultural Resources. In addition, the **Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** was conducted to comply with the BC Fossil Impact Assessment Guidelines (GovBC 2021). While the studies undertaken for the Project have been thorough, there is always the potential that an as-yet unknown heritage or palaeontological resource may be present and could be affected by Project activities. These as-yet unknown resources are considered in this assessment and mitigation measures provided.

3.1 Issues Scoping

Telkwa Coal Limited (TCL) has undertaken an engagement and consultation process to support the scoping of issues for the Project. Please refer to **S11.0 Wet'suwet'en Rights and Interests Assessment** and **S12.0 Public Consultation** of the **EAC Application** for detail on the consultation programs. The consultation and engagement process has included technical working groups established with Indigenous groups and government departments, community meetings, one-on-one and small group meetings, regarding key themes of interest and discussion of candidate VCs to represent the themes of interest. Key themes of interest identified for the Heritage Resources VC were the importance of protecting Archaeological Resources, and Historic and Cultural Sites. This scope has also been informed by archaeological research undertaken for the Project, Traditional Knowledge (TK), and provincial and federal legislation.

3.2 Rationale for Selection of Heritage Resources Valued Component (VC)

The Heritage Resources VC and associated subcomponents were selected during the pre-Application phase of the Project following the VC selection process set out in **3. Scope of the Assessment** and using the methodology provided in the Guideline for Selection of Valued Components and Assessment of Potential Effects (BC EAO 2013).

3.2.1 Valued Component (VC)

The Project Area has been identified as an area with archaeological potential and heritage sensitivity. Heritage Resource subcomponents are known to occur in the area. Heritage Resources are non-renewable, can be very susceptible to disturbance, and are finite in number. They are considered to be important resources that are protected for their historical, cultural, scientific, and educational value to the general public, local communities, and Indigenous groups. Archaeological Resources, a subcomponent of the Heritage Resources VC, are protected by provincial legislation, as described in **2. Regulatory Context**. The Heritage Resources VC may be affected by Project activities that involve effects to the ground surface

and/or vegetation. The Heritage Resources VC supports (are inputs to) and/or are dependent on the assessment of several VCs:

► **Dependent on:**

- **Vegetation VC (S4.0-C7):** The Heritage Resources VC, including both Archaeological Resources and Historic and Cultural Sites subcomponents, may be affected by the removal or alteration of vegetation. Cultural Sites associated with plant gathering may be affected as well as culturally modified trees (CMT);
- **Wildlife VC (S4.0-C8):** Changes to wildlife in the area may affect the utility of Historic and Cultural Sites associated with hunting and trapping; and
- **Land and Resource Use VC (S6.0-C4):** Land and Resource Use may affect the Heritage Resources VC through potentially disturbing archaeological, historic, and cultural sites.

► **Supporting:**

- **Land and Resource Use VC (S6.0-C4):** Effects on Historic and Cultural Sites may have an effect on the use of land and resources as they may result in a change to the presence of a resource; and
- **Community Well-being VC (S6.0-C5):** Effects on, and/or restrictions to, access of Heritage Resources from the Project may have an effect on the Community Well-being VC due to a reduction in the ability to undertake traditional cultural practices.

3.2.2 Subcomponents

During the VC scoping exercise, two (2) subcomponents, Archaeological Resources, and Historic and Cultural Sites were identified (**Table 3.2-1**). The Archaeological Resources subcomponent is limited to sites protected under the *HCA* and includes both known and as-yet unknown archaeological sites. The Historic and Cultural Sites subcomponent includes resources, exclusive of archaeological sites, that have been identified as important for their historical, cultural, scientific, and/or educational value to the general public, local communities, and/or Indigenous groups such as post-1846 CMTs, areas of Indigenous cultural significance, and palaeontological resources. While some of these sites may be protected by legislation, legislated protection is not a requirement for inclusion as a historic or cultural resource.

Table 3.2-1: Summary of Rationale for Selection of Valued Components (VC) and Subcomponents and Their Linkages

Subcomponent	Rationale for Inclusion	Source of Information	VC Linkages	
Archaeological Resources	▪ Potential for Project interaction ▪ Protected under the <i>Heritage Conservation Act</i>, RSBC 1996, c 187 (GovBC 1996b) ▪ Identified by Office of the Wet'suwet'en ▪ Historically addressed for previous projects with similar conditions	▪ Archaeology Branch ▪ Office of the Wet'suwet'en (OW)	Dependent on: ▪ Vegetation ▪ Land and Resource Use	Supporting: ▪ Community Well-being
Historic and Cultural Sites	▪ Potential for Project interaction	▪ Provincial and federal governments	Dependent on: ▪ Vegetation	Supporting: ▪ Community Well-being

Subcomponent	Rationale for Inclusion	Source of Information	VC Linkages	
	- Potential for protection under legislation - Identified during consultation - Historically addressed for previous projects with similar conditions	- Office of the Wet'suwet'en - Local community	- Wildlife - Land and Resource Use	Land and Resource Use

Notes: VC=Valued Component

3.2.3 Indicators

Indicators are quantitative or qualitative measures used to describe existing VC or VC subcomponent conditions and trends, and to evaluate potential Project effects and cumulative effects on the VC. The indicators used in the assessment of Project-related effects on the Heritage Resources subcomponents are shown in **Table 3.2-2**.

Table 3.2-2: Indicators for the Heritage Resources Subcomponents

Indicator	Rationale for Selection
Archaeological Resources Subcomponent	
Change in presence, number, type, and/or significance of archaeological sites	Project activities could affect the ground surface or vegetation within the boundaries of a known or as-yet unknown archaeological site.
Historic and Cultural Sites Subcomponent	
Change in presence, number, type, and/or significance of post-1846 culturally modified trees (CMTs)	The Project has the potential to impact post-1846 CMTs. Pre-1846 CMTs are considered under Archaeological Resources.
Change in presence, number, type, and/or significance of areas of Indigenous cultural significance	The Project has the potential to alter the extent of areas that are significant to the Wet'suwet'en.
Change in presence, number, type, and/or significance of palaeontological sites	The Project has the potential to alter palaeontological resources.

Notes: Project=Tenas Project

3.2.4 Assessment Boundaries

The spatial and temporal boundaries encompass the area within, and the times during which the Project is expected to interact with the Heritage Resources VC. This subsection defines the boundaries, or limits, of the Heritage Resources VC assessment.

3.2.4.1 Spatial Boundaries

The proposed spatial boundaries for the Local Study Area (LSA) and Regional Study Area (RSA) include areas that may be affected by Project-related activities.

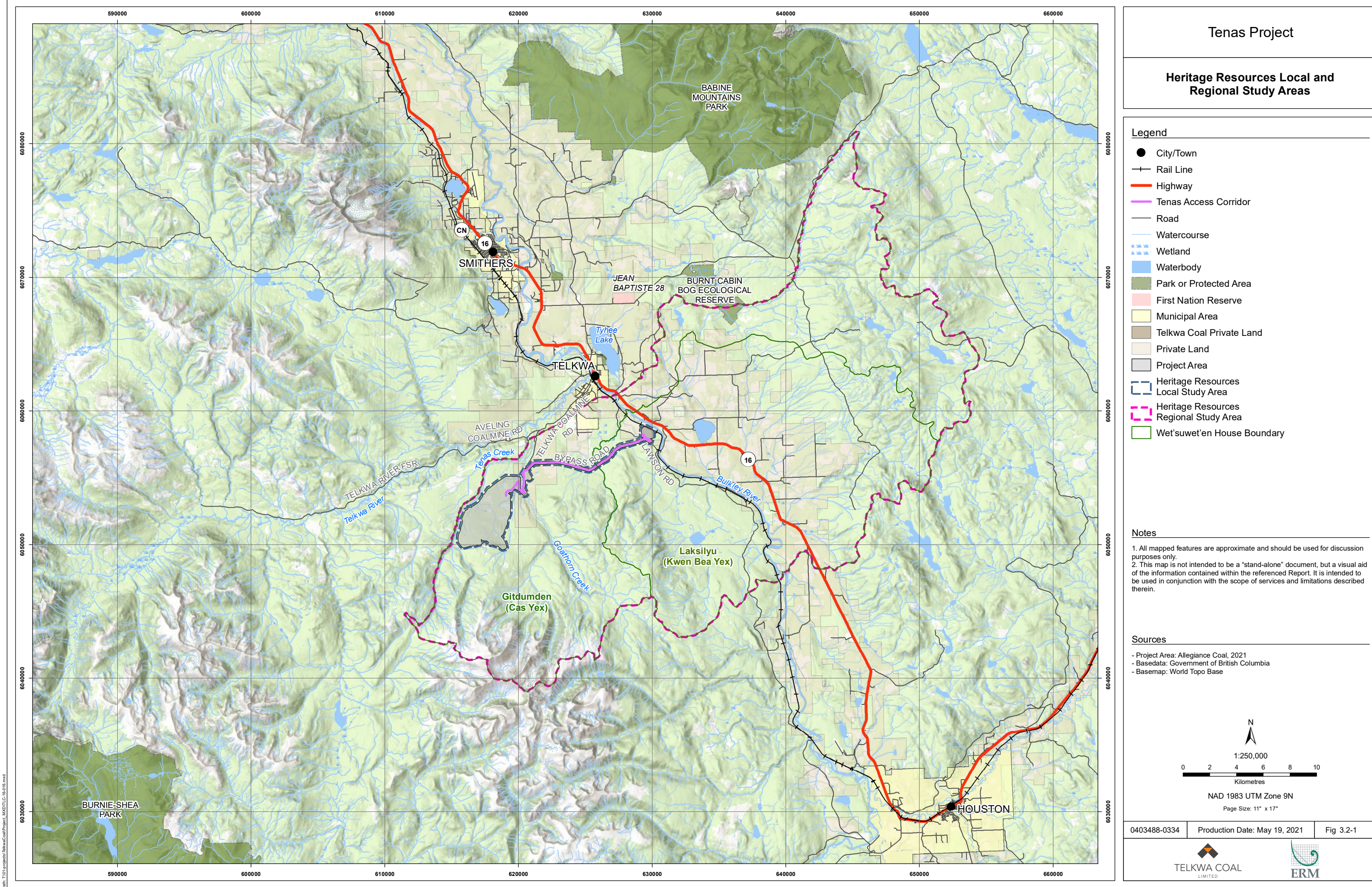
The LSA is the area surrounding and including the Project Area, where there is a reasonable potential for the Project or Project-related activities to interact with and potentially have an adverse effect on the Heritage Resources VC. The Heritage Resources LSA includes the Project Area with a 100 metre (m) buffer, since effects on this VC can only arise through direct disturbance.

The RSA, which encompasses the LSA, is established to provide a regional context for the assessment of Project effects. The RSA is based on the House boundaries of the Gitdumden (Cas'Yex) and Laksilyu (Kwen Bea Yex) Wet'suwet'en Clans, and a 500 m buffer on the Project Area, to provide context for the potential effects that may occur within the LSA. The RSA also encompasses the area within which the residual effects of the Project are likely to interact with the residual effects of other past, present or reasonably foreseeable projects and/or activities, resulting in a cumulative effect or cumulative effects. Therefore, the RSA also defines the boundaries of the cumulative effects assessment (CEA).

The LSA and RSA are described in **Table 3.2-3** and shown on **Figure 3.2-1**.

Table 3.2-3: Spatial Boundary Definitions for the Heritage Resources Valued Component (VC)

Spatial Boundary	Description of Study Area
Local Study Area (LSA)	The Project Area and a 100 metre (m) buffer where direct effects may occur.
Regional Study Area (RSA)	The House boundaries of the Gitdumden (Cas'Yex) and Laksilyu (Kwen Bea Yex) Wet'suwet'en Clans, and a 500 m buffer on the Project Area.



3.2.4.2 Temporal Boundaries

The temporal characteristics of the Project's Construction, Operation, Decommissioning and Reclamation, and Post-closure phases are detailed in **Table 3.2-4**. They are described in greater detail in **S1.0 Overview of Project Proponent Description** of the **EAC Application**. Effects on the Heritage Resources VC may occur within the Construction, and Operation phases of the Project, as the maximum extent of disturbance will occur in the Operation Phase, and no new disturbance will occur in the Decommissioning and Reclamation, and Post-closure phases.

Table 3.2-4: 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 soil, overburden and 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 soil, overburden, and 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 operation including, where available, reclamation activities such as sloping, topsoil placement 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 growth media, 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.

3.2.4.3 *Administrative Boundaries*

Administrative boundaries are political, economic, fiscal, or social constraints that may not align with the LSA or RSA boundaries, or otherwise interfere with the ability to identify or assess potential effects. No administrative boundaries were identified for the Heritage Resources VC.

3.2.4.4 *Technical Boundaries*

Technical boundaries refer to the constraints imposed on the assessment by limitations in the ability to predict the effects of the Project (e.g., difficulties in accessing parts of a study area due to rugged or hazardous terrain). No technical boundaries were identified for the Heritage Resources VC.

4. EXISTING CONDITIONS

This subsection describes the existing conditions of the Heritage Resources VC based on TK, historic and other information, and baseline studies undertaken for the Project.

4.1 Background Information and Studies

This subsection is based on archaeological, palaeontological, and TK/Traditional Use (TU) assessments undertaken for the Project as well as other relevant ethnographic, historic, and archaeological studies, reports, and records. Searches of the British Columbia (BC) Archaeological Site Inventory, using the Remote Access to Archaeological Data (RAAD) application, and of the BC Land Title Survey Authority (LTSA) database were also performed.

4.1.1 Traditional Knowledge (TK)

The **CUS (Appendix 7.1-B)** compiled a baseline inventory of cultural heritage resources pertaining to Wet'suwet'en communities by examining pre-existing cultural, social, historic, and economic data. One (1) of the objectives of the CUS was to provide historical, cultural, and archaeological background data relevant to the study area and adjacent regions (Crossroads Cultural Resource Management [Crossroads] 2021). TK is used in the context of the Heritage Resources VC to understand the effects of the Project on cultural resources of significance to the Wet'suwet'en, and the development of mitigation measures to reduce adverse effects. Additional information can be found in **Appendix 7.1-B** and in **S11.0 Wet'suwet'en Rights and Interests Assessment** of the **EAC Application**.

4.1.2 Scientific and Other Information

Existing scientific and other information relevant to the Heritage Resources VC was researched for context and applicability to the assessment.

Sources of information include bio-geoclimatic information (Bulkley Valley Land and Resource Management Plan [LRMP] 1998, Hewer 1998; Meidinger et al. 1991), local histories (Bourgon 1979, British Columbia Ministry of Mines [BC MOM] 1906, Telkwa Coal n.d.) and archaeological data from the RAAD database maintained by the Archaeology Branch and a search of the LTSA database.

4.1.3 Baseline Studies

This subsection is based largely on the **Tenas Project Archaeological Baseline Report (Appendix 7.1-A)**, **CUS (Appendix 7.1-B)**, and **Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** with supporting information from other documents (**Table 4.1-1**).

The **Tenas Project Archaeological Baseline Report (Appendix 7.1-A)** describes the archaeological setting within the RSA, with fieldwork focused on the Project Area where impacts are most likely to occur. The **CUS** describes cultural heritage resources within the RSA (**Appendix 7.1-B**). The **Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** discusses the palaeontological setting within the RSA, the potential for palaeontological sites within the LSA, and provides recommendations for identifying sites prior to construction activities.

Table 4.1-1: Summary of Desktop and Field Studies Related to Heritage Resources Valued Component (VC)

Study Name	Study Purpose, Duration and Spatial Boundaries
Tenas Project Archaeology Baseline Report (Appendix 7.1-A)	Summarizes the results of the archaeological studies undertaken from 2017 to 2019 for the Project, including an Archaeological Overview Assessment (AOA), Preliminary Field Reconnaissance (PFR), and an Archaeological Impact Assessment (AIA) conducted under <i>Heritage Conservation Act</i> , RSBC 1996 c 187 (GovBC 1996b) Heritage Inspection Permit 2018-0338. This study focuses on the Project Area plus a 500 metre (m) buffer.
Tenas Project Cultural Use Study (Appendix 7.1-B) (CUS)	A desk-based baseline inventory of cultural heritage resources pertaining to Wet'suwet'en communities, concentrating on Wet'suwet'en culture, history, land use, socio-economic demographics, and governance. This study focuses on the Local Study Area (LSA).
Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)	A desk-based baseline inventory of palaeontological resources within the Regional Study Area (RSA).
A History of Coal Mining in Telkwa (Telkwa Coal Limited [TCL] n.d.)	A historical pamphlet documenting coal mining in the Telkwa Valley, produced by Telkwa Coal Limited (TCL) in collaboration with the Telkwa Museum and Bulkley Valley Printers.

The **Tenas Project Archeological Baseline Report (Appendix 7.1-A)** included an AOA, a PFR and an AIA. For the AOA, a desk-based assessment of the Project Area and surrounding study areas was conducted to determine the areas with archaeological potential. Research for the AOA included:

- ▶ a review of the RAAD database maintained by the Archaeology Branch, land survey records, and other relevant records and inventory files;
- ▶ a review of all previous archaeological and ethnographic investigations in the study area and adjacent areas;
- ▶ examination of orthophotos, topographic information, forest cover information, and geological information;
- ▶ a review of relevant information from published and unpublished sources, both local and regional; and
- ▶ history, prehistory, and ethnography.

Based on the background research, areas were identified as having archaeological potential based on the following criteria:

- ▶ a defined topographical rise on level terrain and/or surrounded by a wetland (e.g., knolls, eskers, whalebacks);
- ▶ adjacent to a significant change in slope (e.g., terrace edges, valley tops, ridges);
- ▶ well-drained and relatively level;
- ▶ a source of water in close proximity (e.g., lake, stream, mineral seep, seasonal water run, wetland complex);
- ▶ on a preferred path of travel between or adjacent to landscape features (e.g., edges of wetlands and terraces, ridge-tops, shorelines);

- ▶ offers a view of wetlands and/or natural corridors (e.g., gullies, valleys, ridges, estuaries);
- ▶ any of the above conditions that existed in the past (e.g., abandoned terraces, palaeo-drainages), but are not present today;
- ▶ areas of old growth timber for CMT sites; and,
- ▶ areas within 250 m of a known archaeological or TU site, or within 500 m of a known pack trail, provided environmental conditions of adjacent terrain would have been suitable for use and/or occupancy in the past, and no substantial variation in terrain is evident around known sites or within trail corridors.

Following the desk-based assessment of archaeological potential, a helicopter fly-over of the baseline Project study area was conducted in 2017, and a PFR was conducted in June 2018 to gather further information on the archaeological potential within the LSA. During the PFR:

- ▶ pedestrian transects were conducted by three (3) individuals spaced 5 to 15 m apart throughout the proposed impact zone;
- ▶ potential archaeological and TU sites were marked with Global Positioning System (GPS) and flagged to be further recorded during the AIA; and
- ▶ areas with high archaeological potential were identified, photographed, and recorded with GPS.

The AIA was conducted in June and October 2019, and was based on the methodology in the permit application. The methodology included:

- ▶ visual inspections:
 - ▶ Pedestrian transects, spaced 5 to 15 m apart, were walked by a two (2)- or three (3)-person crews;
 - ▶ In areas of high archaeological potential, survey transects were spaced 5 to 10 m apart and areas of surface exposure were closely examined;
- ▶ subsurface inspections:
 - ▶ In areas of archaeological potential, subsurface shovel tests, with a minimum area of 30 cm by 30 cm, were excavated until sterile soil was reached;
 - ▶ Subsurface testing was undertaken to define the horizontal and vertical extent of the archaeological site deposits;
 - ▶ If present, archaeological materials were documented with photographs and in field notes, the location was recorded with GPS, the area and the associated subsurface tests were sketched on a map, and the finds were collected and labelled;
- ▶ CMTs:
 - ▶ CMT recording was based on the Level 1 recording procedures set out in the Culturally Modified Trees of British Columbia handbook and Archaeology Branch Bulletin 16 (Archaeology Branch 2001);
 - ▶ CMT dating was based on tree stand age data from the British Columbia Ministry of Forests (BC MOF), increment cores, and visual clues;
 - ▶ Location, tree type, and metric attributes of the modifications were recorded; and
 - ▶ Trees were flagged and labelled with an identifying number.

The **CUS (Appendix 7.1-B)** including an examination of pre-existing cultural, social, historic, and economic data, primarily focused on Wet'suwet'en persons and communities particularly the house territories near the Project Area. Research for the **CUS (Appendix 7.1-B)** included:

- ▶ publicly available academic, government, industry, and Wet'suwet'en databases;
- ▶ transcripts from Delgamuukw vs BC as well as historic records, maps, and ethnographies were accessed through the University of British Columbia; and
- ▶ primary source data on cultural use gathered by, or shared with, Crossroads was also considered taking into account Wet'suwet'en input and concerns about data confidentiality.

The report provides a summary of Office of the Wet'suwet'en (OW) culture and history including discussion of the following:

- ▶ an ethnographic overview detailing the Wet'suwet'en language, social structure, season round, land management, pre- and post-contact land use, legislation, traplines, and current land use disputes;
- ▶ the two (2) forms of governance (hereditary and band) which currently represent the interests of the Wet'suwet'en people and a description of the clan and house groups;
- ▶ the socio-economic setting detailing demographics, community infrastructure and services, housing and infrastructure, emergency facilities and services, education and training, the market economy, the land-based Wet'suwet'en economy, and community health and well-being;
- ▶ Wet'suwet'en land-use, values and interests including water, fish, wildlife, and heritage including the importance of place names, hunting and trapping, plant gathering and use, trails, transportation corridors and land access, habitation areas, and spiritual and ceremonial use and values; and
- ▶ intangible cultural values including knowledge and cultural transmission, connection to the land, and sense of place.

The **Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** includes an examination of known palaeontological sites and geological deposits with the potential for fossil specimens, and the objectives of the study are to:

- ▶ Describe the geological background research of the LSA and RSA relevant to this Project;
- ▶ List known fossil localities and illustrate them in relation to the Project Area;
- ▶ Assess the level of Palaeontological Resource Potential of the Project Area;
- ▶ Identify the risk to fossils based on criteria detailed in **Tables 1 and 2 of Appendix 7.1-C**;
- ▶ Make recommendations on what actions are required for the next stages of the Project in order to prevent development from adversely impacting significant fossil resources; and
- ▶ Provide a Chance Find Procedure for palaeontological resources.

The report provides a summary of known palaeontological sites and the potential for as-yet unknown sites to be present within the Project Area. The report details:

- ▶ the geological setting of the RSA and LSA;
- ▶ the Quaternary and Pre-Quaternary palaeontological potential;
- ▶ recommendations for further work, and
- ▶ maps and tables showing known micro and macro fossil locations.

4.2 Description of Existing Conditions

This subsection provides a description of pre-Project conditions (i.e., conditions prior to interaction with the Project), based on TK, scientific and other information, and baseline studies undertaken for the Project.

4.2.1 Regional Overview

The following subsections describe the biophysical, cultural, historical, and palaeontological setting within the RSA based on information from the **Tenas Project Archaeological Baseline Report (Appendix 7.1-A)**, **CUS (Appendix 7.1-B)**, and **Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** undertaken for the Project, as well as historical information and other relevant sources.

4.2.1.1 *Biophysical Setting*

The Project is located in the Bulkley-Nechako region at the northwestern edge of the Nechako Plateau, an area of flat to rolling terrain near the confluence of the Telkwa and Bulkley rivers. The Skeena Mountains are to the north and the Hazelton Mountains to the west. The Project is within the Sub-Boreal Spruce biogeoclimatic (BGC) zone with forested areas composed primarily of white and Engelmann spruce and sub-alpine fir, interspersed with stands of lodgepole pine, aspen, and birch. Large mammals in the area include moose, mule deer, white tail deer, black bear, grizzly bear, grey wolf, cougar, bighorn sheep, mountain goat, and caribou. Smaller mammals, such as coyote, porcupine, beaver, and fox, as well as fur bearing species such as snowshoe hare, mink, marten, and fisher, are common here. Salmon can be found in many of the streams and rivers throughout the region (Hewer 1998; Meidinger et al. 1991). The landscape was previously affected by a large forest fire in 1914 and more recently by the Mountain Pine Beetle epidemic. The area has also been heavily affected by farming and logging (**Appendices 7.1-A and 7.1-B**). For additional information on the biophysical setting see **S4.0 Environmental Effects Assessment** of the **EAC Application**.

4.2.1.2 *Cultural Setting*

The Project is located within the traditional territory of the Wet'suwet'en, specifically the Gitdumden (Wolf and Bear) and the Laksilyu (Small Frog) clans. The Wet'suwet'en seasonal round focused on the harvesting of salmon in the summer, with family groups dispersing to their House's resource gathering areas for the remainder of the year for fishing, hunting, trapping, and gathering. Hunting and trapping was focused on elk, caribou, deer, bear, rabbit, and marten. Gathering activities included the use of trees for medicines, tools, building materials, and firewood, and the collection of berries, which were harvested and dried. The Wet'suwet'en traditionally used controlled burning to manage plants and wildlife in their harvest areas (**Appendices 7.1-A and 7.1-B**).

4.2.1.3 *Historical Setting*

Early European settlement in the area was focused on mineral exploration; however, European goods had been arriving in the area from the coast through trade with the Gitksan. In the mid-1860s, a telegraph line to connect North America to Europe across the Bering Strait was under construction between New Westminster and Kispiox, passing along the south and east sides of Tyhee Lake. Though the project was eventually abandoned following the completion of an alternate line across the Atlantic, the telegraph line and the associated trail and maintenance cabins had been constructed through the Bulkley Valley. The early settlement of Aldermere was a rest station along the Telegraph Trail.

By 1907, the population was shifting towards Telkwa, influenced by the construction of the Grand Trunk Pacific Railway (GTPR). The GTPR also led to the development of the Hubert town site at a proposed Division Point along the rail line. A bridge was built across the Bulkley River to the town site and a small

community sprang up, boasting a church, a hotel, a general store, a bake shop, an office building, and several cabins. Unfortunately for the community of Hubert, the GTPR changed the location of the Division Point to Smithers and, as a result, the settlement at Hubert was short-lived. By 1919, the town site was all but abandoned, though some buildings which were not removed for use elsewhere, remained until destroyed in a fire. In 1972, when an early resident returned to the area, they were able to relocate the roads, now overgrown with poplar and cottonwood, the concrete foundation of an office building and an associated safe, as well as traces of other buildings (Bourgon 1979).

Prospecting in the area south of Telkwa increased following the completion of the GTPR, with coal and copper being the primary resources sought. A 1905 BC MOM report noted that trails used by the prospectors included one (1) along the east side of Telkwa Creek that crossed the flat at the mouth of the river, and then travelled along a gravel bench. The trail branched to the left at Goathorn Creek. Early portions of the trail were reported to be in good condition, but worsened as the trail gained elevation, where it was described as being about as bad a trail could be (BC MOM 1906).

The Telkwa Collieries Mine began mining in the 1910s and became an economic driver for the area by 1918, when it shipped 1,400 tons of coal. The completion of the GTPR allowed for improved movement of people, goods, and equipment through the Bulkley Valley. Roads in the area were improved, and bridges over the Bulkley and Telkwa rivers were constructed. This infrastructure led to increased interest in the mineral potential of the area during the 1920s and 1930s, with coal mines developed along the Telkwa River and Goathorn Creek. The Second World War brought such an increased demand for coal that soldiers were assigned to work at the mines. In 1950, a power transmission line reached Telkwa. This allowed a mine owned by Bulkley Valley Collieries to run on electricity. In the 1960s, many industries switched from coal to oil, and the demand for coal began to decline. Prospecting also peaked in the 1960s with mineable deposits located around the Telkwa Range and Hudson Bay Mountain, resulting in the development of the Duthie, Conin, Dome Mountain, and the Telkwa coal mines (Telkwa Coal Ltd n.d.).

4.2.2 Archaeological Resources Subcomponent

An archaeological assessment was conducted for the Project by Crossroads (**Appendix 7.1-A**). The assessment included an AOA, a PFR, and an AIA conducted under *HCA* Heritage Inspection Permit 2018-0338. The AOA was a desk-based exercise that identified areas of archaeological potential within and around the proposed infrastructure.

There are 11 known archaeological sites within the RSA, of which nine (9) are protected under the *HCA* (**Table 4.2-1**). Site GdSr-1 has Legacy status, meaning that the location is no longer protected under the *HCA*; and another, GdSr-12, is a historic site consisting of historic buildings and features that is not automatically protected under the *HCA*. The remaining nine (9) sites are pre-contact sites protected under the *HCA*.

Table 4.2-1: Archaeological Sites within the Regional Study Area (RSA)

Borden Number	Description	Project Infrastructure	Current <i>HCA</i> Status	Permit Report
GdSr-1	Human Remains	3,074 m east of Rail Infrastructure	Legacy*	1974-0001
GdSr-4	Marker Stone	8,855 m east of Rail Infrastructure	Protected	1974-0001
GdSr-7	Cache Pit	4,852 m southeast of Rail Infrastructure	Protected	1975-0004

Borden Number	Description	Project Infrastructure	Current HCA Status	Permit Report
GdSr-8	House Pits, Cache Pit, CMT, Cultural Depression	278 m east of Rail Infrastructure	Protected	1975-0004; 1997-0285
GdSr-9	Cache Pit	9,706 m southeast of Rail Infrastructure	Protected	2008-0181
GdSr-10	Cache Pit	9,905 m southeast of Rail Infrastructure	Protected	2008-0181
GdSr-11	Cache Pit, Hearth, Lithics, Faunal, Fire Broken Rock	10,011 m southeast of Rail Infrastructure	Protected	2008-0181
GdSr-12	Historic structures	6,222 m southeast of Rail Infrastructure	Not automatically protected	2012-0400
GdSs-5	CMT, Lithics	285 m east of Tenas Access Corridor (TAC)	Protected	1990-0011; 1997-0285
GeSr-1	Lithic	1,053 m north-northwest of Rail Infrastructure	Protected	2014-0100
GeSs-11	House Pits, Cache Pit	2,315 m northwest of Rail Infrastructure	Protected	1975-0004; 1978-0007

Notes: CMT=culturally modified tree; HCA=Heritage Conservation Act, RSBC 1996 c 187 (GovBC 1996b); m=metre
Legacy status is no longer protected under the HCA.

There are no previously recorded archaeological sites within the LSA. AIA fieldwork was conducted in 2018 and 2019, and included both visual inspection of surface exposures and subsurface testing. The AIA identified no new archaeological sites; therefore, there are no known archaeological sites within the LSA.

4.2.3 Historic and Cultural Sites Subcomponent

Historic and Cultural Sites include post-1846 sites important to the local Indigenous and non-Indigenous communities, as well as palaeontological sites and continuous use sites without evidence of pre-1846 use. The Forest Planning and Practices Regulation, BC Reg 14/2004 (GovBC 2004b) provides protections for cultural heritage resources that are the focus of a TU by an Indigenous people that is of continuing importance to that people, and not regulated under the HCA. The following subsection will describe identified historic and cultural resource types within the RSA and known sites within the LSA. These include trails, harvest areas, sacred sites, CMTs, a historic town site, and cultural use areas.

Wet'suwet'en territory contained a large trail network connecting the population to villages, trade routes, resource locations, and spiritual sites among others. A major trail ran through Telkwa Pass, which facilitated trade between the Wet'suwet'en and coastal First Nations. Trails were often marked by blazed trees and located on upper terrace edges above the flood plains of creeks and rivers. Many pre-contact trails are still in use today for Indigenous resource harvesting, recreation, and/or have been repurposed as major modern travel corridors including roads and highways (**Appendix 7.1-B**). A cultural trail exists in the vicinity of Tenas Creek based on discussions to date with the OW (meeting with members of OW, 18 Sept 2018, see **Appendix 11.0-A** of **S11.0 Wet'suwet'en Rights and Interests Assessment** of the **EAC Application**).

The Wet'suwet'en harvest a wide variety of resources from areas within their house territories, including foods from hunting, fishing, berry-picking, and plant gathering. The Wet'suwet'en use approximately 60 plant species for food, the vast majority of which are harvested from forest and woodland settings, or along

watercourses (British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development [BC MFLNRORD] 2017). The Tenas and Goathorn creeks are important salmon spawning and rearing areas (Bulkley Valley Community Resources Board Interagency Planning Team 1998). Fishing camps have been located along the Bulkley and Telkwa rivers (Morris et al 2006). For more information on harvesting activities, see **S6.0-C4 Land and Resource Use VC** and **S11.0 Wet'suwet'en Rights and Interests Assessment** of the **EAC Application**.

There are no known sacred areas within the RSA. Burial sites, sometimes indicated by markings carved into pine trees, are often associated with trails and at hunting grounds, and are considered sacred. Burials are also protected under the *HCA* regardless of age.

Table 4.2-2 and **Figure 4.2-1** outline seven (7) identified Historic and Cultural Sites within the LSA. These sites are not protected under the *HCA* but may have value to the local Indigenous and non-Indigenous communities and are, therefore, included in the Heritage Resources VC assessment. These sites include three (3) post-1846 CMTs, three (3) historic sites associated with the Bulkley Valley Collieries 1, 2, and 3 mine sites, and the Hubert town site.

An additional cultural site of note is a site known as *Dudii Nai C'en*, located either at Hubert or across the Wedzin Kwah/Bulkley River from Hubert (outside of LSA). In testimony during Delgamuukw, the site was described as featuring two totem poles and a gravestone. Please refer to **6.4.3.2 Physical Cultural Heritage** in **S11.0 Wet'suwet'en Rights and Interests Assessment of the EAC Application** for additional information.

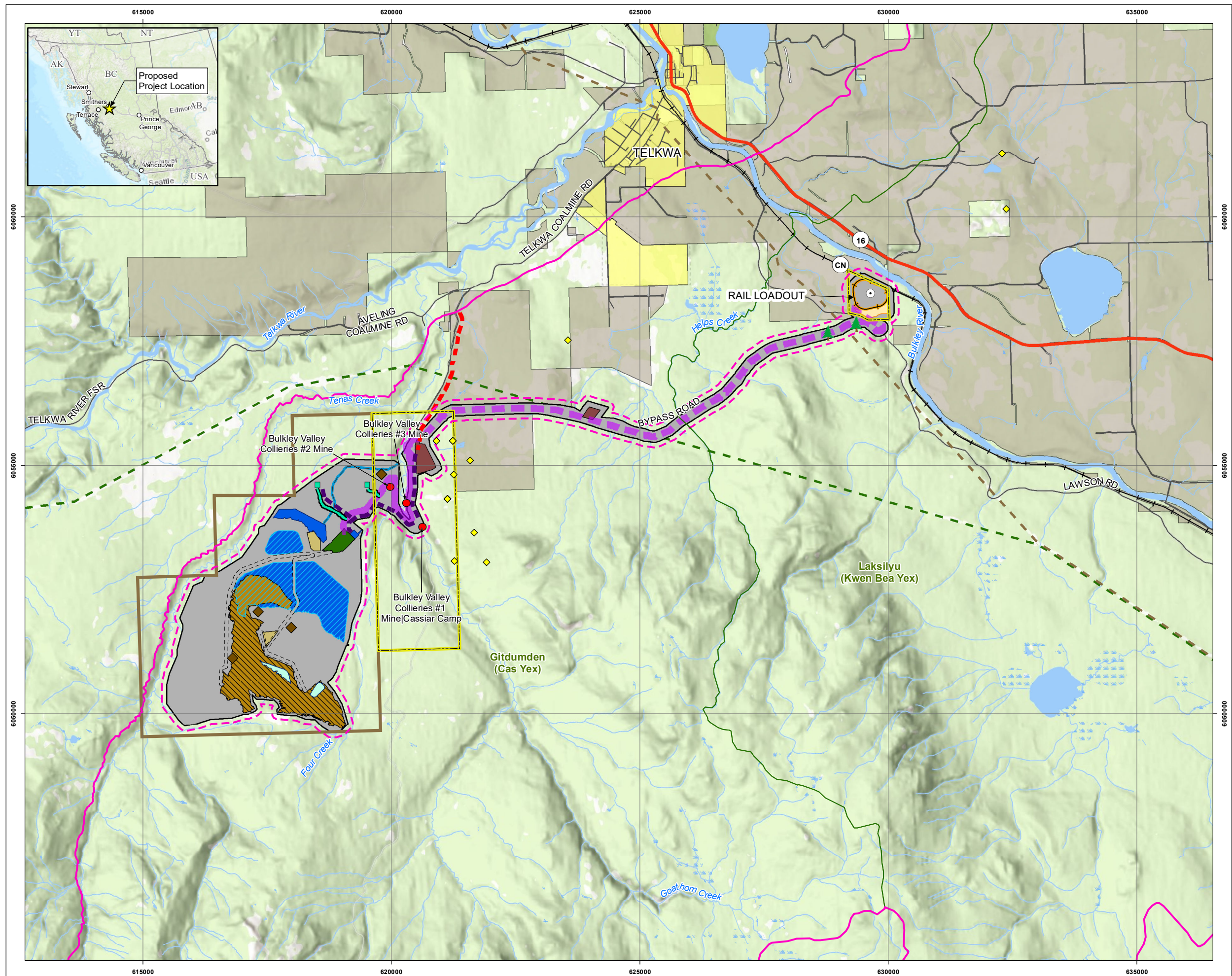
Table 4.2-2: Historic and Cultural Sites within the Local Study Area (LSA)

Name	Description	Project Infrastructure	Current HCA Status	Permit Report
GdSs-1	Historic CMTs and buildings associated with Bulkley Valley Collieries	42 m west of TAC	Not protected	1997-285
GdSs-2	Historic buildings associated with Bulkley Valley Collieries	230 m southeast of TAC	Not protected	1997-285
GdSs-3	Historic buildings associated with Bulkley Valley Collieries	20 m west of TAC	Not protected	1997-285
CMT1	Post-1846 CMTs	2 m north of Rail Infrastructure	Not protected	2018-0338
CMT2	Post-1846 CMTs	25 m south of Rail Infrastructure	Not protected	2018-0338
CMT3	Post-1846 CMTs	18 m south of Rail Infrastructure	Not protected	2018-0338
Hubert Town Site	The location of the early 20 th century Hubert town site	Rail Loop and Loadout	Not protected	n/a

Notes: CMT=culturally modified tree; HCA= Heritage Conservation Act, RSBC 1996 c 187 (GovBC 1996b); m=metre; n/a=not applicable; TAC=Tenas Access Corridor

There are 286 fossil sites documented within the RSA and it has been identified as a Fossil Important Area by the BC MFLNRORD. There are four (4) known pre-Quaternary paleontological sites within the LSA including three (3) bivalve fossils identified during Project-related exploration drilling which are beyond the current mining horizon of seam 1 and one (1) previously identified fossil location consisting of an ammonoid and microfossils (**Figure 4.2-1** and **Appendix 7.1-C**).

Path: T:\01_projects\TelkwaCoal\Project_Maps\TLC-02-001.mxd



Tenas Project

Known Historical and Cultural Sites

Legend

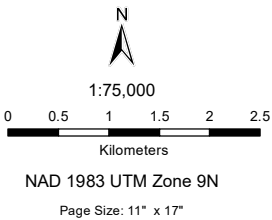
	Rail Line		Existing 25 kV Power Line
	Highway		25 kV Power Line
	Road		Haul Road
	Watercourse		Rail Loop
	Wetland		Discharge Path
	Waterbody		Tenas Access Corridor
	Municipal Area		Backfill Area
	General Private Property		Control and Plant Sedimentation Pond
	138 kV Transmission Line		Explosive Infrastructure
	500 kV Transmission Line		Management Pond
	Post-1846 Culturally Modified Tree		Mine Infrastructure Complex
	Fossil Site (within LSA)		Open Pit
	Fossil Site (within RSA)		Pit Lake
	Hubert Townsite		Quarry
	Early Mine Site		Rail Infrastructure
	Heritage Resources Local Study Area		Topsoil Stockpile
	Heritage Resources Regional Study Area		Tenas Coal Licenses
	Wet'suwet'en House Boundary		Telkwa Coal Limited Private Property
			Project Area

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.
3. Project line features are for display only.

Sources

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



0403488-0308

Production Date: Nov 04, 2021

Figure 4.2-1



5. ASSESSMENT OF PROJECT-RELATED EFFECTS

This subsection describes the potential effects to the Heritage Resources VC, including the subcomponents of Archaeological Resources, and Historic and Cultural Sites both known and as-yet unknown. This assessment includes:

- ▶ potential Project-related interactions with the Heritage Resources VC;
- ▶ potential Project-related effects on the Heritage Resources VC;
- ▶ mitigation measures; and
- ▶ residual effects and significance determinations, if applicable.

5.1 Potential Project-related Interactions with Heritage Resources Valued Component (VC)

The intention of this subsection is to focus on those interactions with potential to adversely affect the Heritage Resources VC. To accomplish this task, the potential for interactions between the Heritage Resources VC and identified Project activities are considered. Each potential interaction is rated using the terms provided in **Table 5.1-1**. Interactions expected to result in potential effects on the Heritage Resources VC (**Table 5.1-2**) are discussed further in **5.2 Potential Project-related Effects**.

Table 5.1-1: Potential for an Interaction between the Heritage Resources Value Component (VC) and the Tenas Project

Term	Definition
No Interaction	Tenas Project (Project) activity will not interact with the Heritage Resources Valued Component (VC); no adverse effect is expected; no further consideration is warranted.
Interaction	Interaction between the Project activity and the Heritage Resources VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable or detectable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

Table 5.1-2: Interactions between the Heritage Resources Valued Component (VC) and the Tenas Project

Project Activities	Heritage Resources Subcomponent	
	Archaeological Resources	Historic and Cultural Sites
Construction		
Transportation of equipment, materials, and personnel		
Site clearing (surveying, clearing, grubbing, soil salvaging)	X	X
Construction of Surface Water Management Infrastructure, including channels and ponds (sedimentation, control, management, storage)	X	X
Construction of Bypass Road and quarries from the Minesite to the Rail Infrastructure	X	X
Improvements to existing private road and Forest Service Roads	X	X
Construction of haul roads and service roads within the Minesite	X	X
Construction of the permanent Goathorn Bridge Crossing over Goathorn Creek	X	X
Construction of the Coal Processing Plant	X	X
Construction of fuel and lubricant storage facilities and distribution network	X	X
Construction of administration buildings (first aid, maintenance, mine dry, warehouse, laboratory, parking, and vehicle wash facilities)	X	X
Construction of a 25 kilovolt (kV) powerline and a 600 volt (V) substation adjacent to the Coal Processing Plant	X	X
Construction of Rail Infrastructure including Rail Loop and Loadout connecting to the existing main Canadian National Railway line	X	X
Installation of water supply wells, storage, and distribution system	X	X
Construction of the water discharge infrastructure	X	X
Construction of storage piles for overburden, rock separated from coal in Coal Processing Plant, and stockpiles for topsoil and vegetation management	X	X
Construction of material handling systems for Minesite, including run-of-mine coal, processed coal, process rock conveyors, and stockpiles	X	X
Construction of solid waste management systems including recycling and composting facilities	X	X
Construction of Explosives Magazine (storage building)	X	X
Employment and labour		

Project Activities	Heritage Resources Subcomponent	
	Archaeological Resources	Historic and Cultural Sites
Operation		
Mining the open pit (soil salvaging, drilling and blasting, excavation of material, dewatering, loading, hauling, unloading)	X	X
Operation of Surface Water Management Infrastructure including channels and ponds (sedimentation, control, management, storage)		
Maintain and use Bypass Road and quarries from the Minesite to the Rail Infrastructure	X	X
Maintain improved private and Forest Service Roads	X	X
Maintain haul roads within the Minesite, including service roads	X	X
Maintain permanent bridge over Goathorn Creek		
Operate Coal Processing Plant		
Maintain fuel and lubricant storage facilities		
Maintain administration buildings (first aid, maintenance, mine dry, warehouse, laboratory, and vehicle wash facilities)		
Maintain 25 kV powerline and a 600 V substation adjacent to the Coal Processing Plant		
Transportation of equipment, materials, and personnel		
Maintain and use Rail Infrastructure including Rail Loop and Loadout connecting to the existing main Canadian National Railway line		
Operate water supply wells, storage, and distribution system		
Operate the water discharge infrastructure		
Maintain storage piles for overburden, rock separated from coal in Coal Processing Plant, and stockpiles for topsoil and vegetation management		
Operate material handling systems for Minesite, including run-of-mine coal, processed coal, process rock conveyors, and stockpiles		
Operate solid waste management systems including recycling and composting facilities		
Maintain Explosives Magazine (storage facilities)		
Progressive reclamation		
Employment and labour		

Project Activities	Heritage Resources Subcomponent	
	Archaeological Resources	Historic and Cultural Sites
Decommissioning and Reclamation		
Dismantle and remove mining equipment and facilities (including powerline, Rail Infrastructure)		
Transportation of equipment, materials, and personnel		
Reclamation and closure activities at Minesite		
Reclamation and closure of Bypass Road and haul roads, including quarries		
Reclamation and closure of permanent bridge over Goathorn Creek		
Reclamation and closure of powerlines		
Reclamation and closure of Rail Infrastructure		
Implement post-mining systems and monitoring		
Employment and labour		
Post-closure		
Maintain post-mining systems and ongoing monitoring		
Transportation of equipment, materials, and personnel		
Employment and labour		

Notes:

Interaction (X): Interaction between the Project activity and the VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

No interaction: (blank cell): Project activity will not interact with the VC, no adverse effect is expected; no further consideration is warranted.

5.2 Potential Project-related Effects

This subsection considers potential adverse Project-related effects on the Heritage Resources VC arising from potential interactions, as identified in **Table 5.1-2**, and in relation to indicators listed in **Table 3.2-2**. There are potential effects from the Project on the Heritage Resources VC from activities during the Construction, and Operation phases; during these phases, the maximum area of disturbance is reached, primarily associated with the disturbance of vegetation and soils. No new disturbance is expected during Decommissioning and Reclamation, and Post-closure phases; therefore, these phases are excluded for further consideration in the assessment. Construction, and Operation phases are considered together because the causes, results, and mitigations for the effects will not change between phases.

Based on the nature of the interactions identified in **Table 5.1-2**, the following adverse effects have the potential to occur:

- ▶ change in presence of Heritage Resources VCs;
- ▶ change in number of Heritage Resources VCs;
- ▶ change in type of Heritage Resources VCs; and
- ▶ change in significance of of Heritage Resources VCs.

As these adverse effects are inter-related, they will be considered together for the purposes of this assessment. Each subcomponent considers both known and as-yet unknown Heritage Resources as even the most thorough assessment may not identify all of the Heritage Resources within an area.

5.2.1 Archaeological Resources Subcomponent

This subsection describes the nature of potential effects on Archaeological Resources that will be considered. Mitigation measures for each potential effect are described in **5.3 Mitigation Measures** below.

5.2.1.1 *Change in Presence, Number, Type, and/or Significance of Sites*

Archaeological site GdSr-8 was within the original location of the Rail Infrastructure; the Project was redesigned to avoid impacting this site. As a result, there are no currently known archaeological sites recorded within the LSA and, therefore, there will be no interaction between the Project and currently known archaeological sites.

Even the most thorough archaeological assessment may not identify all of the archaeological sites, and therefore, there is the potential that as-yet unknown archaeological sites may be present within the LSA. These sites, if present, may be identified through mitigation measures provided in **5.3** during, or prior to, Construction, and Operation phases of the Project. Impacts to any newly discovered archaeological sites would result in a change to the presence, number, type, or significance of Archaeological Resources within the LSA and, therefore, they would be subject to the general management and mitigations discussed in **5.3**.

5.2.2 Historic and Cultural Sites Subcomponent

Similar to **5.2.1 Archaeological Resources Subcomponent**, this subsection describes the nature of potential effects on Historic and Cultural Sites that will be considered, and mitigation measures for each potential effect are described in **5.3 Mitigation Measures**. In contrast to Archaeological Resources, there are known Historic and Cultural Sites recorded within the LSA and, therefore, there will be an interaction with the Project for these sites.

5.2.2.1 *Change in Presence, Number, Type, and/or Significance of Sites*

There are seven (7) known historic sites within the LSA, three (3) of the sites, associated with previous mining activity, were given Borden Numbers by the Archaeology Branch; however, they do not currently qualify for automatic protection under the *HCA*. The remaining sites consist of three (3) post-1846 CMTs and the Hubert town site that do not qualify for automatic protection under the *HCA*. There are also four (4) known fossil sites within the LSA. Potential adverse effects to these sites may occur during the Construction, and/or Operation phases either directly during construction activities or indirectly through increased human presence in the area. These sites, while not automatically protected under the *HCA*, may have value to local Indigenous and non-Indigenous communities. Impacts to these sites would result in a change to the presence, number, type, and/or significance of Historic and Cultural Sites within the LSA. Mitigation measures are provided in **5.3**.

There is also the potential that as-yet unknown Historic and Cultural Sites may be present within the LSA. These sites, if present, may be encountered during the Construction and Operation phases of the Project. Additionally, they may have value to local Indigenous and non-Indigenous communities. Impacts to these sites would result in a change to the presence, number, type and/or significance of Historic and Cultural Sites within the LSA. Mitigation measures are provided in **5.3**.

5.3 Mitigation Measures

This subsection describes mitigation measures to address the potential effects of the Project on the Heritage Resources VC. The mitigation measures are consistent with the definition provided by BC EAO (BC EAO 2013) and encompasses practical means or measures taken to avoid, minimize, rehabilitate onsite, and if required, compensate, or offset the potential adverse effects of a project.

TCL has incorporated several mitigation measures in the Project's design and/or operational procedures to reduce the magnitude, duration, and extent of effects due to the Project. These Project mitigation measures are outlined in **S1.0 Overview of Project Proponent Description of the EAC Application**. Project mitigation measures that are relevant to minimizing Project-related effects on the Heritage Resources VC are summarized in **5.3.1 to 5.3.4** below. Potential adverse effects on the Heritage Resources VC have been eliminated or reduced to the extent feasible through Project design; however, since not all effects can be addressed through design, additional mitigation measures specific to the Heritage Resources VC are described in **5.3.5 to 5.3.11** and in the **Heritage Resources Management Plan (S13.0-C8) (HRMP)**. The selection of mitigation measures for the Heritage Resources VC was informed by: a review of mitigation measures and follow-up programs undertaken for past projects; regulatory requirements; and feasibility. The mitigation measures are expected to be timely and effective following implementation. All mitigation measures of the Heritage Resources VC are summarized in **Table 5.3-1**.

5.3.1 Avoid Sensitive Environments

The Project has been designed to avoid known or previously documented archaeological, cultural, and heritage sites.

Avoidance of Heritage Resources VC sites (both for Archaeological Resources, and Historic and Cultural Sites subcomponents) is always the preferred mitigation measure. To date, archaeological site GdSr-8, a significant archaeological site with cultural depressions indicative of habitation, cache pits, and a historic CMT, was located within the original proposed location of the Rail Infrastructure. Avoidance of archaeological site GdSr-8 was determined to be feasible, the proposed Rail Infrastructure was moved west, and the potential for adverse effects from the Project was eliminated.

5.3.2 Limit Project Footprint and Project Area

- ▶ Cluster Project components, including the open pit, stockpiles for run-of-mine (ROM) coal, processed coal and processed rock, Coal Processing Plant (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 Tenas Access Corridor (TAC) to a single lane width for long distances and utilize existing Forest Service Roads (FSRs) or private roads where appropriate;
- ▶ Backfill approximately 50 percent (%) 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.

5.3.3 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., **HRMP, Construction Environmental Management Plan [S13.0-C4] [CEMP]**);
- ▶ 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.

5.3.4 Heritage Resources Management Plan (HRMP)

The following mitigation measures are applicable to heritage resources:

- ▶ A **HRMP** will be implemented as follows:
 - ▶ 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.

5.3.5 Additional Archaeological Impact Assessments (AIA)

Archaeological studies (i.e., AOAs or AIAs) will be required prior to the Construction Phase if the Project Area changes from that assessed under the 2018 AIA. These assessments will be conducted under an HCA Heritage Inspection Permit, which is required by the Archaeology Branch. Additional archaeological sites may be discovered during assessments.

Any additional archaeological studies have the potential to locate sites relevant to both the Archaeological Resources, and Historic and Cultural Sites subcomponents. Newly discovered archaeological, historic, or cultural sites will be subject to the general management and mitigation measures discussed in the subsections **5.3.3**, **5.3.8**, **5.3.9**, and **5.3.10**, and the **HRMP**.

5.3.6 Palaeontological Fossil Impact Assessment (FIA)

The **Tenas Project Fossil Impact Assessment Preliminary Study (Appendix 7.1-C)** determined that based on the presence of fossiliferous sedimentary rock and four (4) known fossil sites within the LSA, the proximity of known fossiliferous sites within less than one (1) kilometre (km) of the LSA boundaries, and the expected depth of excavation activities associated with the Project, there is the potential for as-yet unknown palaeontological resource to be affected by the Project.

Therefore, a Fossil Impact Assessment (FIA), including a field survey of the Project footprint's bedrock outcrops, will be completed in advance of development activities to assess the significance of the four (4) known fossil sites and the risks of Project activities to affect as-yet unknown significant fossil resources. The results of the FIA will determine the mitigation measures required, if any, for the Construction, and Operation phases of the Project. The FIA will be completed at least six (6) months prior to commencement of the Construction Phase.

Newly discovered sites will be subject to the general management and mitigations discussed in the subsection **5.3.10** below. Furthermore, the Chance Find Procedure for Palaeontological Resources (refer to **5.3.7**) will be used for all future exploration programs within the Project Area if additional fossils are discovered.

5.3.7 Chance Find Procedures

A Chance Find Procedure for Heritage Resources is specific to both the Archaeological Resources, and the Historic and Cultural Sites subcomponents, and the Chance Find Procedure for Palaeontological Resources is specific to palaeontological resources. These Chance Find Procedures have been developed for the Project, providing a specific process to be followed if new heritage and/or palaeontological sites are discovered during the Construction, or Operation phases and are included as **Appendices 13.8-A** and **13.8-B** of the **HRMP**. The Chance Find Procedure for Heritage Resources has been sent to the OW for their review and comment, and TCL anticipates incorporating their feedback into future versions of the document.

The Chance Find Procedure for Heritage Resources and the Chance Find Procedure for Palaeontological Resources will include the following steps if archaeological, historic, cultural materials, or fossils are discovered:

1. Stopping work in the area to avoid damaging the site;
2. Initial recording of the site;
3. Developing "No Work Zones";
4. Not disturbing any physical remains; and
5. Reporting the discovery.

The Chance Find Procedure for Heritage Resources will include procedures to follow if possible human remains are encountered.

Following confirmation of any Chance Find, the onsite Supervisor and Mine Superintendent will assess the site and if necessary, cease construction and/or mining activity in the area and flag off a "No Work Zone" of at least 30 m. If required, the Mine Manager will contact the third-party Consultant Archaeologist, and/or the Archaeology Branch or the BC Fossil Management Office depending on the type of find, and get direction on next steps to identify further mitigation options. This work will be done in collaboration with TCL, Wet'suwet'en decision makers, subject matter experts, and in the case of human remains, the Royal Canadian Mounted Police (RCMP), to determine if the remains are archaeological.

Additionally, site induction and training of Construction, and Operation Phase personnel (including contractors) on the requirements of the *HCA* and the fossil management framework will be conducted. The training will focus on known archaeological sites; the procedures in place for responding to newly identified palaeontological, archaeological, historic, or cultural sites and procedures for reporting sites or observed site alterations.

Newly discovered archaeological, historic, or cultural sites will be subject to the general management and mitigations measures discussed in the **5.3.3**, **5.3.8**, and **5.3.9**.

5.3.8 Avoidance by the Establishment of Buffer Zones to Newly Discovered or Existing Archaeological Resources

If additional archaeological sites are identified during future AIAs or through Chance Finds as described in **5.3.5** and **5.3.7** above for Archaeological Resources, the initial buffer zones described below will be established. Final mitigation measures will be determined through consultation with the Archaeology Branch and Indigenous groups.

Where archaeological sites are located within 0 to 50 m of ground altering activities, there is a risk of direct effects during the Construction, and Operation phases. Areas within a 50 m buffer from archaeological site boundaries will be marked as a "No Work Zone" on Project maps and flagged with signage in the field. Typically, site avoidance (refer to **5.3.1**) through Project redesign is the recommended management option. If redesign is not feasible, mitigation will be determined in consultation with the BC Archaeological Branch and Indigenous groups and carried out by the Project Archaeologist under an *HCA* Heritage Investigation Permit (refer to **5.3.5**).

Where archaeological sites are located from 50 to 100 m of Project components, there is a risk of indirect effects through during the Construction, and Operation phases. Areas within a buffer of 50 m from known archaeological site boundaries will be marked as a "No Work Zone" on construction and/or operation maps and flagged with signage in the field.

Known sites may be inspected on a case-by-case basis to determine if effects have occurred. Caution will be exercised during construction activities near known sites.

Where archaeological sites are located more than 100 m from Project components, there is a lower risk of direct and/or indirect effects during the Construction, and Operation phases, unless the planned work zone is revised.

5.3.9 Determination of Final Mitigation Measures for Newly Discovered Archaeological Resources

These mitigation measures are specific to the Archaeological Resources subcomponent and its potential effect (change in presence, number, type, and/or significance of archaeological sites) if avoidance is not feasible.

Following the establishment of a 30 m buffer zone around newly discovered Archaeological Resources, final mitigation measures will be determined through consultation with the Archaeology Branch and Indigenous groups. Mitigation will be determined in consultation with the BC Archaeological Branch and Indigenous groups, and carried out by the consulting Archaeologist under an *HCA* Heritage Investigation Permit. Possible mitigation measures include detailed mapping, photography, and systematic data recovery through surface collection and controlled excavations of evaluative units if subsurface deposits are present. If the site will not be directly affected, construction monitoring within the “No Work Zone” is sufficient mitigation.

5.3.10 Consultation to Determine Preferred Mitigation Measures

For known Historic and Cultural Sites, including palaeontological sites, not automatically protected, consultation with the affected communities will be undertaken as described below. Preferred mitigation measures provided are specific to known and as-yet unknown Historic and Cultural Sites subcomponents and the potential effects from Project activities (change in presence, number, type, and/or significance of historic and cultural sites) during Construction, and Operation phases.

5.3.10.1 Post-1846 Culturally Modified Trees (CMTs)

If avoidance is not possible, prior to alteration of any post-1846 CMTs, the OW will be consulted to determine, if necessary, the preferred mitigation measures. Common practices for the post-1846 CMTs determined to have cultural significance include detailed measurements and photography, removing and preserving the modified portion of the tree, or removing a cross-section (cookie) from the tree at the modification. These methods allow some or all of the information about the modification(s) to be preserved after the removal of the tree.

5.3.10.2 Historic Mine Sites

As part of the Historic and Cultural Sites subcomponent, there are three (3) sites within the LSA related to previous coal mining by Bulkley Valley Collieries. These sites are located next to the TAC and, therefore, avoidance may be feasible (refer to **5.3.1**). If avoidance is not feasible and there are historic features or artifacts associated with these sites to be affected, the local museum will be consulted to determine if they want to collect and preserve any items prior to effects from the Project. This process is also applicable to any as-yet unknown historic mine sites when they are located.

5.3.10.3 Hubert Town Site

The early 1900s town site of Hubert is located within, or close to, the proposed Rail Infrastructure. This town site was abandoned in the 1920s; however, there may still be historic artifacts or materials associated

with its development and occupancy. There may also be a cultural site known as *Dudii Nai C'en* at or near this location.

Prior to the Construction Phase, the local museums will be consulted to determine if they want to tour the area. If artifacts or features associated with the town site or cultural site are located during this visit, or as a Chance Find during construction and/or operation, the local museum will be consulted to determine if they want to collect and preserve these items prior to effects from the Project.

5.3.10.4 Palaeontological Sites

If avoidance of significant fossil sites is not feasible, mitigation measures will be developed in consultation with the BC Fossil Management Office.

5.3.10.5 Other Historic and Cultural Sites

For as-yet unknown Historic or Cultural Sites, including palaeontological sites, not discussed above that are identified within 50 m of the Project footprint, consultation with community stakeholders, Indigenous, and non-Indigenous groups will be undertaken prior to Project Activities to determine relative significance, and whether additional mitigation measures to record and/or preserve the sites or features are desired.

5.3.11 Summary of Mitigation Measures

A summary of the mitigation measures to avoid or reduce potential Project-related adverse effects on the Heritage Resources VC, and whether or not a residual effect is anticipated, is provided in **Table 5.3-1**.

Table 5.3-1: Summary of Potential Effects and Mitigation Measures for the Heritage Resources Valued Component (VC)

Potential Effect	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measure	Applicable VC Subcomponent	Residual Effect (Yes/No)
Change in Presence, Number, Type, and/or Significance of Archaeological Resources	All activities (C, O)	- Avoid sensitive environments - Limit Project footprint and Project Area - Project footprint boundaries Heritage Resource Management Plan (S13.0-C8) (HRMP) - Additional Archaeological Impact Assessment (AIA) - Chance Find Procedures - Avoidance by the establishment of buffer zones to newly discovered or existing archaeological resources - Determination of final mitigation measures for Archaeological Resources	Archaeological Resources	No
Change in Presence, Number, Type, and/or Significance of	All activities (C, O)	- Avoid sensitive environments - Limit Project footprint and Project Area - Project footprint boundaries HRMP	Historic and Cultural Sites	No

Potential Effect	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measure	Applicable VC Subcomponent	Residual Effect (Yes/No)
Historic and Cultural Sites		▪ Additional AIA ▪ Palaeontological Fossil Impact Assessment (FIA) ▪ Chance Find Procedures ▪ Consultation to determine preferred mitigation measures (if avoidance is not feasible)		

Notes: C,O,D,P represent Project Phases: ©nstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure
C=Chapter; S=Section; VC=Valued Component

See **Table 5.1-2** for list of applicable activities for each listed Project phase, unless otherwise noted in this table.

5.4 Residual Effects and Significance of Residual Effects

The assessment of potential for residual effects on the Heritage Resources VC takes into account mitigation and management measures (5.3) that will be implemented prior to and during the Construction, and Operation phases. Mitigation measures and management strategies include consultation with the appropriate stakeholders, avoiding known sites where feasible, data recovery when avoidance is not feasible, and identifying as-yet unknown sites through additional AIAs when required, conducting a FIA in advance of development activities, educating Project personnel, and implementing the **HRMP** and the Chance Find Procedures for Heritage Resources and Chance Find Procedures for Palaeontological Resources that are Appendices of the **HRMP**. Following the implementation of proposed mitigation measures and management strategies, negligible effects from the Project on known and as-yet unknown Heritage Resources and its subcomponents due to changes in presence, number, type, and/or significance are anticipated; therefore no residual effects were identified, and a residual effects assessment was not conducted.

5.5 Summary of Project-related Residual Adverse Effects and Significance

There were no residual effects following mitigation; therefore, no effects are carried forward to either the residual characterisation or the CEA.

6. CUMULATIVE EFFECTS ASSESSMENT (CEA)

Cumulative effects result from interactions between Project-related effects and the effects on the Heritage Resources VC from other past, present, and future projects and activities. A complete list of potential projects activities to be considered for cumulative effects can be found in **S3.0 Assessment Methodology** of this **EAC Application**.

In order for the Project to contribute to a cumulative effect on the Heritage Resources VC, the following criteria must be met:

- ▶ There must be a residual effect to the Heritage Resources VC as a result of the Project;
- ▶ The predicted residual effect to the Heritage Resources VC from the Project must be demonstrated to interact cumulatively with residual effects from other projects or activities;
- ▶ The other projects or activities have been or will be carried out and are not hypothetical; or
- ▶ The cumulative change is likely to occur.

As there are no residual effects to the Heritage Resources VC after the application of mitigation measures, there are no additional mitigation measures, and a CEA was not undertaken.

7. SUMMARY OF EFFECTS ASSESSMENT FOR HERITAGE RESOURCES VALUED COMPONENT (VC)

There will be negligible effects from the Project on both the Archaeological Resources, and Historic and Cultural Sites subcomponents including palaeontological sites of the Heritage Resources VC following the implementation of mitigation measures. There are no known Archaeological Resources with the LSA. Known Historic and Cultural sites within the LSA include the early mine sites, three (3) post-1846 CMTs, the Hubert Townsite, and four (4) fossil sites. Mitigation measures include the implementation of a Chance Find Procedure for Heritage Resources for the identification of as-yet unknown Heritage Resources that may exist within the LSA, avoidance through Project design and redesign, additional AIAs (if required), and consultation with the local Indigenous and non-Indigenous communities prior to impacts to Heritage Resources. Therefore, it has been determined that there are no residual or cumulative effects for the Heritage Resources VC.

8. FOLLOW-UP STRATEGY

Even the most thorough assessment may not identify all Heritage Resources; therefore, an **HRMP**, including Chance Find Procedures will be used to identify and protect as-yet unknown Heritage Resources or fossils. Compliance with avoidance of Heritage and Palaeontological Resources will be monitored. If additional Heritage Resources are identified through future studies or additional TK information, appropriate mitigations will be applied.

If Construction Phase activities occur near protected archaeological sites that are within 100 m of the Project Area, the site will be flagged or temporarily fenced prior to construction to serve as a visible barrier. All sites within 100 m of the Project Area will be clearly indicated on development maps in relation to the Project components. The Environmental Coordinator, Mine Superintendent, delegated staff member and/or the Independent Environmental Monitor (IEM) that is employed during the Construction Phase will watch for alterations to Heritage Resources or situations where construction activities occur less than 50 m from a site. Should effects be anticipated or found to occur less than 50 m from an archaeological site, the Project Consultant Archaeologist will be contacted to determine if additional mitigation measures, which may include systematic data recovery, are required. The Environment Coordinator, delegates, and the IEM (during Construction Phase) will be fully briefed on the resulting mitigation measures, if required.

At Heritage Resources VC sites where avoidance is recommended, the Environmental Coordinator or delegate will check on their condition during snow-free conditions on an annual basis, or more frequently if Project activities will occur within 100 m to determine that they remain intact and unaffected by the Project. Should effects be observed at Heritage Resources VC sites, the Project Consultant Archaeologist and, if necessary the Archaeology Branch, will be contacted and notified of the effects to develop an action plan.

A philosophy of adaptive management will be adopted to allow management plans and mitigation measures to be adapted to consistently meet or exceed performance targets. This will be achieved through periodic reviews of the **HRMP** and the results of monitoring programs.

If negative trends are identified, a root cause analysis will be conducted to identify gaps and areas for improvement. When these are identified, the Environmental Coordinator and/or Consultant Archaeologist will develop and implement a suitable corrective action.

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