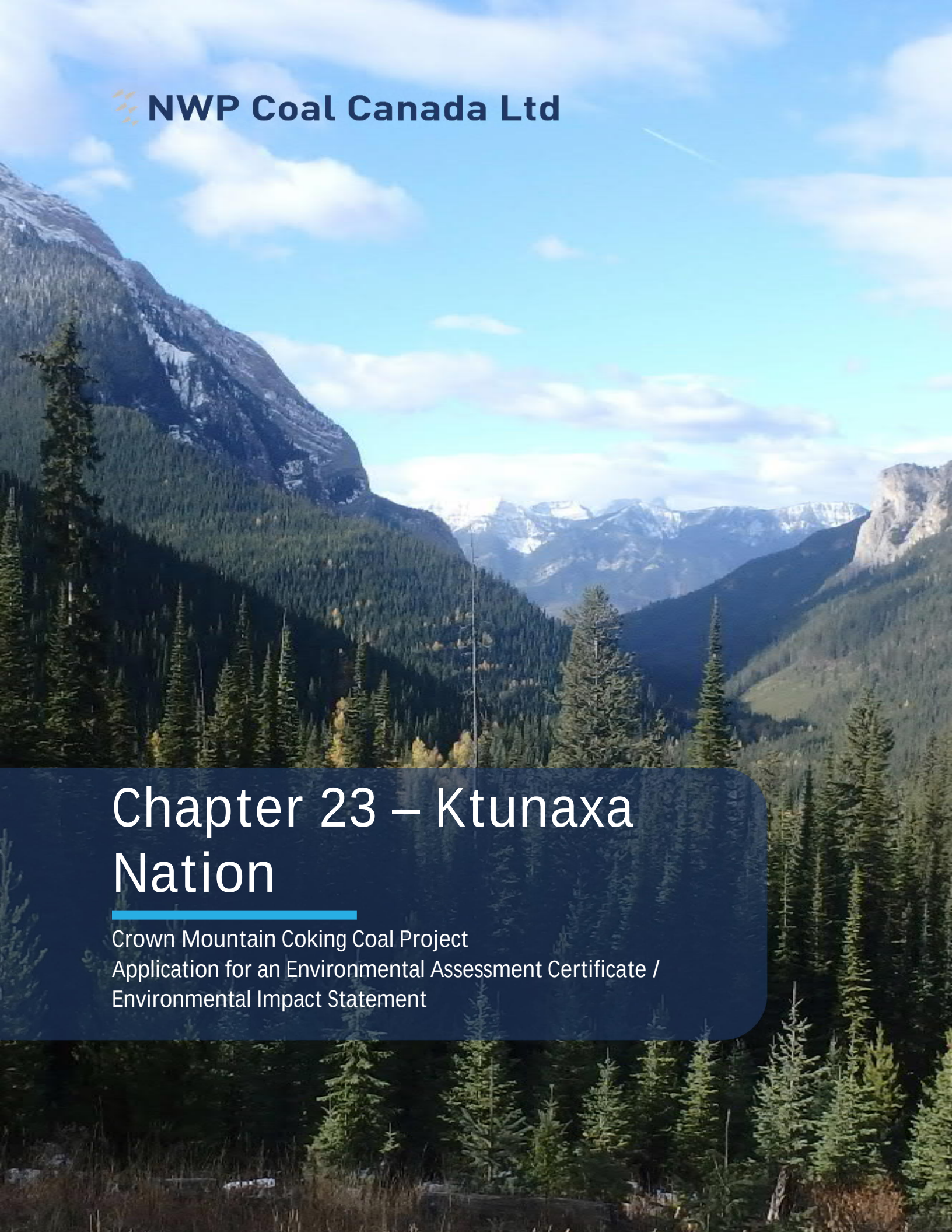
NWP Coal Canada Ltd



Chapter 23 – Ktunaxa Nation

Crown Mountain Coking Coal Project
Application for an Environmental Assessment Certificate / Environmental Impact Statement

Table of Contents

23. Ktunaxa Nation 23-1

23.1 Introduction 23-1
23.1.1 Indigenous Communities 23-2
23.1.2 Regulatory and Policy Setting 23-3
23.1.2.1 Indigenous Communities 23-3
23.1.2.2 Regulatory Setting 23-4
23.1.2.3 Regional Land Use Policies and Plans 23-6
23.2 Environmental Setting 23-8
23.2.1 Atmospheric Environment 23-8
23.2.2 Acoustic Environment 23-9
23.2.3 Soils and Terrain 23-9
23.2.4 Groundwater and Surface Water 23-11
23.2.5 Fish and Fish Habitat 23-12
23.2.6 Terrestrial Ecosystems and Vegetation 23-13
23.2.7 Wildlife and Wildlife Habitat 23-15
23.2.8 Physical and Cultural Heritage 23-16
23.2.9 Social and Economic Conditions 23-17
23.3 Overview of the Assessment Methodology 23-18
23.4 Introduction to the Ktunaxa Nation 23-20
23.4.1 Information Sources 23-21
23.4.1.1 Limitations of Information Sources 23-22
23.5 Ktunaxa Nation Consultation and Engagement Summary 23-22
23.5.1 Engagement Protocols 23-22
23.5.2 Project Development and Pre-Application Engagement 23-23
23.5.2.1 Project Planning and Design Engagement 23-24
23.5.3 Future Engagement 23-30
23.5.4 Preliminary Understanding of Rights and Interests 23-30
23.6 Ktunaxa Nation Baseline Conditions 23-32
23.6.1 Potentially Affected First Nations 23-33
23.6.2 ʔamakʔis Ktunaxa and Ecology 23-33
23.6.3 Ktunaxa Lands and Communities 23-36
23.6.3.1 Yaq̓it ʔa·knuqƚiʾit First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band) 23-38
23.6.3.2 ʔakisq'nuk (Akisqnuk or Columbia Lake Band) 23-39
23.6.3.3 ʔaq̓am (St. Mary's Band) 23-39
23.6.3.4 Yaqan Nuʔkiy (Lower Kootenay Band) 23-40
23.6.4 ʔamakʔis Qukin Ktunaxa ʔa·qaƚqanuxwaƚiʔit and Oral Historical Context 23-41
23.6.5 Ethnographic and Historic Background 23-41
23.6.5.1 Ktunaxa Seasonal Round and Associated Title and Rights and Interests 23-43
23.6.6 Language 23-44
23.6.7 Population 23-45
23.6.8 Ktunaxa Governance 23-45
23.7 Ktunaxa Nation's Rights and Interests 23-49

23.7.1 Overview of the Historic and Current Use of the Elk Valley by Ktunaxa Nation 23-49
23.7.1.1 Water Sector....23-56
23.7.1.2 Lands and Resources Sector 23-58
23.7.1.3 Traditional Knowledge and Language Sector....23-68
23.7.1.4 Social and Health Sector 23-72
23.7.1.5 Education and Employment Sector 23-77
23.7.1.6 Economic Investment Sector 23-78
23.7.2 Summary of Ktunaxa Nation's Rights and Interests 23-81
23.8 Assessment of the Effects of the Changes to the Environment on Ktunaxa Nation....23-89
23.8.1 Assessment Methods....23-89
23.8.1.1 Thresholds for Determining the Significance of Residual Effects 23-89
23.8.1.2 Determination of Valued Components 23-90
23.8.1.3 Assessment Boundaries for the Effects of Changes to the Environment on the Ktunaxa Nation 23-97
23.8.2 Potential Effects of the Changes to the Environment on Ktunaxa Nation....23-101
23.8.2.1 Project Components and Interactions 23-102
23.8.2.2 Characterization of Potential Residual Effects of the Changes to the Environment on the Ktunaxa Nation 23-102
23.8.2.3 Summary of Residual Effects Characterization 23-169
23.8.3 Cumulative Effects Assessment of the Changes to the Environment on Ktunaxa Nation 23-169
23.8.3.1 Cumulative Effects Assessment Methods 23-172
23.8.3.2 Identifying Past, Present, and Reasonably Foreseeable Projects and/or Activities 23-175
23.8.3.3 Identification of Potential Cumulative Effects of Changes to the Environment on Ktunaxa Nation 23-187
23.8.3.4 Potential Residual Cumulative Effects of the Changes to the Environment on Ktunaxa Nation 23-190
23.8.3.5 Summary of Cumulative Effects Assessment of Changes to the Environment on Ktunaxa Nation 23-208
23.9 Overview of the Changes to the Environment on Ktunaxa Nation and their Perspectives 23-211
23.10 Indigenous Impact Management Plan 23-214
23.10.1 Water Sector Impact Management 23-217
23.10.2 Lands and Resources Sector Impact Management 23-230
23.10.2.1 Fishing....23-230
23.10.2.2 Hunting and Trapping 23-231
23.10.2.3 Harvesting and Gathering 23-233
23.10.3 Traditional Knowledge and Language Sector Impact Management....23-234
23.10.4 Social and Health and Economic Investment Sectors Impact Management 23-236
23.10.5 Summary of the Indigenous Impact Management Plan 23-238
23.11 Assessment of Potential Impacts on Ktunaxa Nation Rights and Interests....23-238
23.11.1 Assessment Methods....23-239
23.11.1.1 Limitations of the Impact on Rights and Interests Assessment..... 23-240
23.11.1.2 Assessment Boundaries 23-241

23.11.2 Potential Impact on Ktunaxa Nation Rights and Interests 23-241
23.11.2.1 Characterization of Severity of Adverse Impacts on Ktunaxa Nation's Rights and Interests 23-242
23.11.2.2 Summary of Impact on Ktunaxa Nation's Rights and Interests Assessment 23-294
23.12 Follow-up Strategy 23-301
23.13 References 23-302

Figures

Figure 23.3-1: The Effects Assessment Process Flowchart 23-19
Figure 23.6-1: Ktunaxa ʔamakʔis (Ktunaxa Nation Traditional Territory) 23-35
Figure 23.6-2: Ktunaxa Nation Communities and Reserve Land 23-37
Figure 23.7-1: Georeferenced Ktunaxa Nation Site-Specific Values and HHRA and Sensory Receptors in Proximity to the Project 23-52
Figure 23.8-1: Project Footprint and Infrastructure 23-98
Figure 23.8-2: Ktunaxa Nation Rights and Interests Local Study Area (KNRI LSA) 23-99
Figure 23.8-3: Ktunaxa Nation Rights and Interests Regional Study Area (KNRI RSA) 23-100
Figure 23.8-4: Reasonably Foreseeable Future Projects and Activities in the KNRI RSA 23-177
Figure 23.8-5: Certain Past, Present, and Reasonably Foreseeable Future Projects and Activities in the KNRI RSA 23-179

Tables

Table 23.1-1: Summary of Indigenous Communities Engaged for the Crown Mountain Coking Coal Project 23-2
Table 23.5-1: Project Component Design Influences from Ktunaxa Nation 23-25
Table 23.6-1: Ktunaxa Nation Population, Education, and Employment Data 23-46
Table 23.7-1: Ktunaxa Nation Council's Proposed Crown HHRA and Sensory Receptor Locations and Durations 23-50
Table 23.7-2: Potential Occurrence of Ktunaxa Nation Culturally Significant Plants in the Project Footprint[1] 23-65
Table 23.7-3: Community Well-being Indices for the Indigenous Population of the Regional District of Eastern Kootenay 23-79
Table 23.7-4: Summary of Understanding of Ktunaxa Nation's Rights and Interests in Relation to the Project 23-82
Table 23.8-1: Valued Components by Ktunaxa Nation Sectors for the Assessment 23-93
Table 23.8-2: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Construction and Pre-Production Phase 23-103
Table 23.8-3: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Operations Phase 23-108
Table 23.8-4: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Reclamation and Closure Phase 23-114
Table 23.8-5: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Post-Closure Phase 23-117
Table 23.8-6: Summary of Potential Residual Effects Assessment on Ktunaxa Nation 23-170
Table 23.8-7: Historical Baseline of Cumulative Effects on Ktunaxa Title and Rights/Interests Sectors 23-181

Table 23.8-8: Summary of the Assessment of Cumulative Effects of the Changes to the Environment on Ktunaxa Nation 23-209
Table 23.10-1: Summary of Indigenous Impact Management Plan in relation to the Ktunaxa Nation 23-218
Table 23.11-1: Criteria for Assessing the Level of Severity of the Impacts of the Project on the Exercise of Rights (IAAC, 2022b) 23-243
Table 23.11-2: Summary of Impact on Ktunaxa Nation's Water Rights and related Interests based on Potential Future Use with and without the Project 23-251
Table 23.11-3: Summary of Impact on Ktunaxa Nation's Fishing Rights and related Interests based on Potential Future Use with and without the Project 23-259
Table 23.11-4: Summary of Impact on Ktunaxa Nation's Hunting and Trapping Rights and related Interests based on Potential Future Use with and without the Project 23-269
Table 23.11-5: Summary of Impact on Ktunaxa Nation's Harvesting and Gathering Rights and related Interests based on Potential Future Use with and without the Project 23-278
Table 23.11-6: Summary of Impact on Ktunaxa Nation's Physical and Cultural Heritage Rights and related interests based on Potential Future Use with and without the Project .. 23-287
Table 23.11-7: Summary of Impact on Ktunaxa Nation's Rights and related interests based on Potential Future Use with and without the Project on Social, Health, and Economic Conditions 23-295
Table 23.11-8: Summary of Impact on Ktunaxa Nation's Title, Rights, and related Interests 23-298

Appendices

Appendix A. Summary of Indigenous Consultation

23. Ktunaxa Nation

23.1 Introduction

Historically, the lands of British Columbia have been used by Indigenous Communities and people for traditional land and resource uses since time immemorial. Traditional land and resource use refers to the activities undertaken by Indigenous peoples that were carried out dating back to Pre-contact periods. These activities may have included the building and settling of encampments, seasonal travel, hunting, fishing, trapping, gathering of food and medicines, practicing ceremonial traditions, and burial activities. Evidence of these traditional land and resource uses can be found in archaeological evidence (e.g., archaeological sites, burial sites, and associated objects) and through Indigenous traditional knowledge.

Indigenous Communities, their traditional knowledge, as well as current and historic land and resource use is an important aspect of environmental impact assessment. This chapter provides an overview of the regulatory and policy setting as well as the environmental setting for the Crown Mountain Coking Coal Project. It includes information about the Ktunaxa Nation[1], their Aboriginal and Treaty rights, including traditional land and resource use and descriptions of the Ktunaxa Nation's baseline conditions related to the Project. This chapter includes the assessment of effects of the Project on the environment related to the Ktunaxa Nation, the potential mitigation measures identified, and the assessment of the impacts on the Ktunaxa Nation's rights and interests.

The information presented in Chapter 23 is used to assess potential effects of the Project on Indigenous rights and interests (known as Aboriginal and Treaty Rights and Interests throughout Chapter 23), as outlined in the *Canadian Environmental Assessment Act*, 2012 (CEA Act, 2012) and the Guidelines for the Preparation of an Environmental Impact Statement for the Crown Mountain Coking Coal Project (EIS Guidelines; Canadian Environmental Assessment Agency [CEAA], 2015).

[1] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƚi'it First Nation (ʔakink'umƚasnuqƚiʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

23.1.1 Indigenous Communities

The assessment of potential effects on treaty rights and interests, including land and resource use, was completed for the Indigenous Communities listed in Table 23.1-1. Indigenous Communities required to be consulted as part of the Project were detailed in the provincial Section 11 Order issued for the Project by the federal EIS Guidelines (CEAA, 2015). The Section 11 Order includes Schedules B and C, which specifically name the Indigenous groups requiring consultation, with additional guidance provided in the April 26, 2018 provincial Application Information Requirements document. In October 2020, the British Columbia Environmental Assessment Office (EAO) varied the procedural order for the Project with the issuance of a Section 13 Order, which included the addition of Indigenous groups (Table 23.1-1). Additionally, CEAA provided guidance on February 20, 2015 via the EIS Guidelines, with further direction provided by the Impact Assessment Agency of Canada (IAAC) on March 16, 2020.

Table 23.1-1: Summary of Indigenous Communities Engaged for the Crown Mountain Coking Coal Project

Indigenous Community/Group	Provincial and/or Federal Guidance for Inclusion on the Project
Ktunaxa Nation • Yaq̓it ʔa·knuqƛiˀit First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band) • ʔakisq'nuk (Akisqnuk or Columbia Lake Band) First Nation • ʔaq̓am (St. Mary's Indian Band) • Yaqan Nuʔkiy (Lower Kootenay Band)	• EIS Guidelines (February 20, 2015) • Section 11 Order - Schedule B (May 27, 2015)
Shuswap Indian Band	• EIS Guidelines (February 20, 2015) • Section 11 Order - Schedule C (May 27, 2015)
Stoney Nakoda First Nations • Bearspaw First Nation • Chiniki First Nation • Wesley First Nation	• EIS Guidelines (February 20, 2015) • IAAC revised list of Indigenous Groups (March 16, 2020) • Section 13 Order (October 30, 2020) - additions to Schedule C of the Section 11 Order
Kainai First Nation (Blood Tribe)	• IAAC revised list of Indigenous Groups (March 16, 2020) • Section 13 Order (October 30, 2020) - additions to Schedule C of the Section 11 Order
Piikani Nation	• IAAC revised list of Indigenous Groups (March 16, 2020) • Section 13 Order (October 30, 2020) - additions to Schedule C of the Section 11 Order
Siksika Nation	• IAAC revised list of Indigenous Groups (March 16, 2020) • Section 13 Order (October 30, 2020) - additions to Schedule C of the Section 11 Order
Tsuut'ina Nation	• IAAC revised list of Indigenous Groups (March 16, 2020)
Métis Nation of British Columbia	• EIS Guidelines (February 20, 2015)

23.1.2 Regulatory and Policy Setting

23.1.2.1 Indigenous Communities

As identified by the Impact Assessment Agency of Canada (IAAC) (IAAC, 2015a, b; 2020 a-c; 2021 a, 2022a) and listed in Table 23.1-1, the Project falls within the asserted traditional territories of the member nations of the Ktunaxa Nation (?akisq'nuk, Yaqan nuykiy, ?aq'am, and Tobacco Plains Band), Shuswap Indian Band, the Kainai, Piikani Nation, and Siksika Nation. The Stoney Nakoda (Chiniki, Bearspaw, and Wesley First Nations), has asserted a Land Claim Area which extends into B.C., outside of Treaty 7 territory where this additional land claim area overlaps with the Project footprint as identified by IAAC (IAAC, 2015c). The Project is also located adjacent to the traditional territories of the Tsuut'ina Nation (IAAC, 2021b). The Elk Valley Métis Nation (EVM Nation) is the closest Métis group to the Project footprint and a Chartered Community within the Métis Nation of British Columbia (MNBC). As determined by IAAC, Elk Valley Métis Nation and MNBC citizens in the region from adjacent chartered communities may be exercising their potential rights within the Project footprint (IAAC, 2015d). The Métis Nation of Alberta – Region 3 are determined by IAAC to be potentially impacted by the Project, as rights-bearing Métis communities are best considered as regional in nature, as opposed to settlement-based (IAAC, 2021c). The closest Reserve Lands to the Project are Bummer's Flat 1 Reserve (approximately 69 km southwest in B.C.), Edan Valley 216 Reserve (Stoney Nakoda; approximately 70 km north east in Alberta), and Peigan Timber Limit 147B (approximately 52 km east in Alberta).

Specific to the Ktunaxa Nation, the Project falls within the Ktunaxa Nation and the Ktunaxa Kinbasket Statement of Intent Boundary, indicating the extent of asserted traditional territory used by the Ktunaxa Nation in B.C. The Ktunaxa Nations maintain underlying sovereign and *sui generis* title[2] to all lands and waters within their territories, including the Elk Valley and the Project footprint. The Ktunaxa Nation currently consists of four member Bands in B.C. and two Bands in the United States, covering approximately 70,000 km^2 of Ktunaxa historical traditional territory (Ktunaxa Nation, 2021l). Ktunaxa member groups located in B.C. include:

- ʔYaq̓it ʔa·knuqƛ̓i'it or ʔakink'umƛ̓asnuqƛ̓iʔit or Aqanuxunik (Tobacco Plains Band near Grasmere);
- ʔakisq'nuk (Columbia Lake Band near Windermere)
- ʔaq'am (St. Mary's Band near Cranbrook); and
- Yaqan Nuʔkiy (Lower Kootenay Band near Creston).

The Stoney Nakoda Nations, the Kainai, Piikani Nation, Siksika Nation, and the Tsuut'ina Nation are the Treaty 7 signatories identified by IAAC (IAAC, 2015c; 2020a, b; 2021a, b). In addition to the Treaty 7 rights, the Kainai, Piikani Nation, and Siksika Nation's asserted territory consists of the traditional homeland of the Blackfoot peoples (the Blackfoot Confederacy) which includes the exercise of their Aboriginal rights across the ancestral homeland of the Blackfoot peoples (IAAC 2020a, b: 2021a).

[2] In Canadian law, Aboriginal title is sui generis (meaning of its own kind or unique), in that the land title originates in an Indigenous Community's occupation of its ancestral lands prior to the European assertion of sovereignty. As such, it is different from other forms of property rights because it is a communal right belonging to specific Indigenous communities. In that regard, Aboriginal title may not be sold or purchased by individuals; it may only be voluntarily surrendered to the Crown by an Indigenous community through agreements such as treaties. It includes both surface and subsurface resources, such as mineral rights and oil and gas developments (Irwin, 2018).

23.1.2.2 Regulatory Setting

The proposed Project is subject to environmental assessment (EA) under both the C*anadian Environmental Assessment Act* (CEA Act, 2012) and the British Columbia *Environmental Assessment Act* (2002). The Project is also undergoing a coordinated federal-provincial EA process conducted under the principles of the Canada–British Columbia Agreement for Environmental Assessment Cooperation (the Agreement). Under the Agreement, federal and provincial jurisdictions work together on impact assessments for projects that require both a federal and a provincial assessment to increase efficiency and certainty and achieve quality assessments.

23.1.2.2.1 B.C. Environmental Assessment Act

A new coal mine with a production capacity of greater than 250,000 tonnes per year of clean coal or raw coal or a combination of both clean coal and raw coal is considered a Reviewable Project pursuant to the Reviewable Projects Regulation B.C. Reg. 370/2002 under the EAA, 2002 (S.B.C. 2002, c. 43). The Project is therefore considered a Review Project under the EAA, 2002.

Pursuant to Section 2(2) of the EAA, 2002, the B.C. EAO is the authority responsible for provincial review of this proposed Project. NWP submitted the Final Application Information Requirements to the EAO on April 26, 2018 (B.C. EAO, 2018). On May 27, 2015, the EAO issued an Order under Section 11 of the Act, determining the scope of the required environmental assessment and the procedures and methods for conducting the assessment. Section 12 of the Section 11 Order describes consultation with Indigenous Communities. Part G: Section 12.1 of the Section 11 Order states the EAO will consult with the Indigenous Communities listed in Schedule C of the Section 11 Order by providing notification of Project milestones during the environmental assessment (B.C. EAO, 2018). On October 30, 2020, the EAO issued an amendment in the matter of the EAA, 2002 and the environmental assessment of the Project order under Section 13 amending the Section 11 Order to add a new Section 12.5. The added Section 12.5 identifies that the EAO may implement additional measures for consultation and accommodation with any Indigenous Community, after consideration of issues raised where appropriate (B.C. EAO, 2020a).

The EAO requires that all CEA Act, 2012 requirements under subsection 19(1) for assessing environmental effects (e.g., the environmental effects of accidents and malfunctions, cumulative environmental effects, significance of effects, mitigation measures), including paragraph 5(1)(c) effects, be addressed in a dedicated chapter in the EIS. The potential effects assessment for the purposes of paragraph 5(1)(c) environmental effects, including current use of land and resources, is separate from the assessment of the potential effects on Aboriginal rights and interests. Valued Components (VCs), indicators, and any relevant analysis presented in the assessment of impacts to Indigenous Communities related to paragraph 5(1)(c) (e.g., fishing, hunting, trapping, cultural practices, social, health, or economic conditions), are considered on an individual basis for each Indigenous Community identified in any Schedule of the Section 11 Order, regardless of depth of consultation. Where the effect is the same for multiple Indigenous Communities (e.g., for the assessment of environmental effects to social, health and economic conditions), the discussion can be aggregated, provided the rationale is well documented. Summarized results of the Indigenous consultation related to Aboriginal interests and/or other matters of concern to the Ktunaxa Nation are available in Appendix 23-A, Table 23.A-1.

The EAA, 2002 was repealed by the Environmental Assessment Act, 2018 in 2019. As per subsection 78(6) of the EAA, 2018, the environmental assessment process for the Project was continued under the 2002

Act. On May 3, 2023 the Project was transitioned to the EAA, 2018 through a Transition Order under Section 78(7) of the 2018 Act.

23.1.2.2.2 Canadian Environmental Assessment Act, 2012

The construction, operation, decommissioning, and abandonment of a coal mine with a production capacity of more than 3,000 tonnes per day (tpd) is considered a Designated Project pursuant to the *Regulation Designating Physical Activities* SOR/2012-147 under the *Canadian Environmental Assessment Act*, 2012 (S.C. 2012, c. 19, s. 52). The anticipated production capacity of the Project is up to 4.0 million run-of-mine tonnes (M ROMt) per annum (approximately 10,150 tonnes per day [tpd]) for 15 years. The Project is therefore considered a Designated Project under the *Canadian Environmental Assessment Act*, 2012.

Pursuant to Section 15(d) of the *Canadian Environmental Assessment Act*, 2012, the Impact Assessment Agency of Canada (IAAC, formally known as Canadian Environmental Assessment Agency [CEAA]) is the authority responsible for federal review of this proposed Project. The Final Environmental Impact Statement Guidelines were issued by IAAC to NWP on February 20, 2015 for the preparation of an EIS. Section 5.1 of Part 2 of the EIS identifies which Indigenous Communities NWP is required to engage on the Project. As required by the Agency (IAAC, 2020a), NWP will make key environmental assessment summary documents (draft/final EIS, key findings, plain language summaries) accessible to these Indigenous Communities and ensure their views are heard and recorded. For the purposes of developing the EIS, NWP engaged with Indigenous Communities that may be affected by the Project, to obtain their views on:

- Effects of changes to the environment on Indigenous Communities (social, health, and economic issues; physical and cultural heritage, including any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; and current use of lands and resources for traditional purposes); and
- Potential adverse impacts of the Project on potential or established Aboriginal or Treaty rights.

With respect to engagement activities, the EIS documents:

- The engagement activities undertaken with Indigenous Communities prior to the submission of the EIS, including the date and means of engagement (e.g., meeting, mail, telephone);
- Any future planned engagement activities; and
- How engagement activities by the proponent allowed Indigenous Communities to understand the Project and evaluate its effects on their communities, activities, potential or established Aboriginal or Treaty rights, and other interests.

Summarized results of the Indigenous consultation related to Aboriginal interests and/or other matters of concern to the Ktunaxa Nation are available in Appendix 23-A, Table 23.A-1. As noted above, the comments received from Ktunaxa Nation on the draft effects assessment and NWP's responses where applicable are recorded in Appendix 23-A, Table 23.A-2.

The *Canadian Environmental Assessment Act*, 2012 was repealed by the *Impact Assessment Act* (IAA), 2019. As per subsection 181(1) of the IAA, the impact assessment process for the Project was continued under the 2012 Act.

23.1.2.2.3 Elk Valley Water Quality Plan

The Project is located within the designated area of the Elk Valley Area Based Management Plan, also known as the Elk Valley Water Quality Plan (EVWQP). The EVWQP is a plan to manage the cumulative effects of coal mining on water quality and was developed by Teck in response to a Ministerial Order issued in April 2013 under the *Environmental Management Act* (EMA), 2003.

The Order directed Teck to develop a plan to stabilize and reduce water quality concentrations of selenium, cadmium, nitrate, and sulphate (the Order Constituents) and the rate of formation of calcite in streams. The plan was to include short, medium, and long-term water quality targets for the order constituents for specified locations in the Elk River, Fording River, and the Canadian portion of Lake Koocanusa. The EVWQP was developed with significant consultation with Indigenous Communities, various levels of government, resource tenure holders, the public, and other stakeholders (Teck, 2014). The Minister of Environment approved the EVWQP on November 18, 2014, and the Minister's approval letter also set out Approval Conditions. The EVWQP and the Minister's Approval Conditions apply to all coal mines in the designated area of the Elk Valley, including the Project.

23.1.2.2.4 Elk Valley Cumulative Effects Framework

As part of the Provincial Cumulative Effects Framework, the Elk Valley Cumulative Effects Management Framework (EV-CEMF) aims to assess the historic, current, and potential future conditions of selected valued components and to support natural resource management decisions within the region. The purpose of EV-CEMF is to develop an approach to understand cumulative effects on the environment from various industries and natural events in the Elk Valley. Impacts are assessed using five region-specific valued components (VC) selected by the EV-CEMF Working Group: Westslope Cutthroat Trout, grizzly bear, bighorn sheep, old growth and mature forest, and riparian habitat. The EV-CEMF will be used as an additional tool in the cumulative effects assessment for the Project for the region-specific VCs.

23.1.2.3 Regional Land Use Policies and Plans

In 1992, the B.C. government directed the development of a strategic-level land use plan to identify a comprehensive and integrative vision for land and resource use in the Kootenay-Boundary region. The East Kootenay Land Use Plan was completed in 1995. This 1995 Plan, which has since been retired, included land use designations of new protected areas, special resource management zones, integrated resource management zones and preliminary enhanced resource management zones. The East Kootenay Land Use Plan (1995) also committed provincial agencies to further regional land planning to refine the enhanced management zones (BC, 2021). Accordingly, the Kootenay Boundary Land Use Plan Implementation Strategy (KBLUPIS) was released in 1997 (Kootenay Inter-Agency Management Committee, 1997).

The main objectives of the KBULPIS (1997) include:

- Contribute to environmental, social, and economic sustainability;
- Reduce potential for disruptive land use conflicts;
- Support a secure and certain basis for public and private planning as well as investment in resource development and community planning;
- Integrate with other government strategic planning initiatives related to land and resource management; and

- Provide context and strategic direction for detailed, operational levels of land and resource management planning and decision-making.

The KBLUPIS (1997) applies to all public lands and waters in the Kootenay/Boundary regional planning area. It is important to note that the plan does not contain prescriptive direction for private land, rather, as noted above, it aims to provide strategic long-term direction to enhance security and certainty for private planning and investment in resource management.

The KBLUPIS also provides geographically specific resource management guidelines for individual resource values (e.g., connectivity, grizzly bears, ungulate winter range, etc.) (Kootenay Inter-Agency Management Committee, 1997). In 2001, specific provisions outlined in the KBLUPIS were legally established as higher level plan (i.e., the Kootenay-Boundary Higher Level Plan Order) under the *Forest Practices Code of British Columbia Act*. In 2002, the Kootenay-Boundary Higher Level Plan Order was revised and established new resource management zones and objectives. The objectives and guidelines outlined in the Kootenay-Boundary Higher Level Plan Order (2002) are not intended to impact the permitting of subsurface resource exploration and development (BC, 2021). These objectives do not affect the operational plans for exploration, development, and production activities when authorized through the other legislation (i.e., *Mineral Tenure Act*, the *Coal Act*, and the *Mines Act*). Building off of the KPLUPIS (1997) and the Kootenay-Boundary Higher Level Order Plan (2002), in 2003, the Southern Rocky Mountain Management Plan was developed. This sustainable management plan covers the portion of the KNRI RSA that includes Flathead and Wigwam, as well as the west side of the Elk River drainage. This Plan was amended in 2010 to reflect the B.C. Government's decision to prohibit mining, oil and gas, and coal exploration and development in the Flathead River Watershed. In 2011, the *Flathead Watershed Conservation Act* was introduced.

The 2005 Cranbrook West Recreation Management Strategy overlaps with a small section of the KNRI RSA and provides the strategic-level direction on backcountry recreation (BC, 2021). This plan does not consider industrial access. Since the implementation of this plan, access management areas and snowmobile restrictions have changed and take precedence where they differ from the Cranbrook West Recreation Management Strategy.

23.1.2.3.1 Old Growth Management Areas

Old Growth Management Areas (OGMAs) are a mechanism to protect and attain old-growth forests and enhance biodiversity. The Kootenay Boundary Higher Order Plan (2002) provides legal direction for identifying and defining old and mature seral forests. This order outlines biodiversity emphasis targets for different seral stages by landscape unit and biogeoclimatic unit (Ministry of Sustainable Development, 2002). As previously noted, since 2002, there have been multiple orders that have been approved, which have amended and varied objectives, including the biodiversity emphasis targets and old mature forest objectives. Within the Land Use and Access RSA, the 2005 amendment revised biodiversity emphasis options mapping to enhance timber and biodiversity management in the area.

In 2005, the *Forest Practices Code of British Columbia Act* was repealed and replaced largely by the *Forests and Range Practices Act.* This major change in government direction had implications in terms of how legal objectives related to OGMAs would be considered moving forward. In 2006, the Integrated Land Management Bureau decided not to legalize spatial OGMAs in the Southern Interior region. Non-Legal OGMAs are spatially defined areas of old growth forest that are defined through operational planning or

landscape unit planning processes. When preparing Forest Stewardship Plans, forest licensees are not required to follow OGMA direction and can choose to manage biodiversity targets through alternative methods.

23.2 Environmental Setting

The Project is located in the Elk Valley within the front ranges of the southern Rocky Mountains in south-eastern B.C. The Elk Valley stretches more than 180 km from the mouth of the Elk River at Lake Koocanusa in the south, north to its headwaters in Elk Lakes Provincial Park near the Continental Divide along the B.C.-Alberta border (EV-CEMF, 2018; George et al., 1987). The Elk Valley forms part of the Continental Ranges of the Rocky Mountains. Elevations in the Terrestrial LSA range from 1,170 metres above sea level (m asl) along the Elk River west of Grave Lake up to above 2,700 m asl along the Continental Divide. Key watercourses in the Project footprint, local, and regional study areas include the Elk River, Michel Creek, Alexander Creek, West Alexander Creek, Harmer Creek, and Grave Creek.

23.2.1 Atmospheric Environment

Existing air quality in the Atmospheric LSA and Atmospheric RSA is affected by natural air emissions (e.g., wind-blown dust, forest fires) and anthropogenic air emissions (e.g., existing coal mines, vehicular traffic, construction activities, residential heating, and winter road gritting). Other industrial activities that may affect local and regional air quality and greenhouse gas (GHG) emissions include pulp mills, sawmills, and several oil and gas facilities, in addition to prevalent agriculture and forestry practices.

Air emissions resulting from coal mining and processing include fugitive dust, particulate matter, carbon monoxide (CO), sulphur oxides (SOx), oxides of nitrogen (NOx), volatile organic compounds (VOCs), and GHGs (Province of B.C., 2009; Rout et al., 2014). Emissions of these compounds have the potential to affect human health and aquatic and terrestrial ecosystems. Dustfall is primarily a nuisance issue but may also affect human health, vegetation, water quality, soil quality, and visual aesthetics. Local ambient air quality monitoring data collected by two stations from January 2014 to December 2016 and operated by Teck were used in the baseline analyses. Ambient air concentrations for the selected contaminants of concern all fell below their corresponding B.C. Ambient Air Quality Objectives (AAQOs) for each of their respective averaging periods. Provincial monitoring locations in the Southern Interior Air Zone generally did not exceed the B.C. AAQOs and Canadian Ambient Air Quality Standards (CAAQS) except when influenced by wildfires between 2015 and 2017 (ENV, n.d.). Wildfire smoke is believed to be a factor leading to elevated daily and annual $PM_{2.5}$ concentrations and elevated ozone concentrations.

Meteorological conditions in the Project footprint were determined by collecting data at the Project-specific Crown Mountain meteorological station located within the coal license area at an elevation of 1,920 metres above mean sea level (m amsl) in the headwaters of the Alexander/West Alexander watershed. The mean daily average temperature ranged from 13.4°C in February 2014 to a maximum of 16.6°C in June 2015. Barometric pressure ranged from 78.3 to 82.5 kilopascals (kPa), and was generally higher in the summer, and lower with greater variability in the winter. Average daily humidity varied substantially and ranged from 50.1% (August 2015) to 93.1% (January 2016). Average monthly humidity was typically lowest in the summer months and highest in the winter. The average monthly solar radiation at the Crown Mountain climate station ranged from a minimum of 6.1 watts/square metre (W/m^2) in December 2015 to a maximum of 252.8 W/m^2 in July 2014. The wind rose indicates wind speeds between

2 and 6 kilometres per hour (km/h) were most frequently recorded between January 2014 and May 2016. The most frequent wind direction was traveling west-northwesterly (i.e., from the south-east), at approximately 22.9% of the recorded entries. The lowest precipitation values generally correspond to the summer months (a lowest mean of 35.4 mm in August) and higher precipitation in the early winter months (a highest mean of 89.6 mm in November).

To evaluate baseline GHG emissions for the Project area, total GHG emissions from B.C. and sector specific emissions, particularly emissions from the mining sector were considered. The best available estimate of B.C.'s reported GHG emissions is provided in the 2020 ECCC National Inventory Report (NIR) and 1990-2019 Provincial Inventory (BC, 2021). GHG emission summaries in the Atmospheric RSA in 2020 indicated a total of 1,695,266 t CO2e/year. The highest fossil fuel emitter was Teck's Fording River Operations (649,846 t CO2e/year). Based on these results, GHG emissions from Single Facility Operations in the East Kootenay region in 2020 accounted for approximately 2.6% of B.C.'s annual emissions, or approximately 0.2% of Canada's total GHG emissions.

23.2.2 Acoustic Environment

The acoustic environment in the Project area near and surrounding the Acoustic LSA comprises natural noise sources (e.g., wind, birds, insects), and anthropogenic sources (e.g., residential, recreational, mining, forestry, transportation). The Project location occurs in a medium relative hazard zone for seismic activity (Natural Resources Canada, 2015), but earthquakes do occur in the area (Natural Resources Canada, 2020). Anthropogenic sources of background vibration may include seismic exploration for mining and oil and gas developments, quarrying and resource extraction, large trucks and earth-moving equipment, and timber harvesting and hauling.

Mining in the East Kootenay region has been ongoing for over a century with coal being the dominant resource extracted in the area. There are several existing metallurgical coal mines in the Elk Valley and Crowsnest coal fields, including Teck's Elkview Operations at approximately 8 km southwest of the Project and the Line Creek, at approximately 12 km north of the Project. Additionally, the Canadian Pacific mainline and the Sparwood/Elk Valley Airport are within the Acoustic LSA which affect the acoustic environment in the Project area. None of the above activities currently occur within the Project footprint or Acoustic LSA; these activities are present within the greater region in which the Project is located.

Ambient baseline noise monitoring was performed for the Project in 2017 to determine ambient noise levels at representative human receptors in the Acoustic LSA. Receptor locations were selected near residences, cabins, and campsites. Of the receptors, only two human receptors (locations of possible, but not occupied, Indigenous dwellings) showed some noise levels in exceedance of guidelines. Wildlife receptors were most affected within the Project site itself up to a distance of 1,500 m for noise and up to 400 m to 500 m for vibration levels. All other receptors results were in compliance with the respective criteria and applicable guidelines. Baseline vibration levels were not assessed as there are no known sources of vibration within the Project footprint.

23.2.3 Soils and Terrain

The Soil Quality and Quantity LSA and the Terrain LSA are underlain by a sequence of numerous sedimentary rock formations ranging in age from Jurassic to Lower Carboniferous. The Grave Prairie,

Upper Grave Creek, West Alexander Creek, and Alexander Creek drainages are largely underlain by Jurassic-aged sandstone, shale, and limestone of the Fernie Formation (Massey et al., 2005; Price et al., 1992). The spine of Erickson Ridge consists of Carboniferous-aged dolomite, limestone, and chert of the Rundle Group (Etherington, Mount Head, and Livingstone Formations). Outcrops of dolomitic siltstone, sandy dolomite, orthoquartzite and limestone of the Rocky Mountain Group flank the Rundle Group rocks. In turn, shale, sandstone, and limestone of the Spray River Group are located between the Fernie Formation and the Rocky Mountain Group. Sandstone, siltstone, and coal of the Kootenay group outcrop along the Crown Mountain ridge top (Massey et al., 2005; Price et al., 1992).

As part of the baseline analysis, a total of 17 Soil Map Units (SMUs) were described and were finalized once a pattern of main soil types was established through field sampling and image analysis. Dominant SMUs consisted of circum-mesic till, moderately shallow soil, and deep colluvium within the LSA and Project footprint. High soil erosion potential was identified along watercourses and on steep slopes throughout the Soil Quality and Quantity LSA.

Soil salvage potential was considered low in the LSA as 59.7% of soils were considered unsuitable for salvage for rehabilitation purposes. Soils with good potential to be salvaged for rehabilitation purposes (i.e., m, m-h, m-l classes) cover 22% of the Project footprint. Another 17% of the Project footprint has fair potential for soil salvage.

Concentrations of metals in the soil samples analyzed during the baseline surveys were found to be below the B.C. Contaminated Sites Regulation (CSR) standards, and Canadian Council of Ministers of the Environment (CCME) Canadian Soil Quality Guidelines (CSQG) with some exceptions that included aluminium, arsenic, barium, cobalt, manganese, nickel, selenium, thallium, and zinc. Four of the 18 polycyclic aromatic hydrocarbon (PAH) parameters analyzed were detected in soil samples. With the exception of one sample collected from near an exposed coal seam northwest of the summit of Crown Mountain, levels were below the B.C. CSR standards and CCME CSQGs. Soil pH levels by SMU varied greatly from strongly acidic to moderately alkaline.

Terrain type, assessed by mapping of surficial materials across the terrain LSA include till, colluvium, aeolian, fluvial, glaciolacustrine, and organic deposits, as well as weathered bedrock and anthropogenic deposits. Glaciolacustrine sediments are found throughout the Terrain LSA and are associated with increased susceptibility to landslides and surface erosion than other materials. Within the Terrain LSA, deposits of glaciolacustrine sediments were found along the Elk River valley bottom, Grave Prairie and the south end of Grave Lake between the elevations of about 1,200 m above mean sea level (amsl) and 1,400 m amsl.

Terrain stability class within the Terrain LSA was high to very high covering approximately 47% of the Terrain LSA. Though karst was not observed within the Terrain LSA by the terrain stability mapping, 892.9 ha (7%) of the Terrain LSA is underlain by Primary Karst likelihood, 977.7 ha (8%) by Secondary Karst likelihood, and 3,818 ha (30%) Tertiary Karst likelihood. The remainder of the area is considered to have a negligible amount of karst potential. Most of the Project infrastructure is located on areas mapped as Tertiary or unmapped. The majority (56.5%) of the Terrain LSA was not classified as a geohazard; slow moving geohazards (5.9%), rapid moving geohazards (32%) or a combination of slow and rapid geohazards (6.1%) were identified in the baseline assessment.

23.2.4 Groundwater and Surface Water

There are two mapped aquifers identified within the catchments of Grave Creek and Erickson Creek located to the southwest of the Project, close to the Town of Sparwood. Aquifer 1078 is a sand and gravel aquifer with a size of 8.5 km^2 and overlies the 1082 bedrock aquifer at its west end. This confined aquifer is comprised of glaciofluvial sands and gravels, and it is located underneath till, in between layers, or underlying glaciolacustrine deposits. The reported yield for the wells screened in this aquifer ranges between 0.3 and 2.5 L/s while their depth to water ranges from 24 to 40 m below ground surface (m bgs). The groundwater flow pattern (i.e., flow direction) is not clear but is likely towards the Elk River. Recharge sources are precipitation, snow melt, and infiltration of surface water. Aquifer 1082 is a confined bedrock aquifer with an area of 1.8 km^2 and a median well yield of 0.41 L/s. Groundwater within this aquifer flows to the southwest through fractured sedimentary rocks, including shale, sandstone, and limestone of the Fernie Formation.

Thirteen private wells, where 12 are owned by Teck were identified within 7 km of the LSA. No registered private wells within the Grave Creek, Erickson Creek, and Alexander Creek catchments were found.

Groundwater quality sampling at Crown Mountain has been completed over two periods between 2013 and 2016, and 2018 through 2020. Within the LSA, baseline groundwater quality exceeds B.C. CSR drinking water criteria for several parameters (cobalt, lithium, sodium, chloride, and fluoride). Most of the exceedances to these criteria occur in and around the projected footprint and above the confluence between West Alexander and Alexander creeks. Monitoring wells that exceed selenium are also located below the confluence between West Alexander and Alexander creeks and are clearly explained by a regional groundwater signature. Several monitoring wells exceed the B.C. CSR for drinking water criteria for lithium, whereas one well exceed B.C. CSR Drinking Water and B.C. Drinking Water criteria for chloride.

As part of the surface water baseline assessment, discharge hydrographs demonstrated the variability of flow conditions within the LSA. Notably, minimal to near zero flows are annually observed in the late-fall to early-spring months at each monitoring station. The onset of annual freshet conditions has been noted to occur as early as the beginning of April in some years (e.g., 2016). The freshet periods over the course of stream flow monitoring were found to generally persist into early July with low summer flows typically occurring at least by the end of August.

Surface water analytical results from the baseline program between May 2012 and June 2019 were compared to the B.C. WQG working and approved short-term guidelines for freshwater aquatic life and long-term and short-term CWQGs for freshwater aquatic life. Elevated concentrations of total aluminum and copper were identified in surface water collected from the Alexander Creek watershed during a high-magnitude precipitation event in June 2013. Nine samples exceeded the guidelines for cadmium within the Alexander Creek watershed in June 2013 and May 2014. These elevated concentrations are associated with high flow volumes and significant precipitation events. Concentrations of key parameters (i.e., nitrate, fluoride, sulphate, aluminum, cadmium, copper, iron, and selenium) were consistently higher in Michel Creek compared to Alexander Creek.

23.2.5 Fish and Fish Habitat

Fish and fish habitat baseline surveys were conducted to describe and quantify existing conditions. The scope of the surveys included fish habitat, fish communities, benthic invertebrates, sediment quality, water quality, and tissue residue analyses of fish, periphyton, and benthic invertebrates.

Field studies were completed in 2014, 2017, 2019 and 2020 and included sampling in winter, spring, summer, and fall. A total of 60.1 km of stream length was assessed; of this, 49.1 km (82%) was determined to be fish bearing. Fish species observed within the Fish and Fish Habitat LSA have included Westslope Cutthroat Trout (listed under Schedule 1 of the *Species at Risk Act* [SARA]), Bull Trout, Eastern Brook Trout, Mountain Whitefish, and Rainbow Trout (Lotic Environmental, 2020). In the Aquatic RSA, additional species observed consisted of Longnose Sucker, Longnose Dace, Torrent Sculpin, Burbot, Kokanee, Peamouth Chub, and Northern Pikeminnow. Distribution of Rainbow Trout, Burbot, Kokanee, Peamouth Chub, and Northern Pikeminnow is limited to downstream of Elko Dam on the Elk River and in Lake Koocanusa (Lotic Environmental, 2020).

As part of the baseline, fish inventories identified Westslope Cutthroat Trout, Bull Trout, Eastern Brook Trout, and Mountain Whitefish. Results of the baseline fish community study indicated the potential presence of two subpopulations of Westslope Cutthroat Trout in Alexander Creek consisting of a "fluvial resident", and "fluvial migratory" population.

Fish habitat surveys during baseline studies were conducted on Alexander Creek, West Alexander Creek, Grave Creek and other tributaries and lentic areas within the Fish and Fish Habitat LSA and Project footprint. Alexander Creek is a fish bearing fourth order tributary of Michel Creek, characterized by cascade-pool and cascade-riffle to riffle-pool morphologies. Overall habitat quality was considered to be good in one reach (ALE1) with mature riparian vegetation, diverse channel units, and sufficient overhead, cover was less available in the remainder of the watercourse. A long bedrock falls was considered to be a barrier to fish migration. Substrate was dominated by cobble and gravel throughout the surveyed reaches. Spawning potential for fish bearing reaches in the Alexander Creek watershed were classified overall to be moderate to good providing areas with adequate spawning gravel size, overhead cover, flow, and water depth for Westslope Cutthroat Trout. Spawning potential was overall limited for fall-spawning species, some sections of Alexander Creek provided appropriate spawning habitat and fall surveys of 2017 identified potential Bull Trout redds, and one confirmed Bull Trout redd in 2019.

West Alexander Creek is a second order stream and a tributary of Alexander Creek dominated by cascade-riffle/cascade-glide morphology. Within the reaches surveyed, a moderate amount of cover was provided by woody debris, and boulders. Riparian vegetation primarily consisted of mature coniferous forest, and substrate was dominated by cobble and gravel. Some sections of West Alexander Creek are considered as non-fishing-bearing due to the presence of gradients of 45% for over 200 m, and dewatering. A wetland area confirmed to be non-fish bearing is present at the headwaters (WAL4). All four unnamed tributaries of West Alexander Creek were also observed to be non-fishing-bearing due to the presence of waterfall barriers and/or gradients greater than 30%. One reach of two surveyed of West Alexander Creek (WAL1) was considered to have good spawning potential which was confirmed by the presence of Westslope Cutthroat Trout fry and redds.

Grave Creek is a fourth order stream and a tributary of the Elk River located adjacent to the Project footprint with four fish bearing reaches. Due to the presence of a barrier to fish migration, two reaches are considered to contain an isolated population of Westslope Cutthroat Trout. Morphology was characterized by cascade-pool, and step-pool, with dominant substrate consisting of cobble and gravel. Cover ranged from poor to good between reaches and consisted of boulders, woody debris undercut banks present, and overhanging vegetation. Overall, Grave Creek and its tributaries provide moderate to good spawning potential with evidence of spawning activity including one Redd noted during surveys.

Overwintering habitat suitability was variable and was classified as poor, moderate, or good based on depth, temperature, and dissolved oxygen levels.

Twenty-seven wetland (lentic) sites were surveyed in July 2019. Lentic sites were dominated by open water/channelized wetlands with slow moving or stagnant water, including active and inactive beaver impoundments. Most wetlands had emergent vegetation and were surrounded by mature forest. Fish presence surveys indicated that 23 of the 27 wetlands surveyed had potential for fish presence, 12 of which were connected to watercourses and considered fish-bearing after the first year of inventory sampling. Fish captures included juvenile eastern brook trout and one juvenile bull trout.

Benthic invertebrate community sampling was conducted in October 2014 and October 2017 at sites on Alexander Creek, West Alexander Creek, unnamed tributaries of West Alexander Creek, Grave Creek, and the unnamed tributaries on Grave Creek (where streams were considered fish-bearing). In 2017, some Alexander Creek stations had twice as many invertebrates in samples compared to 2014, though community composition remained similar.

23.2.6 Terrestrial Ecosystems and Vegetation

The Project footprint and the Landscapes and ecosystems LSA are characterized by old growth and mature forest, riparian habitat, avalanche chutes, and some grasslands and wetlands. The Biogeoclimatic Ecosystem Classification (BEC) zones present within the Landscapes and Ecosystems RSA and Landscapes and Ecosystems LSA include Montane Spruce (MS), Interior Cedar-Hemlock (ICH), Interior Douglas-Fir (IDF), Engelmann Spruce - Subalpine Fir (ESSF) and Interior Mountain Heather - Alpine (IMA). Fire suppression activities have resulted in a greater abundance of young forests, reducing the occurrence of non-forested structural stages where many listed plants occur (Demarchi et al., 2000; Kirby and Campbell, 1999; Mountain Goat Management Team, 2010; and Poole and Ayotte, 2019).

Baseline Terrestrial Ecosystem Mapping (TEM) was used to map and quantify avalanche chutes, grasslands, riparian habitat, old and old growth and mature forest as well as wetlands. The Project TEM predicted avalanche chutes occur across 69 ha or 5% of the Project footprint, and in 603 ha or 5% of the Landscapes and Ecosystems LSA. Grasslands are predicted to occur across 13 ha or 1% of the Project footprint, and in 200 ha or 2% of the Landscapes and Ecosystems LSA. Old growth and mature forest occur across 851 ha or 66% of the Project footprint, and 5,029 ha or 39% of the Landscapes and Ecosystems LSA. Riparian habitats are predicted across 78 ha or 6% of the Project footprint, and in 1,318 ha or 9% of the Landscapes and Ecosystems LSA. The Project TEM predicts wetlands cover less than 1 ha and less than 1% of the Project footprint, and in 122 ha or 1% of the Landscapes and Ecosystems LSA. Invasive species were found within the grassland (13 species), riparian (six species), and wetland (nine species) habitats.

The wetland baseline study identified four wetlands that occur in the Project footprint, while 32 surveyed wetlands are located adjacent to or outside of the Project footprint in the Terrestrial LSA. Most wetlands surveyed ranged in size from 0.01 to 0.25 ha (n=11) and 0.51 to 0.75 ha (n=10), and represented bog, fen, marsh, swamp, shallow open water, and a transitional/successional marsh-fen classes. The wetland baseline study also identified 11 wetland site associations and three non-wetland site associations in the Terrestrial LSA listed by the B.C. CDC as special concern (Blue-listed) and at risk of being lost (Red-listed). No Red- or Blue-listed wetland site associations were found in the Project footprint and no SARA-listed wetland plant species or communities were found within the LSA or Project footprint. One Red-listed site association was observed in the Terrestrial LSA, and 10 Blue-listed site associations were observed across 14 wetlands in the Terrestrial LSA. The Red-listed was found to occur the same wetland complex in which two Red-listed non-wetland alkaline-saline meadows were observed.

As of May 2021, the B.C. CDC has documented historical observations of 39 listed plants and 11 listed plant communities in the Landscape and Ecosystems RSA (B.C. CDC, n.d.). Within the Landscapes and Ecosystems LSA, 8 Red-listed and 15 Blue-listed plants have been documented by B.C. CDC. Limber pine and whitebark pine are both considered Endangered by COSEWIC with whitebark pine additionally being listed as Threatened under SARA (2002).

Whitebark pine was detected within the Project footprint and Landscapes and Ecosystems LSA, from an elevation of approximately 1,800 m asl to the ridge top of Crown Mountain (2,230 m asl) with the bulk of observations located at or above 1,900 m asl. Whitebark pine is also found to the north of Crown Mountain along the ridge that extends from Crown Mountain to the northern edge of the Landscapes and Ecosystems LSA in the upper Grave Creek drainage. Additionally, VRI data indicates that whitebark pine is found just outside the Landscapes and Ecosystems LSA to the east and northeast. Though limber pine was not observed within the Landscapes and Ecosystems LSA, the potential for this species to occur cannot be ruled out as seed catches or trees may occur and were not observed during the extensive baseline surveys. Limber pine has been documented south of the Landscapes and Ecosystems LSA (Klinkenberg, 2019) in habitats similar to those found within the Landscapes and Ecosystems LSA.

Baseline field surveys also recorded four listed plant species currently Red-listed by the B.C. CDC within the LSA and include ground plum, shining penstemon, Parry's townsendia, and Drummond's milk-vetch. Of the listed plant species observed during baseline surveys, none are listed as species at risk under the SARA (2002) or are designated at-risk by COSEWIC. Prior to 2019, Cusick's paintbrush was Red-listed. Since 2019, its status has been listed as Unknown (B.C. CDC, n.d.). The four Red-listed plant species within the Landscapes and Ecosystems LSA were observed in the southern portion of the Landscapes and Ecosystems LSA and not within the Project footprint. Cusick's paintbrush was also observed in the southern portion of the Landscapes and Ecosystems LSA and east of the proposed rail loadout within the Gg12 ecological community west of Valley Road. The observation of Cusick's paintbrush in the southern Landscapes and Ecosystems LSA was the first occurrence of this species documented in the Elk Valley.

Habitat conditions for listed plant communities and species in the Landscapes and Ecosystems LSA were observed in low elevations areas of the MSdw (below 1,600 m asl) with warm aspect or soil conditions preventing the establishment of trees. As part of the baseline field surveys, one Red-listed grassland was observed within the Landscapes and Ecosystems LSA. Gg12 *Rough Fescue - (Bluebunch Wheatgrass) - Yarrow - Clad Lichens* (*Festuca campestris* - (*Pseudoroegneria spicata*) - *Achillea borealis – Cladonia* spp.)

was identified through the rare plant field surveys, accounting for 0.21% of the Landscapes and Ecosystems LSA and 0.04% of the Project footprint.

23.2.7 Wildlife and Wildlife Habitat

Comprehensive field surveys were conducted in 2014, 2017, 2018, and 2019 to obtain Project baseline information on wildlife occurrence, abundance, distribution and habitat availability within the Terrestrial LSA.

Baseline surveys showed that the ungulate community (including moose, elk, bighorn sheep and mountain goat) were broadly distributed in the Terrestrial LSA, occurring at various elevations within the Alexander, Grave, and Harmer Creek drainages and transboundary mountain passes (e.g., Deadman Pass) during all seasons. Most detections of each ungulate species were higher in spring/summer than in fall/winter. Moose were most often detected in riparian habitats, wetlands, and transboundary mountain passes. Elk were detected in riparian habitats, avalanche chutes and transboundary mountain passes. Mountain goats and bighorn sheep occurred most frequently in avalanche chutes and transboundary mountain passes.

Carnivores, including grizzly bear, wolverine, American marten, and Canada lynx were found to occur along Alexander, Grave, and Harmer Creek drainages and transboundary mountain passes throughout the LSA. A grizzly bear den was incidentally observed in the avalanche chute directly west of Crown Mountain during July 2018. Baseline surveys showed evidence of breeding females throughout the Terrestrial LSA.

Wolverine tracks were detected in all three Biogeoclimatic Ecosystem Classification (BEC) zones, with no substantial difference between detection in different zones. Active or recently used American badger burrows were only documented in the northwest portion of the Terrestrial LSA, to the south, and southeast of Grave Lake. There were no active or recently used burrows, or burrows indicative of maternal denning found within the Project footprint.

Baseline acoustic monitoring identified the little brown myotis, northern myotis, and eastern red bat in the Terrestrial LSA. Both the northern myotis and the little brown myotis are federally-listed on Schedule 1 of the SARA (2002) as Endangered with their survival imminently threatened by white-nose syndrome (ECCC, 2014). Northern myotis are also provincially Blue-listed. Bat species detected during winter months (November to February) were silver haired bat, big brown bat, and little brown myotis (in order of relative abundance). The highest relative number of acoustic files recorded during winter was at the West Alexander Creek headwaters site, followed by the Alexander Creek wetland, with only one recording of a silver haired bat at the Harmer Creek Reservoir. Results of live capture surveys included the identification of post-lactating females at the Alexander Creek wetland site and the Harmer Creek Reservoir site, indicating successful reproduction occurred at the maternity roost.

Within the breeding bird window of June and July 2014 and 2017 to 2019, a total of 2,088 individual birds of 80 species were observed. The most frequently encountered species across the survey years were Swainson's thrush, pine siskin, and yellow-rumped warbler. Two federal SARA-listed (2002) and provincially Blue-listed species were observed: barn swallow and olive-sided flycatcher. Species that are federally-listed under SARA (2002), but provincially Yellow-listed, included common nighthawk and evening grosbeak. Great blue heron are provincially Blue-listed, but not federally listed under SARA

(2002). Within the Terrestrial LSA, breeding landbird communities were found to be the most abundant, species-rich, and diverse in grasslands, mixed shrub forests, and wetlands.

During the landbird migration surveys in 2018 and 2019, 51 species were observed during the spring surveys with 878 individuals, and 33 species with 297 individuals were observed during fall surveys. The species observed most frequently were dark-eyed junco, American robin, and pine siskin. Two species of conservation concern (evening grosbeak and olive-sided flycatcher) were observed during the migration seasons. Landbird communities were found to be the most abundant, species-rich, and diverse in the MSdw subzone in mixed shrub forests in the spring and in wetlands in the fall.

During the raptor standwatch surveys in 2018 and 2019, 38 raptor observations comprising 14 species were observed. Seven raptor species were observed during the migration standwatch surveys: bald eagle, golden eagle, osprey, red-tailed hawk, Cooper's hawk, northern goshawk, and turkey vulture. In addition, 48 individual incidental observations during the spring and fall included American kestrel, barred owl, broad-winged hawk, great horned owl, merlin, northern harrier, peregrine falcon, and sharp-shinned hawk. Red-tailed hawk were the most frequently observed resident species in the spring and golden eagle were the mostly frequently observed resident species in the fall. The highest average raptor abundance and species richness was observed along southern Alexander Creek in the spring and along the upper reaches of Grave Creek in the fall.

A total of 583 individual waterbirds comprising 23 species were recorded in the Terrestrial LSA during the spring wetland surveys in April and May 2018 and 2019. Red-winged blackbird, mallard, and northern shoveler were the most abundant species in the wetlands during the spring surveys. A total of 259 individual wetland birds of 14 species were recorded in the Terrestrial LSA during the summer wetland and ephemeral area surveys in June and July 2014 and 2017 to 2019. Mallard, spotted sandpiper, and red-winged blackbird were the most abundant wetland bird species observed in the summer. A total of six birds, consisting of five mallards and one hooded merganser, were the only wetland bird species observed in the fall.

Eighty-three riverine birds and 11 nests were observed in the Terrestrial LSA across 28.3 km of creek habitat assessed over the survey years. Spotted sandpiper were the most abundant riverine bird species observed in the Terrestrial LSA, followed by American dipper and harlequin duck. No riverine birds were observed in Grave Creek upstream of the confluence with Harmer Creek or in the unnamed creek in Deadman Pass. Alexander Creek had the highest riverine bird abundance, species richness, and diversity in the Terrestrial LSA.

A total of 412 amphibian detections were recorded at 18 wetland survey sites and two ephemeral areas in the Terrestrial LSA during the amphibian baseline surveys including the western toad, Columbia spotted frog, wood frog, and long-toed salamander. The western toad is listed as Special Concern under Schedule 1 of the federal SARA (2002) and were documented at wetlands and ephemeral areas in the Terrestrial LSA from May to July across the sampling years.

23.2.8 Physical and Cultural Heritage

The archaeology baseline program was conducted under *Heritage Conservation Act* Section 12.2 Heritage Inspection Permit 2015-0098, and subsequently Multi-Assessment Permit 2018-0014, and commenced

with a desktop review of applicable Archaeological Overview Assessments (AOAs) and archaeological potential polygons, and previous archaeological inspections to identify locations where archaeological sites have been previously recorded in proximity to the Project footprint. The field component of the archaeological assessment commenced with reconnaissance surveys (i.e., ground-truthing exercises) within and adjacent to delineated archaeological potential polygons (Choquette 2012; 2014) within the Archaeological LSA, and in particular within or in proximity to (i.e., ± 100 m) the Project footprint. A paleontology field assessment was not conducted because fossils resources are generally anticipated to occur deep below ground surface.

During the baseline archaeological program, numerous archaeological sites and artifacts were identified within the Archaeological LSA through the field reconnaissance (walkover) and sub-surface (shovel and evaluative) testing. Site types included, pre-contact, cultural material, surface lithics, fire-altered rock, and ancestral remains. Though the results of the baseline archaeological inventory and archaeological impact assessment conducted have been completed, subsequent inspections (i.e., shovel testing) will be required on areas within the Project's mine plan that have yet to be subjected to any form of archaeological assessment (e.g., Phase IV, utility corridor west of the Elk River, and recently defined clearing limits of the mine plan).

23.2.9 Social and Economic Conditions

The population near the Project includes a variety of small communities in B.C. and Alberta, including Sparwood, Elkford, Fernie, and Crowsnest Pass. Individuals also live in the Regional District of East Kootenay (RDEK), including Electoral Area A. In 2016, the total population in the RDEK was 60,439, increasing at a rate of 9% between 2006 and 2016. The total Indigenous population in the RDEK was 4,710, increasing by 37.5% between 2006 and 2016. Approximately 65% of the RDEK population was working age (i.e., 15 to 64 years).

The mining industry constitutes the largest component of the regional economy. Currently, Teck has four coking coal mines operating within the Elk Valley, with the RDEK accounting for over 70% of Canada's annual coal exports (Katay, 2017). Several other mines operating in the RDEK produce industrial minerals including silica, magnesite, gypsum, graphite, and phosphate. Placer mining occurs throughout the RDEK, and several small operations produce aggregate, sand and gravel, and dimension stone (Katay, 2017). Other sectors of industry in the RDEK include forestry, agriculture, tourism and energy (i.e., oil and gas).

Within the RDEK, mining employs approximately 10.7% of the population in comparison to the B.C. economy which has 1.1% of workers employed in mining. The area also has more people employed in food services and accommodation; and arts, entertainment and recreation in the RDEK, which is consistent with the focus on tourism development. Employment rates within the economic LSA ranged from 54.0% to 68.7% in 2016. Analysis of the economic diversification of the LSA determined that Sparwood, Elkford, Fernie and the RDEK Electoral Area A was low. This is typical for smaller municipalities where mining is the primary industry, and as in the RDEK, many of the businesses are directly or indirectly related to the sector. In addition, the communities within the RDEK also participate in other primary industries and tourism. Annual government revenues range between approximately $8 million and $48 million. The primary revenue source for all municipalities within the Economic LSA is taxation and grants in lieu.

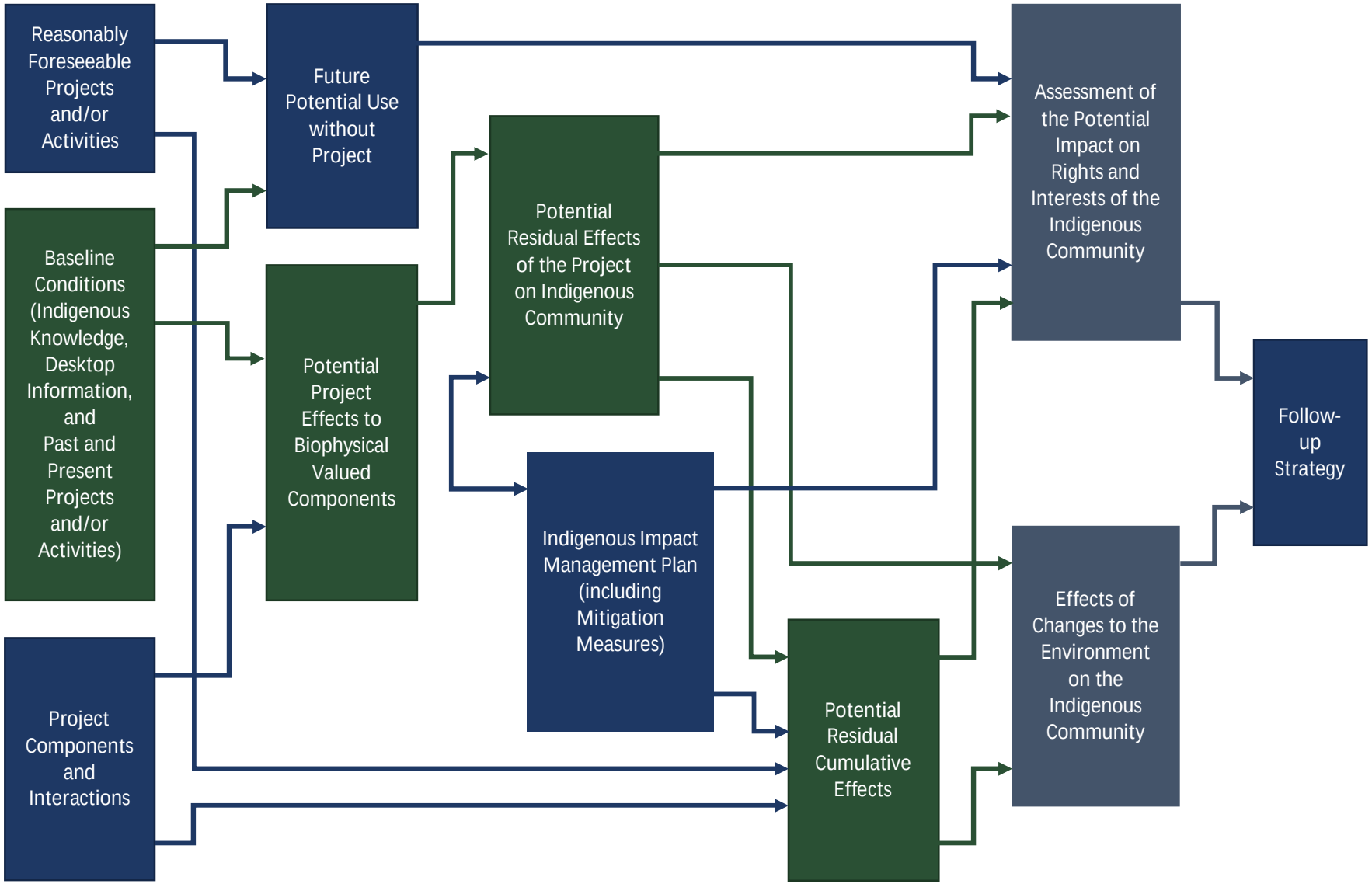
23.3 Overview of the Assessment Methodology

The methods for assessing potential effects on Ktunaxa Nation's rights and interests in relation to the Project followed the approach outlined in Chapter 5: Effects Assessment Scope and Approach. Figure 23.3-1 outlines the approach used as well as the following:

- Step 1 – Identify the rights and interests of the Ktunaxa Nation considering the HHRA and sensory receptor locations related to current and rights-based use publicly available shared perspectives from other EIS/Applications in the Elk Valley, and input provided by the Ktunaxa Nation (Section 23.5);
- Step 2 – Understand how historic and current use or changes to those conditions could affect the Ktunaxa Nation's exercise of their rights and interests related to the Project footprint (and the KNRI LSA and RSA) (Section 23.7). Current use as defined in Section 23.7 is reflective of current use of lands and resources for traditional purposes as well as potential future use by the Ktunaxa Nation;
- Step 3 – Identify the potential future use and conditions that support the Ktunaxa Nation's exercise of their rights and interests within the Project footprint, the KNRI LSA, and the KNRI RSA without the Project (Section 23.11.2.1);
- Step 4 – Identify potential pathways for interactions and adverse effects of the Project components and physical activities (Section 23.8.2.1) and the potential for changes to the environment that could impact on the exercise of Ktunaxa Nation's rights and interests (Section 23.8.2.2);
- Step 5 – Consider the anticipated residual effects to VCs (i.e., changes to the environment) that are directly related to Ktunaxa Nation's rights and interests or identified specifically as being of interest to them, identifying the potential for residual effects on the rights and interests of the Ktunaxa Nation and determining the level of significance of these effects (Sections 23.8.2.2.1 to 23.8.2.2.5);
- Step 6 – Assess the potential for cumulative residual effects on the exercise of Ktunaxa Nation's rights and interests and determine the level of significance of resulting cumulative effects (Sections 23.8.3.4 and 23.8.3.4);
- Step 7 – Identify biophysical and rights and interests specific measures to avoid, mitigate, and/or otherwise accommodate for potential adverse impacts of the Project on the exercise of the Ktunaxa Nation's rights and interests (Section 23.10: Indigenous Impact Management Plan);
- Step 8 – Consider the results of Step 5 and 6 with respect to Step 7 (Indigenous Impact Management Plan), to identify and describe the impacts on rights through a comparison of potential future use of the Project footprint (and the KNRI LSA and RSA), with and without the Project, to assess the severity of any identified adverse impacts (Section 23.11.2.1); and
- Step 9 – Identify additional follow-up strategies and adaptive management techniques to avoid, mitigate, or otherwise accommodate for potential adverse impacts of the Project on the exercise of Ktunaxa Nation's rights and interests (Section 23.12).

As outlined in Chapter 5 and Step 5 above, residual environmental effects are the effects on a VC that remain, or are predicted to remain, after mitigation measures have been implemented. The assessment of residual effects on VCs involves the consideration and evaluation of specific effects assessment criteria based on the degree (i.e., 'level') of potential Project effects. Criteria used to characterize residual effects in this chapter include:

Figure 23.3-1: The Effects Assessment Process Flowchart



- Duration of time that the effect occurs;
- Magnitude or intensity of the effect;
- Geographic extent, both biophysical and socio-economic scales, of the effect;
- Frequency of the effect (i.e., how often the effect occurs);
- Reversibility of the effect (i.e., if the effect can be reversed); and
- Context (i.e., the sensitivity and resilience of a VC to changes caused by the project).

If a residual effect on a VC was determined and the VC was also considered a "pathway" for potential effects on another VC, this chapter identifies the linkages between the VCs. A determination of significance was completed for each residual effect using the significance threshold identified for each VC, as outlined in Chapter 5, Section 5.3.4.1, and was informed by the results of the residual effects characterization criteria. Residual effects on VCs were ranked as 'not significant' or 'significant'. If there was a residual effect on a VC, whether significant or not, the effect was carried forward to the cumulative effects assessment. Likelihood, the probability of the predicted significant residual effect of occurring, is presented as applicable for both intermediate and receptor VCs if the significance determination results in a conclusion that the effects of the Project on the VC are significant. In addition, assumptions or limitations to determining the likelihood of a predicted significant residual effect were described. Effects that were determined to be not significant do not require a characterization of likelihood. Confidence refers to the prediction of the significance of a residual effect based on the quality of data used in the assessment, the level of understanding of the residual effect, and the degree to which analyses are complete. The level of uncertainty associated with the residual effects assessment, including the significance determination, was also included in evaluating confidence.

23.4 Introduction to the Ktunaxa Nation

The following sections provide information about the Yaq̓it ʔa·knuqƚi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band) as having been identified by the Impact Assessment Agency of Canada (IAAC) (formerly the Canadian Environmental Assessment Agency [CEAA]) as asserting their Aboriginal rights collectively through the Ktunaxa Nation Council[3] (IAAC, 2015a). With specific reference to the required assessment matters under the British Columbia Environmental Assessment Office (B.C. EAO) Transition Order under Section 78(7) (2022)[4], the Ktunaxa Nation Council (KNC as identified by IAAC)[5] is addressed on behalf of the Ktunaxa Nation.

This chapter provides information about the Ktunaxa Nation's (addressed by the Ktunaxa Nation Council on behalf of Ktunaxa Nation where applicable unless there is information specific to a member Band) Aboriginal rights[6], Aboriginal Title, including their traditional land and resource use within the following three areas: the Project footprint, the Ktunaxa Nation Rights and Interests Local Study Area (KNRI LSA),

[3] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƚi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

[4] Under BC EAO Transition Order Under Section 78(7), Schedule A, (B1) reads as: *The phrase "Each of the above four communities are represented by the Ktunaxa Nation Council (KNC)" is rescinded and replaced by "The Ktunaxa Nation Council (KNC) on behalf of the Ktunaxa Nation."* This is applicable everywhere in Chapter 23.

[5] Also known as Ktunaxa Nation Council Society by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC, 2021).

[6] Ktunaxa Nation's Aboriginal rights and interests and Title will be referred to as Ktunaxa Nation's rights and interests in this document where applicable, otherwise known as Ktunaxa Nation Title and Rights and related interests (rights and/or interests).

and the Ktunaxa Nation Rights and Interests Regional Study Area (KNRI RSA), defined in Section 23.8.2.1. This chapter includes a description of the Ktunaxa Nation's baseline conditions including the Ktunaxa Nation's rights and interests[7], the assessment of effects of the Project on their environment, the potential mitigation measures, and the assessment of the impacts on their rights and interests.

The information presented in Chapter 23 was used to support the assessment of potential effects of the Project on the Ktunaxa Nation's Aboriginal rights and interests, which were considered in this chapter are also outlined in the *Canadian Environmental Assessment Act*, 2012 (CEA Act, 2012), the Guidelines for the Preparation of an Environmental Impact Statement for the Crown Mountain Coking Coal Project (EIS Guidelines; Canadian Environmental Assessment Agency [CEAA], 2015; IAAC, 2015a), the Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples, updated 2022 (IAAC, 2022b), the Application Information Requirements (AIR) pursuant to an Environmental Assessment Certificate (Application) under the section 16(2) EAA (2002), the *Human and Community Well-Being: Guidelines for Assessing Social, Economic, Cultural and Health Effects in Environmental Assessments in B.C., 2020* (B.C. EAO, 2020b); and meetings with the Agency. The information provided below has also been used to identify mitigation measures to remove or reduce the potential for adverse impacts.

23.4.1 Information Sources

The information described herein was obtained through Ktunaxa Nation HHRA and sensory receptor locations for current and rights-based use, Ktunaxa perspectives identified by the Ktunaxa Nation Council from previous EIS/Applications in the Elk Valley (e.g., other development project EA/IA applications, including Baldy Ridge Extension Project, the Castle Project, Grassy Mountain Coal Project, and the Line Creek Operations Project), publicly available secondary information sources (e.g., Ktunaxa Nation Annual and Community reports, Ktunaxa Community websites, and federal and provincial Ktunaxa demographic data), listed in Sections 23.5 to 23.7 and where stated, through consultation with the Ktunaxa Nation Council and the Yaq̓it **ʔa·knuqƛi'it First Nation** (ʔakink'umǂasnuqǂiʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), **ʔ**aq'am (St. Mary's Band), and Yaqan Nu**ʔ**kiy (Lower Kootenay Band). NWP had previously engaged with the Ktunaxa Nation Council to have the Ktunaxa Nation author Chapter 23 (noted in the Application Information Requirements and the Environmental Impact Statement guidelines as Section C). As the Ktunaxa Nation Council temporarily paused external engagement with government, industry, and others as of April 2021, NWP has solely authored this section and prepared this information which was shared with the Ktunaxa Nation (including all member Bands) for their review.

The information is intended to provide an overview of traditional land and resource use within the Project footprint, the KNRI LSA, and the KNRI RSA. This information is not intended to supersede or prejudice the traditional knowledge or specific information that may be shared as part of ongoing engagement with the Ktunaxa Nation. It provides information from generally available knowledge and secondary sources of information that is intended to complement additional information that might be available from Ktunaxa Nation for the assessment processes, should they wish to share it. If further information is received through continued engagement with the Ktunaxa Nation (and its member Bands), the information will be included in the applicable environmental assessment/impact assessment (EA/IA) phase to be considered

[7] Ktunaxa Nation's Aboriginal rights and interests and Title are defined as those outlined in the correspondence from the Impact Assessment Agency of Canada (IAAC or "the Agency") (formerly the Canadian Environmental Assessment Agency, or CEAA) addressed to Chief Teneese and Council of Ktunaxa Nation on February 10, 2021 (IAAC, 2015a), indicating the Agency's preliminary understanding of the nature and extent of the Ktunaxa Nation's Aboriginal rights and interests as described in Section 23.5.4.

as part of the overall evaluation of the potential impacts on Ktunaxa Nation's member Bands' rights and interests.

23.4.1.1 Limitations of Information Sources

As further detailed in Section 23.5.2, prior to April 2021, we understand that the Ktunaxa Nation Council was preparing Section C – Ktunaxa Nation Rights and Interests Assessment to support the EA/IA Application. At the time of the Application/EIS submission, the Ktunaxa Nation did not provide a Section C submission nor a Project-specific Traditional Land and Resource Use study (TLU) to NWP. Throughout this Application/EIS, where Traditional Knowledge (TK) was provided by Ktunaxa Nation (during the review of Project Planning and Design documents and during Pre-Application Engagement) it has been incorporated where applicable and noted as such. The limitations of the information sources considered include those publicly available (e.g., other development project EA/IA applications, including Baldy Ridge Extension Project, the Castle Project, Grassy Mountain Coal Project, and the Line Creek Operations Project) and those activities and correspondence that detail Project-specific information available from Ktunaxa Nation to be shared publicly (i.e., Crown HHRA and sensory receptor locations, results of previous studies, and technical reports) (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a). Limitations of information are also noted where no information is provided by Ktunaxa Nation directly related to the baseline conditions established in Sections 23.6 and the understanding of Ktunaxa Nation's rights and interests considered in Section 23.7, where NWP's understanding of Ktunaxa Nation's rights and interests is limited to those confirmed by Ktunaxa Nation (including the member Bands) in Section 23.5.4.

23.5 Ktunaxa Nation Consultation and Engagement Summary

All information compiled and presented in Section 23.5 has been authored by NWP utilizing secondary sources that are publicly available and the information presented throughout is not intended to supersede traditional knowledge or specific information of the citizens and Elders of the Ktunaxa Nation (IAAC, 2015a).

23.5.1 Engagement Protocols

The Ktunaxa Nation engages in Government-to-Government relationships based on the Ktunaxa understanding of Ktunaxa Title and Rights and related interests, among other things, based on the principles recognized in the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its implementation by the Government of British Columbia (B.C.) through legislation developed in collaboration with First Nation partners and enacted in November 2019. In October 2010, the B.C. Government and Ktunaxa Nation Council signed a Strategic Engagement Agreement (SEA), which the Ktunaxa Nation Council views as a step towards shared decision making in Ktunaxa ʔamakʔis (B.C. Government News, 2013). The SEA provides for Government-to-Government discussions on natural resource decisions within Ktunaxa ʔamakʔis. The SEA was renewed in 2019 and at its previous renewal in 2013, Ktunaxa Nation Chair Kathryn Teneese, Director and Chief Negotiator at Ktunaxa Nation Council, stated:

> *"Ktunaxa remain unwavering in our role as stewards of this territory. As the Ktunaxa Nation and the Province continue to move towards shared decision-making in relation to land and resources*

within our territory, we look forward to building upon the successes of the past three years while continuing to develop our government-to-government relationship with the Province. The renewal of the Strategic Engagement Agreement is another positive step forward in this relationship" (B.C. Government News, 2013).

The SEA established mutually agreed upon procedures for consultation and accommodation and intended to encourage a positive and respectful Government-to-Government relationship to strengthen B.C.'s investment climate, and to help build the mechanisms to support decision-making in a post-treaty environment. The SEA provides an opportunity for the Ktunaxa Nation while in the treaty process (outlined further in Section 23.6.8) to take a more active role in the decision-making process and develop a stronger Government-to-Government relationship with the province.

The Consultation Work Plan for the Project was proposed by the Impact Assessment Agency of Canada (formerly the Canadian Environmental Assessment Agency) on February 20, 2015 (IAAC, 2015a). This Consultation Work Plan was intended to guide federal Crown-Indigenous consultation activities during the impact assessment (IA) process of the Project. It communicated the federal Crown's objectives for consultation, the proposed structure for integrating consultation into the environmental assessment, and the proposed activities in which the Ktunaxa Nation Council was invited to participate. The Ktunaxa Nation Council ceased external engagement with government, industry, and others in April of 2021. The Ktunaxa Nation Council requested the suspension of coal mine environmental assessments in Qukin ʔamakʔis (Raven's Land including Elk Valley) in a letter to the Minister of Environment and Climate Change Canada and the Minister of Environment and Climate Change Strategy dated August 13, 2021 (KNC, 2021m).

It is noted that the IAAC has indicated that the duty to consult with the Ktunaxa Nation in relation to the Project is at the high end of the consultation spectrum (IAAC, 2015a) when compared to other Indigenous Nations, as the IAAC anticipates that the Ktunaxa Nation will experience more potential Project impacts.

23.5.2 Project Development and Pre-Application Engagement

The Pre-Application phase of consultation includes engagement undertaken up to the submission of the Application/EIS, following the issuance of the Section 11 Order by the B.C. Environmental Assessment Office (EAO). Pre-Application phase engagement activities have included distribution of a Project Notification Letter, meetings with the Ktunaxa Nation Council to discuss the Project, and distribution of draft Application/EIS materials for Ktunaxa Nation Council review. The Ktunaxa Nation Council have also been engaged on a wide range of tasks and Project topics, through in-person meetings, calls/conference calls, letters, and emails. The Ktunaxa Nation Council has been involved in Project Working Group meetings with the Proponent and Crown since October 2015. Key meetings and calls are summarized in Chapter 4: Consultation and Engagement, Table 4.4-2. The meeting summary does not include Ktunaxa Nation involvement in Working Group meetings, which are described in Chapter 4, Section 4.6.5.

NWP and the Ktunaxa Nation Council negotiated an Engagement Agreement in late 2019 and NWP is currently working on strengthening the reciprocal relationship and communication with the Ktunaxa Nation by proceeding with a strong statement of intent to maintain communication and consultation with the KNC. This is in addition to supporting capacity related concerns faced by Ktunaxa Nation representatives in order to help facilitate collaboration on the assessment process for the Project. NWP has continued to engage with the Ktunaxa Nation Council regarding exploration activities, with the most

recent communication including the CX-5-14 Crown Mountain MYAB Annual Summary/Annual Update Meeting in June of 2023. The Ktunaxa Nation (and its member Bands) has provided input to a wide range of environmental assessment (EA) process-related tasks and documents including the Project description, the Indigenous Consultation, Valued Components (VC) document, and the Application Information Requirements (AIR).

NWP firmly recognizes and understands the importance of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) (UN, 2008) and the *Declaration on the Rights of Indigenous Peoples Act* (DRIPA) (British Columbia, 2019a) in the assessment process. NWP acknowledges the importance of UNDRIP and DRIPA in the protection of Indigenous peoples' rights, title, and cultural practices. NWP recognizes the relationship Ktunaxa Nation has with the territory as stewards of the lands who have asserted title over ʔamakʔis Ktunaxa and further emphasizes the importance that NWP continues to consult with Ktunaxa Nation and their representatives throughout this application process. With reference to sections Article 26 and Article 32 of the UNDRIP (UN, 2008), Article 26 refers to Indigenous Peoples rights to own, use, develop, and control their traditional territories and that the Crown must give legal recognition of these rights. Article 32 continues to say that Indigenous Peoples need to be consulted in good faith and must grant free, prior and informed consent ("FPIC") for any project connected to their lands and resources, while proponents must take the utmost caution to mitigate any adverse impact to the First Nation, whether that be environmentally, culturally, or otherwise (UN, 2008).

NWP recognizes Ktunaxa Nation's member Bands' inherent control over their Traditional Territories and emphasizes the respect NWP has for Ktunaxa Nation's member Band assertions of title over ʔamakʔis Ktunaxa in accordance with the principles of UNDRIP and DRIPA. NWP intends to continue to communicate openly, honestly, and accurately with Ktunaxa Nation on the proposed Project and matters that may affect Ktunaxa Nation and work in collaboration with Ktunaxa Nation Council to address concerns. After several months of negotiations, NWP and ʔYaq̓it ʔa·knuqƛ̓it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band) signed a Process and Consent Agreement in early 2023. Since then, NWP and Yaq̓it ʔa·knuqƛ̓it First Nation have shared multiple documents and held bi-weekly meetings to work through key issues including the proposed rail loadout (RLO) location, water quality mitigation, fish and fish habitat offsets, and the reclamation process.

23.5.2.1 Project Planning and Design Engagement

One of the key steps in the Pre-Application phase during Project planning and Project design is the determination of the Valued Components (VCs) for assessment within the environmental assessment. The Ktunaxa Nation provided significant input to the development of the VC document. This included Ktunaxa Nation Council participation in a Project Working Group meeting on October 15, 2015 to review and discuss proposed Project VCs. The general themes of comments received from the Ktunaxa Nation on the draft Valued Components document are detailed in Chapter 4, Table 4.4-3, where a summary of the comments received is provided with specific changes to the VC document based on feedback received from the Ktunaxa Nation noted. Some specific comments related to VCs included adding Indigenous perspectives to VCs related to economics, socio-economics, community health, land-use/tenure, and visual aesthetics. For the purposes of this Application/EIS, the Physical and Cultural Heritage Assessment VCs refer to archaeological resources/sites where significance was added as a measurement indicator and further details on specific feedback from the Ktunaxa Nation is noted in Chapter 16: Physical and Cultural Heritage Assessment, Table 16.2-1.

With respect to the Landscapes and Ecosystem VCs, patch size, structural change and relative abundance to ecosystems, and coarse woody debris were added as measurement indicators based on Ktunaxa Nation feedback. Karst potential was incorporated into baseline data collection using the overlay of provincial mapping for karst and the review of the drilling campaigns' geophysical logs, geochemical analysis of the rock, and the detailed light detection and ranging (LiDAR) data of the proposed footprint and adjacent areas that showed potential karst cavern outcrops. Based on Ktunaxa Nation feedback, Terrain Assessment (Chapter 8: Soil and Terrain Assessment, Section 8.4.3.2), Groundwater Intermediate VC (Chapter 9: Groundwater Assessment, Section 9.3.4), and the at-risk bat model incorporated karst potential (Chapter 15: Wildlife and Wildlife Habitat Assessment, Appendix 15-C) into their analysis.

Based on feedback received from the Ktunaxa Nation, an effects assessment on bighorn sheep and mountain goats VC to address concerns around assessing potential Project effects on mountain goats was also included in Chapter 15. For the Vegetation VC, patch size was added as a measurement indicator to various VCs and Ktunaxa Nation's notes on the assessment of limber pine health were also included. For Wildlife and Wildlife Habitat VCs, the inclusion of habitat quality measurements were added as measurement indicators, and connectivity was added as a measurement indicator for bighorn sheep. Additional information provided by Ktunaxa Nation was added to note the importance of aquatic mustelids and a potential pathway for selenium uptake.

From mid-2019 to April 2021, the Ktunaxa Nation Council and NWP held biweekly engagement activities including virtual meetings to discuss the Project and ongoing information sharing initiatives. In October 2020, EAO and IAAC invited the Ktunaxa Nation Council to attend biweekly virtual Project meetings. These engagement activities have been separate from those that include Ktunaxa Nation involvement in Working Group meetings. In April 2021, the Ktunaxa Nation Council temporarily paused attendance at all Project meetings and returned to engagement activities in 2023.

The Ktunaxa Nation Council has been involved with discussions related to overall Project design, in particular the siting of the proposed rail loadout facility and associated infrastructure, to address concerns regarding potential impacts to archaeological resources within the Grave Prairie area. NWP has worked closely with the Ktunaxa Nation to review alternate locations for the rail loadout outside of the Grave Prairie area. Table 23.5-1 presents the Project component design refinements and changes that have occurred to address the items raised by the Ktunaxa Nation through continued engagement with NWP.

Table 23.5-1: Project Component Design Influences from Ktunaxa Nation

Project Component	Sub-Component	Alternatives
Mine Rock Storage Facility Design	Layer Cake Method to MRSF Design versus Conventional Design	The decision to adopt the Layer Cake method of selenium treatment was influenced by numerous discussions with the KNC Lands department and Ktunaxa Nation's public correspondence on the Elk Valley Water to have a sustainable long-term solution for selenium treatment. The Layer Cake method of selenium treatment impacted the decision to locate the coal handling and coal preparation plant (CHPP) adjacent to the mine location instead of closer to the rail loadout (RLO) as this minimized the re-handling effort for the CHPP tailings.

Project Component	Sub-Component	Alternatives
Mine Sequence	North Pit to South Pit versus South Pit to North Pit	The North pit to South pit mine sequence was selected to minimize the initial footprint. This aligns with Principle 1 of the *Ktunaxa Perspectives on, and Principles for, Reclamation and Restoration in Qukin ?amak?is and the Elk Valley* (Morris and Candler, 2020) with the minimization of initial disturbance and provide earlier opportunities for salvaging and stockpiling soil for reclamation purposes.
Mine Sequence	South Pit Access Road West Design versus East Design	The access road was redesigned based on feedback provided to NWP during a site visit in August 2019. Ktunaxa Elders asked about the design of the mine rock storage facility impact to the avalanche chutes and were concerned about the impact to the avalanche chutes. The South pit access road was redesigned to reduce the impact to the avalanche chutes.
Reclamation Sequence	Stockpiling Soil on Initial MRSF Platforms versus Earlier Reclamation Opportunities	Stockpiling soil on the initial mine rock storage facilities (MRSF) Platform allows for a large flat soil stockpile that was designed to meet the soil stockpiling requirements. The design allows for the stockpile to be maintained/aerated prior to application to reclaimed portions of the mine. This aligns with Principle 2 of the *Ktunaxa Perspectives on, and Principles for, Reclamation and Restoration in Qukin ?amak?is and the Elk Valley* (Morris and Candler, 2020).
Clean Coal Haul Road	Upgraded existing Grave Creek FSR versus Dedicated Access Road Accommodating Off-highway Vehicles (2013 PFS Design)	The access road design was changed from the 2013 Pre-Feasibility Study (PFS) design to an upgraded existing Grave Creek Forest Service Road (FSR) based on conversations with KNC staff regarding additional roads in the Project footprint. This decision impacted the size of truck used for the clean coal haul, which limited the size to a highway legal width truck.
Rail Loop Design	Southern Locations versus Parallel Track versus North Location	In 2016 and 2018, the Ktunaxa Nation sent correspondence to the EAO objecting to the proposed location of the PFS rail loadout (RLO). In 2018, NWP completed an extensive archaeology survey of the proposed PFS RLO area. The results highlighted the areas of high archaeology value to the KNC. NWP designed multiple options for the RLO in three general locations. A low archaeology potential polygon was provided by Tipi Mountain and then investigated in the fall 2019. The three location options for the Rail Loop were presented to the KNC on December 19, 2019, along with the preferred option which was based on the 2019 field program.
Clean Coal Stockpile Location	Convey over Grave Creek versus Clean Coal Stockpile Adjacent to the RLO	In the pre-feasibility study clean coal stockpile design, the clean coal stockpile was located north of Grave Creek, and coal was conveyed over Grave Creek and Grave Prairie to the rail loadout. This conveyor alignment was reviewed with the Ktunaxa Nation in March 2020 and was deemed not acceptable. NWP moved the clean coal stockpile location based on this guidance.

Project Component	Sub-Component	Alternatives
Clean Coal Stockpile Access Road	New Construction versus Previously Disturbed	A follow up archaeology program was completed in 2020 to assess the clean coal access road. The findings of the program were reviewed in the field with KNC staff, which ruled out the new construction option. KNC staff proposed using an existing road, which was adopted for the environmental assessment.

The Ktunaxa Nation Council provided input, direction, and/or participation to selected Project baseline programs, including, but not necessarily limited to the following:

- Water Quality/Quantity – Input into the overall program (initial meeting in spring 2012). Surface water fieldwork (sample collection, logger downloads, etc.) was completed by Nupqu Resource Limited Partnership (Nupqu; previously known as Nupqu Development Corporation), a natural resource management consulting and contracting services firm owned and operated by the Ktunaxa Nation.
- Archaeology – Input, direction, and participation to the extensive archaeological baseline program. The majority of the work was completed by Tipi Mountain Eco-Cultural Services, now a division of Nupqu.
- Human Health and Ecological Risk Assessment (HHERA) – The Ktunaxa Nation Council provided input and guidance to the Project HHERA. Information included preferred rates of Ktunaxa foods (fish, shellfish, land animals, plants, etc.). A Technical Memorandum: *Ktunaxa Nation Council Basic Standards for Human Health Risk Assessment (HHRA) in the Elk Valley* (Candler et al., 2020) was provided to NWP that details Ktunaxa standards applicable to all HHERAs in the Elk Valley. A draft of the Project HHERA was provided to the Ktunaxa Nation Council in mid-June 2021 for use in the preparation of Section C of the Application.

The Ktunaxa Nation Council and their Environmental Assessment team were actively engaged with reviews and discussions related to data assessment and modelling until April 2021. The Ktunaxa Nation Council also provided KNC-specific guidance documents to support the development of the Application including:

- Technical Memorandum: *Ktunaxa Nation Council Recommended Minimum Standards for Proponents in Determining Significance of Effects in Environmental Assessments (EAs) in the Elk Valley* (Candler, 2020); and
- DRAFT *Ktunaxa Perspectives on, and Principles for, Reclamation and Restoration in Qukin ʔamakʔis and the Elk Valley (General)* (Morris and Candler, 2020).

These guidance documents were utilized throughout the Application/EIS in the determinations of significance for Project-related effects and for mitigating potential impacts as outlined in Section 23.10: Indigenous Impact Management Plan.

In addition to participation in site tours for the Project Working Group, NWP has also facilitated several site tours with members of the Ktunaxa Nation Council. Additional tours were expected to occur in the summer/fall of 2021 and are awaiting further confirmation given the Ktunaxa Nation's temporary pause to external engagement as of April 2021, which are expected to be discussed in 2023 and onward.

Prior to April 2021, NWP is of the understanding that the Ktunaxa Nation Council was preparing Section C – Ktunaxa Nation Rights and Interests Assessment to support the EA Application. Section C would cover a range of topics including Ktunaxa rights and interests related to water, traditional knowledge and language, economic investment, education and employment, social, lands and resources, and cumulative effects. The Section would also provide background for the Ktunaxa Nation, including ethnography/history, population, governance, etc. NWP received feedback from the Ktunaxa Nation Council regarding their work on Section C in March 2023 during conformity review (Appendix 23-A, Table 23.A-2) with updates added to this chapter.

A temporary pause in engagement activities with the Ktunaxa Nation was initiated, at the KNC's request, in late April 2021. The Ktunaxa Nation Council has requested the suspension of coal mine environmental assessments in Qukin ʔamakʔis (Raven's Land including Elk Valley) in a letter to the Minister of Environment and Climate Change Canada and the Minister of Environment and Climate Change Strategy (BC) dated August 13, 2021 (KNC, 2021m). A response to the request was addressed by the Minister of Environment and Climate Change Strategy on September 8, 2021 to meet to review and discuss the regulatory processes underway and develop a shared understanding of how the Ktunaxa Nation Council would be involved in each of the processes (B.C. EAO, 2021).

On November 9, 2021, NWP sent a draft effects assessment chapter (similar to KNC's potential Section C submission) to the KNC for review. The draft section was prepared by NWP's consultants based on information available publicly. It was noted, when sent, that it was NWP's preference that the section be written by the Ktunaxa. On December 13, 2021, NWP and the KNC staff held a virtual meeting discussion regarding the receipt of the draft effects assessment chapter and acknowledged that no comments would be provided at this stage and no feedback has been received to date. NWP also reiterated their desire to re-engage with the Ktunaxa Nation to discuss the Project, including Ktunaxa Nation concerns related to environmental conditions and cumulative effects in the Elk Valley. On March 10, 2023, as part of the IAAC's conformity review, comments from the KNC on this chapter were provided and a follow-up correspondence to permitting the usage of Human Health Risk Assessment (HHRA) and sensory receptor locations as current and rights-based use for Ktunaxa traditional purposes and publicly available Ktunaxa perspectives shared in previous EIS/Applications in the Elk Valley was confirmed (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a).

Additional information on consultation and engagement with Indigenous Communities is provided in Chapter 4 and in Appendix 23-A, Table 23.A-1 where applicable. Additional feedback presented in Chapter 15, Appendix 15-A was used to inform occupancy and habitat modelling for wildlife species VCs and their habitat. While Ktunaxa Nation did not author a Section C submission and did not provide a Traditional Land-Use Study to NWP, throughout this Application/EIS, where Indigenous Knowledge was provided by Ktunaxa Nation (during the review of Project Planning and Design documents and during Pre-Application Engagement including datasets related to HHERA) it has been incorporated where applicable throughout and noted as such.

Summarized results of Ktunaxa perspectives and the consultation related to their Title, Rights, and related interests including other matters of concern to the Ktunaxa Nation are available in Appendix 23-A, Table 23.A-1. As noted above, the comments received from the Ktunaxa Nation during IAAC's conformity review and NWP's responses where applicable are recorded in Appendix 23-A, Table 23.A-2.

Overarching themes presented in the feedback received from Ktunaxa Nation (and the member Bands) include concerns regarding the potential cumulative effects of various other project/development activities within the Elk Valley, fisheries concerns, and potential Project impacts to water quality and quantity. More specific concerns related to the Project as identified by Ktunaxa Nation Council, are as follows:

- Archaeological concerns (specifically the Grave Prairie Cultural Landscape) were raised due to the proposed rail infrastructure within the Grave Prairie which conflicts with important Ktunaxa cultural values identified via correspondence from Ktunaxa Nation Council (KNC, 2018; 2021m; 2022b).
- Potential overlap of some Project components with Teck's Proposed Conservation Lands was identified and requires further consultation and are addressed in Section 23.6.3.
- Potential karst features within the Project area were identified and are addressed in Section 23.8.2.1.
- Potential impacts to traditional lands and the use of associated resources were identified.
- Concerns around mitigation measures and requested that Indigenous Community-focused impact management measures be included.
- KNC Crown HHRA and sensory receptor locations be utilized in the assessment as current and rights-based use for Ktunaxa's traditional purposes.
- Concerns regarding the threshold of cumulative impacts on Ktunaxa rights and interests as a result of the potential residual cumulative effects of the Project in combination with other past, present, and reasonably foreseeable projects and activities.

The Ktunaxa Nation's views expressed on the effectiveness of the mitigation or accommodation measures where applicable are further outlined in Appendix 23-A, Tables 23.A-1 and Table 23.A-2.

Any other matters of concern raised by the Ktunaxa Nation that was not captured in the feedback included in Appendix 23-A, Table 23.A-2, are addressed in Appendix 23-A, Table 23.A-1 where noted and included in Sections 23.6 to 23.11.

Key issues that remain outstanding with the KNC are:

- Archaeological concerns (specifically the Grave Prairie Cultural Landscape) due to the proposed rail infrastructure within the Grave Prairie which conflicts with important Ktunaxa cultural values.
- The potential overlap of some Project components with Teck's Proposed Conservation Lands.
- Concerns regarding the overall potential cumulative effects within the Elk Valley due to on-going activities, and the effectiveness of mitigation measures included in this chapter and those for VCs related to Ktunaxa Nation.

NWP continues to attempt to work with Ktunaxa Nation and its member Bands to address key remaining issues. NWP understands consultation as an iterative process and has been open to adapting the process to accommodate the KNC. NWP is hopeful that the issues can be resolved and might include the development of additional mitigative measures where practicable.

In addition to engagement and consultation activities with the Ktunaxa Nation Council, NWP has also had direct interactions with the Yaq̓it ʔa·knuqƛ̓iʔit First Nation (ʔakink'umƛ̓asnuqƛ̓iʔit or Tobacco Plains Band) and the ʔaq'am (St. Mary's Band). A letter from the St. Mary's Indian Band was sent to IAAC on December 5, 2014. The letter outlined specific concerns regarding the development of the proposed

Project including the impacts to traditional lands and the use of associated resources (e.g., fish, wildlife, and other traditional foods), the potential impacts to archaeological sites, wildlife species of cultural significance/species at risk (such as grizzly bear), and water quality. NWP's preliminary response identified that the potential impacts to the specific concerns outlined in the correspondence would be addressed in the Application.

In mid-June 2021, NWP provided a Google Drive link containing archaeological reports for the Project to the Yaq̓it ʔa·knuq̓ti'it First Nation. Beginning in early 2023, NWP and Yaq̓it ʔa·knuq̓ti'it First Nation have shared multiple documents and held bi-weekly meetings to work through key issues including the proposed rail loadout location, water quality mitigation, fish and fish habitat offsets, and the reclamation process.

23.5.3 Future Engagement

NWP is committed to creating and sustaining constructive dialogue and relationships with the KNC over the course of the Project and the Application review phase of the EA/IA. Should the Project be successful in receiving an Environmental Assessment Certificate (EAC), NWP will continue to share information with the Ktunaxa Nation Council. Over the course of the Application review phase and post-EAC, NWP will provide the Ktunaxa Nation Council with Project information, such as the Application/EIS, technical information required through Information Requests that are made public by the EAO and/or IAAC, and other engagement materials such as Project newsletters and Project website updates. NWP will continue to respond to comments received from the Ktunaxa Nation Council as per the Section 11 Order, subsection 12.5.

NWP is committed to an ongoing dialogue with the Ktunaxa Nation Council and the Ktunaxa Nation member Bands and First Nations that are represented, including a commitment to the following:

- Continued implementation of the engagement agreement between NWP and Ktunaxa Nation;
- Continued support of the site visits from representatives of the Ktunaxa Nation;
- Integration of provided Project-specific Indigenous Knowledge from the Ktunaxa Nation where applicable and possible;
- Identifying mitigation and accommodation measures to prevent/offset impacts to Valued Components of interest to the Ktunaxa; and
- Ongoing discussion on possible mitigation for potential impacts to Ktunaxa Nation Title, Rights, and related interests.

23.5.4 Preliminary Understanding of Rights and Interests

As their vast traditional territory includes the Project footprint, there is a potential for the Project to affect the Ktunaxa Nation's Title and Rights and related interests. Therefore, the Ktunaxa Nation's cultural and traditional heritage and traditional knowledge and land use must be taken into consideration and accommodated where appropriate in relation to the Project. An activity, such as the Crown Mountain Project, in the Ktunaxa Nation Territory that has the potential to infringe on the Aboriginal Title and Rights and related interests of the Ktunaxa Nation and its member communities will trigger the Crown's duty to consult and accommodate with the Ktunaxa Nation.

Section 23.5.4 of the Project Application/EIS addresses Ktunaxa Nation member Bands' rights collectively as identified by the Impact Assessment Agency of Canada (IAAC) (formerly the Canadian Environmental

Assessment Agency [CEAA]) in correspondence dated February 20, 2015 (IAAC, 2015a) to Chief Kathryn Teneese of the Ktunaxa Nation Council stating:

> *"Recognising that the ?akisq'nuk, yaqan nuykiy (Lower Kootenay), ?aq'am (St. Mary's), and Tobacco Plains Bands assert Aboriginal rights collectively through the Ktunaxa Nation Council"* (IAAC, 2015a).

In addition, information received from the Agency attached to the correspondence noted above (IAAC, 2015a), indicates the following, which summarizes the Agency's preliminary understanding of potential impacts of the Project on Ktunaxa Nation's rights and interests:

- *"The proposed project falls within the asserted traditional territory of the member nations of the Ktunaxa Nation.*
- *The Ktunaxa Nation is currently engaged in Stage 4, Agreement in Principle (AIP), of the B.C. Treaty Commission's six-stage process through the Ktunaxa Nation Council.*
- *The site of the proposed mine falls inside the asserted traditional territory member nations of the Ktunaxa Nation, and may impact the following potential Aboriginal rights:*
  - *Fishing:*
    - *selenium leaching from mined coal deposits and the potential for biological/ecological effects due to oxidation of waste rock materials (ML/ARD) may have a potential impact on water quality, fish health, and aquatic resources;*
    - *stream crossings for roads, pipelines, and rail and power lines may lead to alteration or loss of fish habitat;*
    - *potential water diversions may impact water quality and flow;*
    - *enhanced access to the project area may result in increased fishing pressure;*
  - *Hunting and Trapping:*
    - *the construction, operation, and decommissioning of the mine pit, access road, rail line, pipeline, and power line may impact animals such as grizzly bear, moose, deer, elk, fur-bearing mammals, and migratory birds, including rare and endangered species;*
    - *the construction of the mine pit and related infrastructure may result in the alteration or loss of wildlife habitat and disruption to migration movements;*
    - *enhanced access to the project area may result in increased hunting and trapping pressure and wildlife mortality; and*
  - *Gathering and Harvesting:*
    - *the construction of the mine pit and related infrastructure may result in alteration or loss of vegetation and increased dust loading.*
- *The site of the proposed mine falls inside the asserted traditional territory member nations of the Ktunaxa Nation, and may result in the following concerns related to your potential Aboriginal rights:*
  - *long-term or permanent displacement of access to lands may impact unknown historical or archaeological sites and ability to carry out traditional use activities"* (IAAC, 2015a).

BC EAO Transition Order Under Section 78(7), Schedule A, (B1) reads as:

> *"The phrase "Each of the above four communities are represented by the Ktunaxa Nation Council (KNC)" is rescinded and replaced by "The Ktunaxa Nation Council (KNC) on behalf of the Ktunaxa Nation."*

As such, for the sake of simplicity, in this chapter, Ktunaxa Nation or Ktunaxa Nation Council[8] will be used as inclusive terms that incorporate the Yaqit ʔa·knuqɬi'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one Indigenous Community.

Ktunaxa Nation views their Title and Rights and related interests[9] as extending beyond the protection of traditional hunting, fishing, trapping, and gathering practices to include overarching pillars of nation rebuilding. The Ktunaxa Nation Council, the governing body of the Ktunaxa Nation, is comprised of the elected council of each of the four Ktunaxa communities in Canada and it organizes its programs according to five pillars of nation rebuilding (KNC, 2016a). As noted by Ktunaxa Nation Council's website (KNC, 2022a), Ktunaxa Nation's rights and interests are organized into Sectors that align with the pillars described as:

- Lands and Resources Sector;
- Traditional Knowledge and Language Sector;
- Social (and Health) Sector;
- Education and Employment Sector; and
- Economic Investment Sector.

The Lands and Resources Sector represents the uses of lands and resources for various traditional purposes including fishing, hunting and trapping, and harvesting and gathering including the identified rights as described by IAAC correspondence noted above. The Traditional Knowledge and Language Sector includes intangible resources as well as ceremonial/sacred areas, access and travel routes, and physical and cultural heritage including the identified rights as described by IAAC correspondence noted above.

23.6 Ktunaxa Nation Baseline Conditions

This section describes the baseline conditions as they relate to the Project for Ktunaxa Nation and includes a description of the Ktunaxa Nation's governance structures, a brief history of the Ktunaxa Nation and its member Bands, publicly available information regarding demographic data, ecology, social structures, and ethnography.

All information compiled and presented in Section 23.6 has been authored by NWP utilizing Ktunaxa Nation's HHRA and sensory receptor locations for current and rights-based use, Ktunaxa perspectives from previous EIS/Applications in the Elk Valley, publicly available secondary information sources, and any input received to date through the engagement activities described in Section 23.5. Indigenous Knowledge utilized in this section based on Ktunaxa Nation's input has been used where permitted by Ktunaxa Nation, and while no information from a Project-specific TLU study has been provided, where Indigenous Knowledge has been utilized it has been noted accordingly. The information presented throughout is not intended to supersede traditional knowledge or specific information of the citizens and Elders of the member Bands identified collectively as Ktunaxa Nation by IAAC (IAAC, 2015a).

[8] Also known as Ktunaxa Nation Council Society by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC, 2021).
[9] Ktunaxa Nation's Aboriginal rights and interests and Title will be referred to as Ktunaxa Nation's rights and interests in this document where applicable, otherwise known as Ktunaxa Nation Title and Rights and related interests (rights/interests).

23.6.1 Potentially Affected First Nations

The Ktunaxa Nation, as identified by IAAC (IAAC, 2015a), is made up of all Ktunaxa citizens residing both within and outside of Ktunaxa ʔamakʔis, Ktunaxa lands or Traditional Territory as defined by the Ktunaxa Nation, including the member communities and their citizens (KNC, 2020a). The Ktunaxa Nation maintains unceded Aboriginal Title in much of what is now known as the East and West Kootenays. The Ktunaxa Nation traditional territory as it is understood today is shown in Figure 23.6-1. The northern portion of Ktunaxa ʔamakʔis has historically been within the boundaries of Canada, while the southern portion within the boundaries of the United States. In Canada, the member communities of the Ktunaxa Nation include, Yaq̓it ʔa·knuq̓ɬiʾit First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), ʔaq̓am (formerly known as St. Mary's Band), Yaqan Nuʔkiy (Lower Kootenay Band), and ʔakisq'nuk (Columbia Lake Band). Ktunaxa communities south of the Canada-U.S.A. border are located in what is now known as Idaho and Montana (KNC, 2021l).

The Project is located in the Elk Valley, which is wholly within the unceded and unsurrendered territory of the Ktunaxa Nation. The Elk Valley is east of the Rocky Mountains in Ktunaxa ʔamakʔis and has been occupied continuously by the Ktunaxa Nation since time immemorial and is maintained as Aboriginal Title by the Ktunaxa Nation (KNC, 2021l). The potentially affected Ktunaxa First Nations identified in Schedule B of B.C.'s Order under Section 11 for the Project (IAAC, 2015a) and shown on Figure 23.6-1 are as follows:

- Yaq̓it **ʔa·knuq̓ɬiʾit First Nation** (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band) near Grasmere, B.C.;
- **ʔ**akisq'nuk First Nation (Columbia Lake Band) near Windermere, B.C.;
- **ʔ**aq'am (St. Mary's Band) near Cranbrook, B.C.; and
- Yaqan Nu**ʔ**kiy (Lower Kootenay Band) near Creston, B.C.

The Ktunaxa Nation Council represents the interests of the Ktunaxa Nation and all four of the potentially affected Ktunaxa communities in Canada (IAAC, 2015a).

23.6.2 ʔamakʔis Ktunaxa and Ecology

Based on a review of publicly available information, the Ktunaxa Nation maintains underlying sovereign and *sui generis* title[10] to all lands and waters within its territories, including the Elk Valley and the Project footprint. Ktunaxa people have occupied the lands adjacent to the Kootenay and Columbia Rivers and the Arrow Lakes of British Columbia, Canada for thousands of years (KNC, 2016). The Traditional Territory of the Ktunaxa Nation covers approximately 7 million hectares (ha) within the Kootenay region of southeastern British Columbia and historically included parts of Alberta, Montana, Washington and Idaho (KNC, 2021l). As shown on Figure 23.6-1 the historic Ktunaxa ʔamakʔis of the Ktunaxa Nation extends well east of the Rocky Mountains and south into present day Montana, Idaho, and Washington states. The Ktunaxa Nation's original statement of intent to negotiate a treaty filed in 1993 describes the traditional territory of the Ktunaxa Nation within British Columbia and is illustrated in Figure 23.6-1 as the Ktunaxa Area of Intent (B.C. EAO, 2010).

[10] In Canadian law, Aboriginal title is *sui generis* (meaning of its own kind or unique), in that the land title originates in an Indigenous group's occupation of its ancestral lands prior to the European assertion of sovereignty. As such, it is different from other forms of property rights because it is a communal right belonging to specific Indigenous communities. In that regard, Aboriginal title may not be sold or purchased by individuals; it may only be voluntarily surrendered to the Crown by an Indigenous community through agreements such as treaties. It includes both surface and subsurface resources, such as mineral rights and oil and gas developments (Irwin, 2018).

Two Ktunaxa communities in the United States that make up the Ktunaxa Nation, though they are not part of the KNC include:

- ʔaq̓anqmi (Kootenai Tribe of Idaho near Bonners Ferry, Idaho); and
- **k̓**upawi¢q̓nuk (Ksanka Band, Confederated Salish and Kootenay Tribes of the Flathead Indian Reservation, near Elmo, Montana).

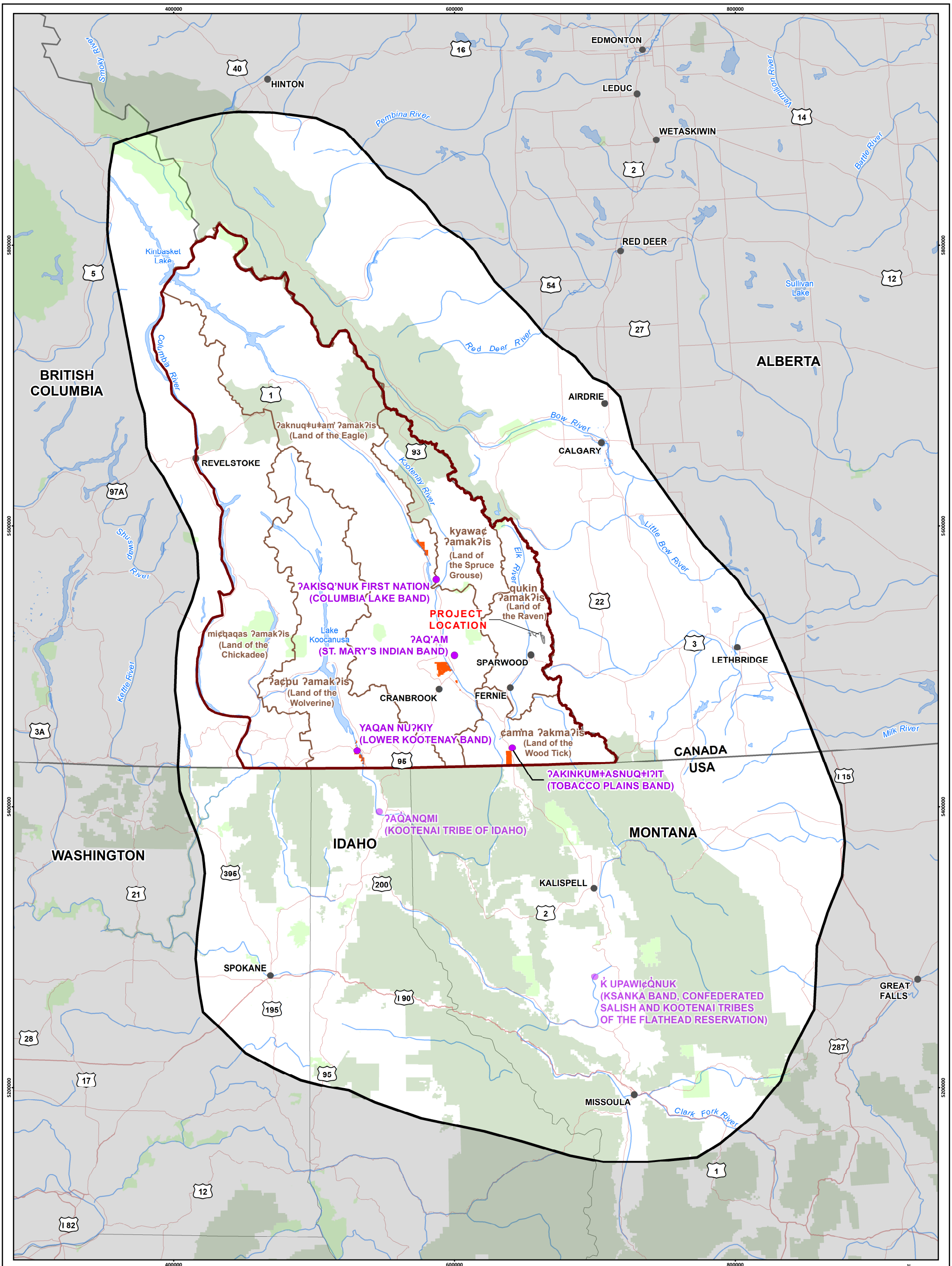
It is important to note that Figure 23.6-1 depicts a snapshot in time, and the concept of the extent of Ktunaxa Nation traditional territories is based on an evolving understanding of the landscapes that were occupied by Ktunaxa Nation ancestors and may not fully reflect the up-to-date views of the Ktunaxa Nation communities.

Ktunaxa sovereignty predates the 1846 establishment of the international boundary between Canada (then British North America) and the United States, and Ktunaxa Title and Rights and related interests extend across both provincial (Alberta/B.C.) and international borders. The core of Ktunaxa ʔamakʔis, within which Ktunaxa peoples, Ktunaxa culture, and Ktunaxa governance have persisted since time immemorial, is dominated by the valleys of the upper Columbia and Kootenay River systems (including the Elk Valley), and by the slopes and peaks of the Rocky Mountains and adjacent ranges to the west (KNC, 2021l).

The region's landscape is alive with Ktunaxa culture and history. The Ktunaxa creation story relates the origins of the Ktunaxa people and describes the events and relationships that helped shape – and continue to shape – Ktunaxa ʔamakʔis. As told by Elder Wilfred Jacobs, the creation story tells of the exploits of powerful animal beings that travelled the Columbia and Kootenay valleys in a loop, before the rivers were separated, naming the Ktunaxa landscape and helping create it and the Ktunaxa people as they went. The geography of the Elk Valley is formed in the final events of the story, when the animal chief and creation hero, Naɬmuqƛin, collapses, forming the Rocky Mountains with his body. His feet stretch to Yaˑɬiki near the Yellowhead Pass, and his head lies in the area of Yellowstone Park in Montana (KNC, 2021b).

Within Ktunaxa law and oral tradition, the Ktunaxa ʔamakʔis is composed of traditional land districts. These are historically associated not only with key actors in the Ktunaxa creation story, but also with specific key resources and with particular Ktunaxa individuals or lineages that held particular authority and responsibility for resource stewardship in those areas. Traditional land districts play an important historic and contemporary role in Ktunaxa land governance and resource management. The Elk Valley itself falls within the Ktunaxa traditional land district of Qukin ʔamakʔis, or Raven's Territory.

Today, the Elk Valley is known to Ktunaxa peoples not only for the richness of its fish and game but also for the presence of coal and extensive coal mining, and the associated restrictions on access to mining areas, many of which are private. The diverse landforms, waters, animals, and plants that share Ktunaxa ʔamakʔis are under pressure from many sources of development and change. Valley bottoms, traditionally maintained through fire cycles as open forests and grasslands, are now threatened in many places by changes in the landscape from mining, fire suppression, housing, energy transmission, hydro-electric reservoirs, agriculture, and transportation systems. Higher altitude valleys and slopes, including high elevation grasslands on south and east facing slopes of the Rocky Mountains, provide critical habitat for culturally important species such as elk, deer, bighorn sheep, and grizzly bear. These ecosystems are impacted in many areas by forestry, mining, recreational development, and associated road networks (KNC & the Firelight Group, 2015).



Crown Mountain Coking Coal Project

Figure 23.6-1
Ktunaxa ʔamakʔis (Ktunaxa Nation Traditional Territory)

- Ktunaxa Nation Traditional Territory
- Ktunaxa Nation Area of Intent
- Ktunaxa Nation Traditional District
- Ktunaxa Nation Reserve Lands
- Ktunaxa Communities
- Project Footprint
- City/Town
- Highway
- Watercourse
- Waterbody
- Provincial/State/Local Park
- National
- Province/State Boundary

Scale 1:2,500,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada, ESRI Basedata, Ktunaxa Nation.

Map Created By: RB
Map Checked By: MN
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: FINAL
Date: 2022-04-11

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The region's rivers and streams also provide culturally important sources of fish and plants, including various trout species. Both the Columbia and Kootenay River systems have been heavily modified by hydroelectric and other developments, including mining and forestry. Industrial development, commercial demand, other environmental changes have resulted in the almost complete disappearance from Ktunaxa ʔamakʔis of two cultural keystone species: bison and anadromous salmon. Other cultural keystone species, including grizzly bear, are at risk (B.C. MOE, 2015).

23.6.3 Ktunaxa Lands and Communities

Based on a review of publicly available information, while the Ktunaxa Nation considers itself to hold underlying title to all lands within its territories including the Elk Valley and the Project footprint, Indian Reserves belonging to Ktunaxa Nation communities include (Government of Canada, 2019):

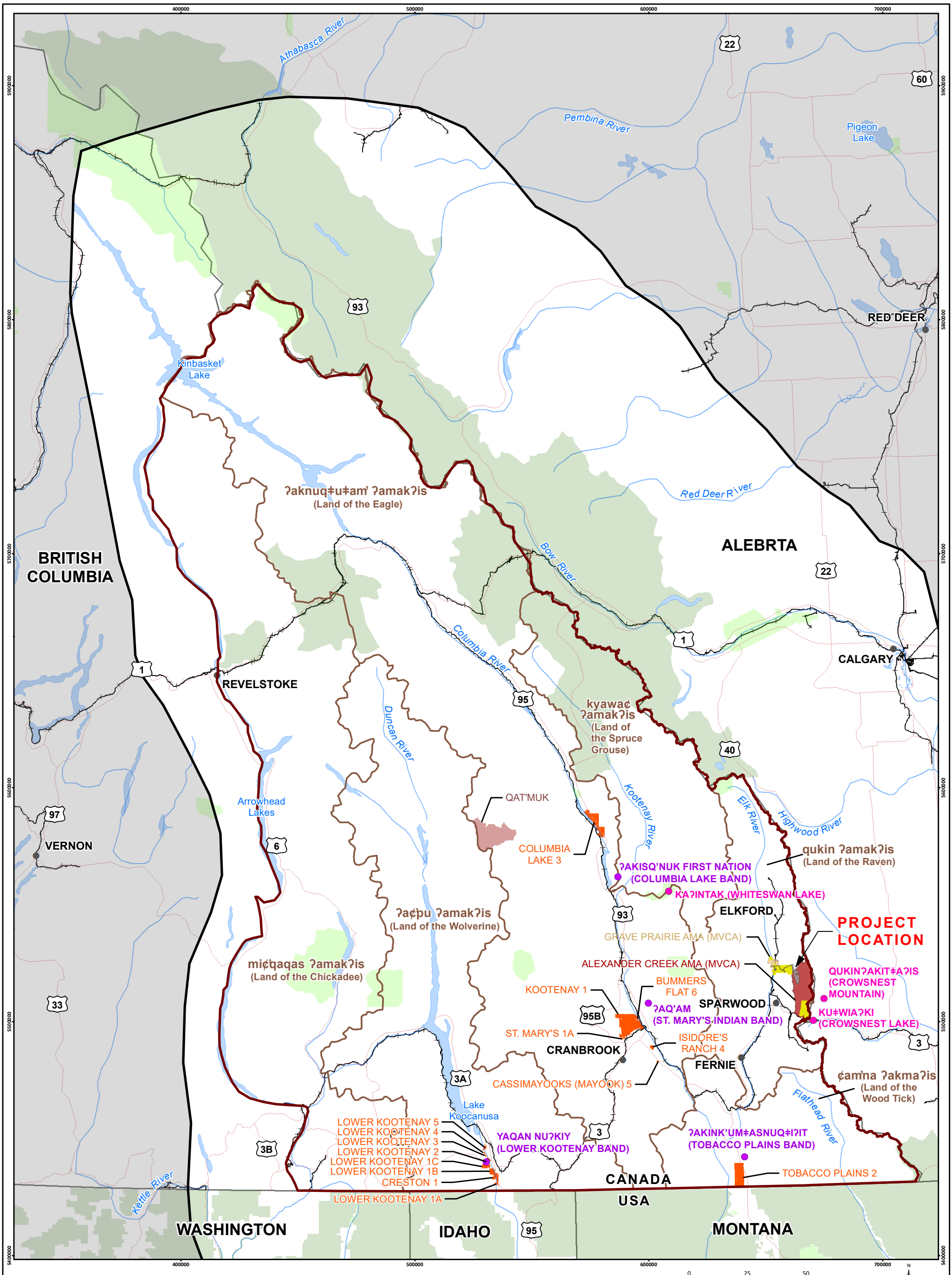
- Yaq̓it ʔa·knuqƚi'it or ʔakink'umƚasnuqƚiʔit or Aqanuxunik (Tobacco Plains Band near Grasmere) – two reserves (Tobacco Plains 2, St. Mary's 1A);
- ʔakisq'nuk (Columbia Lake Band near Windermere) – two reserves (Columbia Lake 3 and St. Mary's 1A);
- ʔaq'am (St. Mary's Band near Cranbrook) – five reserves (Bummers Flat 6; Cassimayooks (Mayook) 5; Isidore's Ranch 4; Kootenay 1; St. Mary's 1A); and
- Yaqan Nuʔkiy (Lower Kootenay Band near Creston) – nine reserves (Creston 1; Lower Kootenay 1A; Lower Kootenay 1B; Lower Kootenay 1C; Lower Kootenay 2; Lower Kootenay 3; Lower Kootenay 4; Lower Kootenay 8; St. Mary's 1A).

These reserves are shown on Figure 23.6-2, along with the location of the Project in relation to Ktunaxa traditional land districts. The Elk Valley was traditionally used and occupied by the Ktunaxa Nation prior to and after 1846, the date of the Oregon Boundary Treaty (KNC, 2020a).

Important Ktunaxa settlements were maintained in the Elk Valley well into the twentieth century, and Ktunaxa citizens continue to reside throughout the lower Elk Valley, including in Sparwood, Fernie, and elsewhere (KNC & the Firelight Group, 2015). Ktunaxa citizens have maintained use and occupancy throughout the Elk Valley despite widespread impacts from coal mining, forestry, and other activities in the valley. While there are no reserve lands in the Elk Valley, it is understood by the Ktunaxa that reserve areas were promised in the area of Michel Flats and present day Sparwood, including large portions of the KNRI LSA, but were never formally allotted (KNC et al., 2015). Ktunaxa sites indicated on Figure 23.6-2 are those that are culturally important and have significance within the Ktunaxa Nation Area of Intent, they are described further below.

Within Ktunaxa law and oral tradition, Ktunaxa territory is also divided into traditional land districts historically associated not only with key actors in the Ktunaxa creation story, but also with specific key resources and with particular Ktunaxa individuals or lineages that held particular authority and responsibility for stewardship of resources in those areas (KLR et al., 2011). Traditional land districts play an important historic and contemporary role in Ktunaxa land governance and resource management and the six traditional districts are identified in Figure 23.6-2 as follows:

- Qukin ʔamakʔis (Land of the Raven),
- ¢aṁna ʔakmaʔis (Land of the Wood Tick),
- Kyawa¢ ʔamakʔis (Land of the Spruce Grouse),
- ʔaknuqƚuƚaṁ ạmakʔis (Land of the Eagle),



Crown Mountain Coking Coal Project

Figure 23.6-2
Ktunaxa Nation Communities and Reserve Land

LEGEND

- Ktunaxa Nation Traditional Territory
- Ktunaxa Nation Area of Intent
- Ktunaxa Nation Traditional District
- Ktunaxa Nation Reserve Lands
- Ktunaxa Communities
- Ktunaxa Sites
- Qat'muk
- Grave Prairie AMA
- Alexander Creek AMA
- Project Footprint
- City/Town
- Highway
- Railway
- Watercourse
- Waterbody
- Provincial/State/Local Park
- National Park
- Teck Conservation Lands
- Province/State Boundary

0 25 50
Kilometres

Scale 1:1,500,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada, ESRI Basedata, Ktunaxa Nation.

Map Created By: RB
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- ʔaƛpu ʔamakʔis (Land of the Wolverine), and
- Miƛqaqas ʔamakʔis (Land of the Chickadee).

Figure 23.6-2 also depicts the Access Management Areas/Motorized Vehicle Closed Areas (AMAs/MVCAs) designated and regulated under the *B.C. Wildlife Act* that are located within the Qukin ʔamakʔis, the Grave Prairie AMA (MVCA) and the Alexander Creek AMA (MVCA) which are in proximity to the Project. Figure 23.6-2 also includes the publicly available information on extensive lands within the footprint that are owned and managed directly, or in partnership, by the KNC (Teck, 2022).

In 2021, the Ktunaxa Nation and Teck signed a Joint Management Agreement for more than 7,000 hectares of land purchased by Teck in 2013 set aside for conservation. The lands are located in Qukin ʔamakʔis Ktunaxa and in the region of Teck's steelmaking coal operations in southeast British Columbia. The Teck Conservation Lands include the entirety of Grave Prairie, and a small portion of the Alexander Creek watershed. Under the Agreement, the Ktunaxa Nation and Teck agree to jointly manage the land for conservation purposes protecting significant fish and wildlife habitat. The Agreement will also support the Ktunaxa Nation Stewardship Principles, and Teck's goal to achieve a net positive impact on biodiversity in the areas where it operates. Both parties recognize the importance of ensuring that communities of interest are involved in the conservation planning for the lands consistent with Teck's commitment at the time of purchase (Teck, 2022). The West Alexander watershed (located within the Project footprint) and all Project infrastructure, aside from the Rail Loadout facility, are not inside the Teck Conservation Lands though they do overlap with the Alexander Creek AMA (MVCA). The Rail Loadout facility overlaps with the Grave Prairie AMA (MVCA). NWP began negotiations to purchase the lands by the Rail Loadout prior to Teck purchasing them and setting them aside for conservation in 2013.

23.6.3.1 Yaqit ʔa·knuqƚi'it First Nation (ʔakink'umǂasnuqǂiʔit or Tobacco Plains Band)

The Yaqit ʔa·knuqƚi 'it is located in Grasmere, B.C. near the Roosville Border Crossing. According to publicly available information, the purpose of the Yaqit ʔa·knuqƚi 'it First Nation administration is to protect and further the Aboriginal Rights of Yaqit ʔa·knuqƚi 'it membership and provide opportunities in economic development, health and wellness, employment and training, and cultural heritage, for all Yaqit ʔa·knuqƚi 'it people (Yaqit ʔa·knuqƚi 'it First Nation, 2021a). The leaders of the Yaqit ʔa·knuqƚi 'it including the Chief and Council with the direction, guidance, patience, and confidence of the Yaqit ʔa·knuqƚi 'it citizens, implement the Vision Statement (Yaqit ʔa·knuqƚi 'it First Nation, 2021a):

> *"The Yaqit ʔa·knuqƚi 'it is a self-governing community, dedicated to improving the health, safety, education and financial security of our people while exercising the right to practice our cultural and traditional ways."*

According to publicly available information, the Yaqit ʔa·knuqƚi 'it comprises of over 4,200 ha in southeastern British Columbia. The southern boundary adjoins the Canada-U.S.A. border in Montana and Highway 93 crosses the Reserve at two locations and the Reserve surrounds the Canada Customs facility. The members of Yaqit ʔa·knuqƚi 'it First Nation (in English, "Tobacco Plains Indian Band") are the descendants of the distinct group of Indigenous peoples who have occupied, controlled, and been the exclusive stewards over their unceded ancestral lands that surround ʔakinkum̓ǂasnuqǂiʔit ("Tobacco Plains") since time immemorial (British Columbia Assembly of First Nations, 2021).

23.6.3.2 ʔakisq'nuk (Akisqnuk or Columbia Lake Band)

Based on a review of publicly available information, the ʔakisq'nuk (Akisqnuk) First Nation is a vibrant, growing community nearly 300 members strong situated in the Columbia Valley, in southeastern British Columbia. Located in an area of unparalleled natural beauty, Akisqnuk neighbours the communities of Windermere to the north and Fairmont Hot Springs to the south. Akisqnuk's western border reaches along the pristine shores of Lake Windermere for 14 kilometres. The ʔakisq'nuk (Akisqnuk) First Nation's eastern border lies at the base of the Rocky Mountains (ʔakisq̓nuk First Nation, 2017c).

The Band's administration headquarters are located in offices just south of Windermere where the Chief and Council and staff provide health, education, housing, lands, and economic development services for the benefit of Akisqnuk First Nation community members (ʔakisq̓nuk First Nation, 2017c). At Akisqnuk First Nation, Ktunaxa language classes are offered for community members and all efforts are being made to teach the language. This is a collaborative effort with the Ktunaxa Nation Council and even includes partners such as the College of the Rockies, which offers college credit courses in Ktunaxa language. Some Akisqnuk First Nation community events are open to the public at large. Public events are a way in which Akisqnukniks and Ktunaxa Nation community members share their culture with the greater East Kootenay community (ʔakisq̓nuk First Nation, 2017b).

Akisqnuk First Nation's Land Code is currently in the active developmental phase as per the First Nations Land Advisory Board (First Nations Lands Advisory Board, 2021). A draft Land Code has been reviewed in its entirety by the 10–akis"nuknik-strong Land Code Development Committee at 30 meetings between March, 2015 and June, 2018. If adopted at community referendum, this Land Code will transfer legal authority over –akis"nuk reserve lands to –akis"nuknik. After the Land Code is finalized, Akisqnuknik will be asked to vote to approve or disapprove the land code and land management for the Akisqnuk First Nation (ʔakisq̓nuk First Nation, 2017b). This Land Code will replace 34 sections of the Indian Act with made in –akis"nuk land laws (ʔakisq̓nuk First Nation, 2019).

23.6.3.3 ʔaq̓am (St. Mary's Band)

According to publicly available information, the ʔaq̓am Community has the largest population of all Ktunaxa Nation Bands and the largest land base, occupying 7,461 hectares in total (ʔaq̓am First Nations, 2021a). The ʔaq̓am Community is situated in the Rocky Mountain Trench, in the East Kootenay region in southeastern British Columbia. The community rests alongside the St. Mary's River as it approaches the Kootenay River, with the Rocky Mountains to the east and the Purcell Mountains to the west. The ʔaq̓am Community is close to the centre of the Traditional Territory of the Ktunaxa Nation, and is 5 kilometres from Cranbrook, the largest city in the East Kootenay, and a short distance from the Canada-U.S.A. border. The area is easily accessible via Highways 3 and 93/95 and the Canadian Rockies International Airport (ʔaq̓am First Nations, 2021d).

The ʔaq̓am Community Band Council consists of a Chief and four Councillors, all elected through the Band's own election process. ʔaq̓am community members are employed in a variety of fields, including local government, hospitality, construction, transportation, tourism, forestry, and entrepreneurial pursuits. The ʔaq̓am administration operates a diverse range of programs and services, including the ʔaq̓amnik̓ Elementary school, ʔaq̓amnik̓ Daycare, ʔaq̓amnik̓ After School and Summer Programs, Community Education Services, Community Health, Economic Development, Lands/Natural Resources

and Housing and Administrative services. These functions are operated centrally at the Band's Administration Building (ʔaq̓am First Nations, 2021a).

Based on a review of publicly available information, the ʔaq̓amnik' have asserted self-governing jurisdiction over ka ʔamaknaɬa (our lands) through the development and ratification of a Land Code. The Land Use Plan is the vision for how ʔaq̓am Community will honour and live according to ʔaknumuɛtiɬɬaknumuɛtiɬi and their ancestors did before them. The Land Use Plan is a document that sets forth the future vision for how ka ʔamaknaɬa will be used. The future vision is set forth through a series of visual maps along with a set of laws and policies to ensure the vision is made possible. The community engagement plan for the ʔaq̓am Community Land Use Plan consisted of a variety of methods that built on previous consultations performed in 2008, 2012, and 2014. Engagement activities undertaken in 2015 focused on hands-on workshops, home visits, and engaging youth with the purpose of determining proper locations for various future land uses. This Land Use Plan is permissive in its nature. The intent of the Land Use Plan is to protect important features and encourage connection to the land. Thus, the Land Use Plan should be interpreted to allow continued existing uses of the land unless specifically restricted in the Land Use Plan (ʔaq̓am First Nations, 2021c).

23.6.3.4 Yaqan Nuʔkiy (Lower Kootenay Band)

According to publicly available information, historically and since time immemorial, the Lower Kootenay Band, locally known as Yaqan Nuʔkiy, were the original inhabitants of the Lower Kootenay area. The name Yaqan Nuʔkiy means "where the rock stands" and refers to an important place in the Creston Valley (Yaqan Nuʔkiy, 2021c). Yaqan Nuʔkiy is located on approximately over 2,400 ha in the beautiful Creston Valley along the banks of the Kootenay River in southeastern British Columbia. With 248 citizens, about half of them live within the main community which is located 4 kilometers south of Creston and just north of the Canada-U.S.A. border on Simon Road. The community is situated on a bench overlooking the Kootenay River and includes 52 houses, an Administration Complex with a gymnasium, Yaqan Nukiy School, an arbour, ball diamond, playground, and a cemetery. The people of Yaqan Nuʔkiy are entrepreneurs, artisans, guides, tradesman, professionals, craftsmen, students, athletes, hunters and fishermen (Yaqan Nuʔkiy, 2021a).

The Vision Statement for Yaqan Nuʔkiy is (Yaqan Nuʔkiy, 2021a):

> *"A stable, independent, self-governing authority, providing principled leadership to a dynamic community of caring, healthy citizens, from a secure resource base."*

The Lower Kootenay Band has community lands located on eight separate reserves in the Creston Valley. The lands are located adjacent to the Kootenay River and stretch from the Canada-U.S.A. border to Wynndel, B.C. The community lands contain over 1,600 ha of the richest agricultural lands in south eastern British Columbia. The Lands and Resource Department works closely with local producers to manage these lands for timothy hay, cereal crop production, and livestock grazing. There are also about 450 ha of wetlands which were established by Ducks Unlimited and are currently managed with the assistance of the Yaqan Nukiy Wetlands Friendship Society, which is comprised of Lower Kootenay and Creston Valley citizens (Yaqan Nuʔkiy, 2021b). The community is governed by a Chief and four councillors, who are elected positions for a term of four years (Yaqan Nuʔkiy, 2021a).

The community hosts the annual Yaqan Nuʔkiy Traditional Pow Wow on the May long weekend in conjunction with the Creston Blossom Festival and enjoys positive relationships with its neighbours and other governments throughout the Creston Valley including the Town of Creston and the Regional District of Central Kootenay (Yaqan Nuʔkiy, 2021a).

23.6.4 ʔamakʔis Qukin Ktunaxa ʔa·qaɬqanuxwaɬiʔit and Oral Historical Context

Based on a review of publicly available information, Qukin amakʔis (Raven's Land, including the Elk Valley), as recalled and recounted by Ktunaxa Elders and Knowledge Holders, provides the context for particular place-based ʔa·qaɬq̓anuxwatiɬa·qaɬq̓anuxwatis, and other forms of Ktunaxa knowledge (KNC, 2020a). Many of the Ktunaxa's founding stories tell of events, from the epic to the humorous, involving creative powers that have an ongoing role in the Ktunaxa worldview. These stories are anchored in particular places or landmarks within Ktunaxa ʔamakʔis, making Ktunaxa lands alive with Ktunaxa knowledge and history (KNC, 2021b).

One oral history especially connected to the Elk Valley has been recounted by Elders and portions of this same story were told to Franz Boas in the early twentieth century and included in Boas' 1918 publication of Kootenay Tales. The story tells of a time when Squirrel (Taƛa¢), Ram (kwi‡q‡i), and other powerful spirits acted with greed and selfishness to control the Elk and Crowsnest Pass valleys and their resources by force, blocking the entrance to the valley to the exclusion of people's use, resulting in dangerous consequences. The story was told again by Ktunaxa leaders in a somewhat different form, and recorded, in association with the Fernie "curse raising" event in 1964 (Fernie, 1977). It seems likely that the recounting of this story at this event was an effort by Ktunaxa people, even in the mid-1960s, to shift the focus of those attending the curse raising away from stereotyped ideas of Indian curses, and instead toward a recognition of Ktunaxa understandings of the valley, its importance, and what the landscape, in combination with Ktunaxa ʔa·qaɬq̓anuxwatiɬ, or oral history, can teach humans (KNC et al., 2015).

23.6.5 Ethnographic and Historic Background

Based on a review of publicly available information, the Ktunaxa are a distinct Indigenous cultural and linguistic group (also referred to in various ethnographic and historic material as Kootanaes, Kootenay, Kutenai, Kutonaqa, Ki'tona'qa, Lakes, and other names) historically and currently occupying the upper Columbia and Kootenay River valleys, and the Selkirk, Monashee, Purcell and Rocky Mountains (including the eastern slopes in present day Alberta) (Brunton, 1998). Smith (1984) provides a useful synthesis of Ktunaxa territorial descriptions from prior ethnographers and notes that:

> *"The most notable topographic features of their territory…were the upper Kootenai and upper Columbia valleys, the flanking mountains, and within the valleys of the upper Kootenai and Columbia Rivers"* (Smith, 1984).

The Ktunaxa are described in the ethnographic literature as including two primary divisions: Upper Ktunaxa (including communities at Tobacco Plains and Columbia Lakes in B.C. and Elmo in Montana), and Lower Ktunaxa (including communities at Creston, B.C. and Bonner's Ferry, Idaho) (KNC, 2020a). The community at ʔaq'am, B.C. is generally described as including both Upper Ktunaxa and Lower Ktunaxa (KNC et al., 2015). Recognizing that there are differences, including subsistence differences, between

communities, and between Upper Ktunaxa and Lower Ktunaxa, existing sources agree that the Ktunaxa, as a whole, hold a common and distinct identity and language, as well as cultural and spiritual traditions that distinguish them from neighbouring groups, and that have persisted (despite challenge and change) from well prior to 1846 to the present day (Smith, 1984).

Prior to and following 1846, Ktunaxa groups used, occupied, and firmly controlled an extensive territory, including the Elk River valley, but also including areas east and west of the Rocky Mountains (KNC & the Firelight Group, 2015). The Ktunaxa maintained, and continue to maintain, a vibrant subsistence and trade economy throughout their ʔamakʔis. A structured but dynamic annual round included harvesting game, fishing, harvesting cultivated tobacco and wild plants, collecting and using mineral and other resources, and trade and other interactions with neighbours. This sustained the Ktunaxa through the arrival of European explorers, traders, priests, miners, and settlers in the nineteenth century (Choquette, 1993).

Trade, social, and war relationships existed between Ktunaxa and Blackfoot (Piikani) and Stoney (Nakoda) peoples east of the Rocky Mountains, and Shuswap and other Interior Salish (e.g., Sinixit, Kalispel, Colville) peoples to the west (KNC et al., 2014). The Elk Valley served as an important area for trade and visiting between Ktunaxa and plains groups until at least the early twentieth century. While primarily passed down orally, Ktunaxa history was also recorded by at least some Ktunaxa leaders using winter counts, including one documented by Schaeffer (c. 1937) at Tobacco Plains that recorded events through most of the nineteenth century, including prior to and following the arrival of Father de Smet in Ktunaxa ʔamakʔis in the early 1840s.

Based on interviews and oral histories collected in the late nineteenth and early in the twentieth century by some ethnographers (Chamberlain 1892; Curtis 1911; Boas 1918; Teit 1930; Turney-High 1941; Schaeffer 1935, 1966), it is possible to identify the area of the Elk Valley, including the Crowsnest Pass area, as being originally and continuously occupied by Ktunaxa speaking people. Each of these sources supports an understanding that the Elk Valley, and the larger area of Qukin ʔamakʔis in its entirety, was used, occupied, and effectively controlled by Ktunaxa speaking people for a long period of time prior to, and extending beyond, the effective assertion of British, Canadian, or American sovereignty in the region (B.C. EAO, 2010).

Available information (archival and ethnographic), as well as oral histories and archaeology, supports an understanding that the Elk Valley in general, and specifically the upper Elk River, including areas around Michel Creek, Line Creek, Grave Creek, Round Prairie, and the Fording River, has been continuously used and occupied by Ktunaxa peoples, and specifically Upper Ktunaxa peoples, for hundreds of years prior to 1846 (KNC et al., 2014). Schaefer (1935) notes that the Elk Valley was the primary home of the easternmost branch of the Ktunaxa, referred to in some places as the Plains Ktunaxa or Tunaxa, and in others as the ƙaqawakanmitukniƙ.

Based on Ktunaxa oral histories recorded by Schaeffer (1935-1937; 1966), the ƙaqawakanmitukniƙ (qakawakanmi‡uqnik in Schaeffer), along with other branches of the Ktunaxa Nation, including the katamukinik, were decimated by smallpox while hunting bison east of the Rocky Mountains, likely just prior to, or shortly after, the arrival of horses in Ktunaxa ʔamakʔis in the late 1700s. At least some of the survivors of the ƙaqawakanmitukniƙ returned to their people west of the Rocky Mountains and were later joined by Ktunaxa from further south under the leadership of Chief Michel (Hole-in-the-Head), an important Ktunaxa leader through the latter half of the nineteenth century.

Chief Michel (also spelled Michelle) is mentioned by Teit (1930) and Turney-High (1941) and recalled in detail by Ktunaxa Elders recorded by Schaeffer (1935-1937, 1966). Schaeffer records multiple versions, each differing slightly, of hunting buffalo east of the Rocky Mountains at a time when the Ktunaxa were decimated by an outbreak of smallpox or other illness. In the late 1960s, Chief Ambrose Gravelle provides a detailed oral history of the ɬkaqawakanmitukniɬ, or Michelle Prairie village, contracting smallpox when a group of Ktunaxa warriors returned home from a raid east of the Rocky Mountains. On the advice of an old woman who had dreamt of the disease, the ɬkaqawakanmitukniɬ moved east onto the plains to avoid spreading the disease to other Ktunaxa communities. Only a handful of ɬkaqawakanmitukniɬ survived and returned to their kin west of the Rockies. One of those survivors (Kanuk‡u‡am or Whitehead) returned to the area of ɬkaqawakanmitukniɬ and Columbia Lakes. Some years later, Chief Michel married a daughter of Whitehead, became the leader of the Michel Prairie people and continued Ktunaxa use, occupation and control of the Crowsnest Pass area (KNC, 2020a). Their descendants continued to use and occupy the Elk Valley. The community later became known as the Michel (or Michelle) Band, also referred to by Turney-High (1941) as the Fernie Band. No reserve lands were ever set aside in the Elk Valley (KNC et al., 2015).

Based on information provided by Ktunaxa Nation Council (KNC, 2022b) via correspondence to NWP, Grave Prairie is a landscape containing extremely important Ktunaxa cultural values. Grave Prairie is a place of incredible historical and cultural importance and is the site of a Ktunaxa village where community members were decimated by smallpox and where the graves of Ktunaxa ancestors remain. The area is valued for its cultural heritage, biodiversity, and role in habitat connectivity and as per Ktunaxa Nation this site cannot be further disturbed (KNC, 2016b). The KNC Lands and Resources Council and the Lands Advisory Working Group, a committee comprised of Knowledge Holders appointed by each Ktunaxa First Nation Chief and Council have determined that the area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure, is not compatible with this cultural landscape. Ktunaxa Nation asserts stewardship responsibility over all of their cultural heritage resources, including ancestral remains and those sites that hold ancestral remains and archaeological sites and resources. Ktunaxa Nation have an inherent right and obligation to maintain and preserve a distinct cultural identity and way of life for present and future generations, which includes the preservation, protection, and stewardship of their cultural heritage sites. Ktunaxa Nation consent will be required where any cultural heritage site or resource may be impacted by a proposed development and/or land alteration. All cultural heritage sites and resources will be protected and managed in a way that is respectful of Ktunaxa stewardship, cultural values, and traditional teachings. Based on the direction from Ktunaxa Knowledge Holders, the area is currently known as the "Grave Prairie Cultural Landscape" and contains two "zones"; a "Culturally Significant Area" where no new activities or infrastructure will be accepted and a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to Ktunaxa contemplating additional development. The impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify any land alteration in the area (KNC, 2022b).

23.6.5.1 Ktunaxa Seasonal Round and Associated Title and Rights and Interests

Based on a review of publicly available information, the Upper Ktunaxa, and the ɬkaqawakanmitukniɬ, traditionally relied upon an annual round[11] that included lands east and west of the Rocky Mountains and

[11] Annual round or seasonal round refers to the pattern of movement from one resource-gathering area to another in a cycle that was followed each year (KNC et al., 2015).

extended north and south of the current Canada-U.S.A. border (KNC & the Firelight Group, 2015). The more permanent Ktunaxa village areas were located west of the Rocky Mountains, particularly after the arrival of the European fur trade, European diseases, and the expansion of the Blackfoot Confederacy in the late eighteenth and early nineteenth centuries. The annual round included hunting for sheep, deer, elk, and goat, as well as other species in the Elk Valley and adjacent valleys, and fishing for Westslope Cutthroat Trout and other fish in streams and lakes, and salmon at Columbia Lakes and along the Columbia River drainage further downstream (Schaefer, 1935; Turney-High, 1941). In the summer, tobacco was cultivated at the main settlement, ḵaqawakanmituknik̓ (Michel Prairie), in the Elk Valley as well as other locations further to the south. Bison were hunted along the sheltered eastern slopes of the Rocky Mountains in the winter season (Schaeffer, 1935; 1964), or farther afield on the plains in the summer. Travel to the east side of the Rocky Mountains by various mountain passes, including the Fording River Pass and the Crowsnest Pass, continued until bison populations were decimated on the northern plains in the late nineteenth century. Salmon remained a critical resource for Upper Ktunaxa along the Columbia drainage until the construction of the Grand Coulee Dam in Washington State in the 1930s made it impossible for salmon to return to the upper Columbia (KNC et al., 2015).

Ktunaxa oral histories and ongoing land use indicate that Ktunaxa citizens have relied on and, to the extent possible, continue to rely on, the Elk Valley for a range of practices including the harvesting of fish, plant, wildlife, and mineral resources, trails and transportation routes associated with the seasonal round and oral histories, and associated camps, cultural areas, and practices (KNC & the Firelight Group, 2015). Ktunaxa citizens see a direct connection between the historic Ktunaxa annual round and current practices on the land, including economic benefit from the trade of resources. Based on available evidence, and considering ongoing Ktunaxa practice within living memory, the Ktunaxa Nation has maintained continuous practice of rights, including harvesting, management, and exclusive Indigenous control throughout the Elk Valley and Qukin ʔamakʔis since well prior to 1846 (KNC et al., 2014).

23.6.6 Language

Based on a review of publicly available information, the Ktunaxa Nation speak the Ktunaxa language, an integral part of Ktunaxa identity as a Nation and a community. The homelands of the Ktunaxa Nation are characterized by extreme mountain ranges and deep river valleys which were difficult to navigate, which are ideal conditions for a language to be developed in isolation (Kapell, 2019). As a cultural isolate language (i.e., a language unrelated to any other known language), Ktunaxa is critically endangered, and Ktunaxa Nation has identified as one of its goal to foster fluent Ktunaxa language speakers with strong cultural skills and knowledge. In order to encourage the development of Ktunaxa language skills, Ktunaxa language and culture are taught at the ʔaḳamnik' School and through programs like Head Start (ʔaḳam First Nation, 2021b).

The Ktunaxa Nation continue to record and document the Ktunaxa language to ensure that it is accessible to future generations. Through the Ktunaxa Community Portal on FirstVoices.com, online visitors can read, listen to, and learn words, phrases, songs, stories, games, and more. Learners can also access the Ktunaxa Language app – a media-rich bilingual dictionary and phrase collection comprised of words and phrases archived at the online Aboriginal language database FirstVoices.com – through iTunes. The College of the Rockies also offers an online University Studies course in Basic Ktunaxa. The program aims to help students develop the skills, strategies and resources to support the revitalization of Ktunaxa language in their homes, their schools and their communities. A short documentary titled "Living the

Language – Canada: The Ktunaxa", produced by Al Jazeera, chronicles the history of the Ktunaxa language and the efforts being made to preserve it (ʔaq̓am First Nation, 2021b).

23.6.7 Population

According to publicly available information, the Ktunaxa Nation as recognised by IAAC as asserting their Aboriginal rights collectively through the Ktunaxa Nation Council (IAAC, 2015a), has approximately over a thousand registered members, with approximately half of the members living on-reserve (Statistics Canada, 2016d). The remaining members mostly live in adjacent urban areas located in and around the traditional territory of the Ktunaxa Nation (KNC, 2021l). The total Ktunaxa Nation population including non-status members is approximately 1,500 on the Canadian side of the traditional territory, with approximately 50% of the status population and most of the non-status population living off-reserve (KNC, 2016a). Approximately 35% of the registered population is under the age of 25, and the annual rate of population growth is projected to be 2% per year (Statistics Canada, 2016d). Table 23.6-1 indicates the key statistics publicly available, based on the population of the Ktunaxa Nation, and the breakdown of the registered population in the four main reserves which are as follows (INAC, 2022 a-d):

- ʔakinǩum‡asnuq‡iʔit (Tobacco Plains Band): 256 (161 or 63% off reserve).
- ʔakisq̓nuk (Columbia Lake Band): 363 (215 or 59% off reserve).
- ʔaq̓am (St. Mary's Band): 395 (187 or 47% off reserve).
- Yaqan Nuʔkiy (Lower Kootenay Band): 249 (127 or 51% off reserve).

23.6.8 Ktunaxa Governance

According to publicly available information, Ktunaxa social organization was kinship-based and loosely organized into politically independent bands of related families (Choquette, 2008). The Ktunaxa Nation and its governance systems predate the arrival of European settlement and associated colonial government. Ktunaxa laws and governance systems have never been surrendered or extinguished and remain in place and actively practiced by Ktunaxa citizens. Since 1982, these laws and governance systems have been recognized and affirmed by Section 35 of the *Constitution Act, 1982* (KNC et al., 2015).

The Ktunaxa Nation Council originated in 1970 as the Kootenay Indian District Council to promote the political and social development of the Nation. In 1991, the Council's name was changed to Ktunaxa/Kinbasket Tribal Council (K/KTC) to reflect the origins of the two language groups (Ktunaxa and Secwepemc) in the Traditional Territory. In 2005, the Council's name was changed to Ktunaxa Nation Council (KNC, 2021e). The Ktunaxa Nation has a clear vision for its future that includes goals related to community health, language and culture, the stewardship of lands and resources, economic sustainability, and self-government. As per the Ktunaxa vision statement (KNC, 2021k):

> *"Kɛmaǩqa ksukɬuɬa·k kuǩqani ɛ ǩitqakiɬ haqa ksiʔɬ ɛxa ʔa·kɬukqaʔis ksukiɬq̓ukaʔmi·k kiʔin Ktunaxa naʔs ʔamaǩʔis. Qus piǩaksɛ naʔs ɛxaɬ yaqanakiɬ haqaʔki. ǩitqawiɛmu kakiɬwiɛkiɬ ʔamakʔis ǩisnikɛik kɛxaɬɛqa kiɬkǩaxuxami·k ǩitqakiɬ haqa ɛ ǩisʔin ʔaknumuɛtiɬʔis.*
>
> *Strong, healthy citizens and communities, speaking our languages and celebrating who we are and our history in our ancestral homelands, working together, managing our lands and resources, within a self-sufficient, self-governing Nation."*

Table 23.6-1: Ktunaxa Nation Population, Education, and Employment Data

Ktunaxa First Nation	Population				Median Age 2016 (2011) %+	Labour Force Participation Rate 2016 (2011) %+	Unemployment Rate 2016 (2011) %+	High School or Less Education, Age>15 years 2016 (2011) %+
	Registered On Reserve			Registered Population On & Off Reserve 2021 (2011)				
	2021	2016	2011					
ʔakinʌ̓kum‡asnuq‡iʔit (Tobacco Plains Band- TOBACCO PLAINS 2)	95	75	57	248 (193)	36.5 (45.0)	50.0 (70)	0.0 (28.6)	33.3 (66.6)
ʔakisq'nuk (Columbia Lake Band- COLUMBIA LAKE 3)	148	140	131	321 (268)	36 (44.4)	65 (62.5)	0.0 (13.3)	30.4 (66.6)
ʔaqam (St. Mary's Band- KOOTENAY 1)	208	170	104	399 (364)	37.0 (32.0)	77.8 (81.2)	14.3 (30.8)	19.2 (68.7)
Yaqan Nuʔkiy (Lower Kootenay Band – CRESTON 1)	122	110	113	250 (214)	28.0 (41.6)	61.1 (50)	27.3 (25)	22.2 (70.6)

Source: INAC, 2019, 2022 a-d; Statistics Canada, 2016a-d; 2022 a-d.

The Ktunaxa Nation Council, the governing body of the Ktunaxa Nation, is comprised of the elected council of each of the four Ktunaxa communities in Canada. The KNC has established the Ktunaxa Nation Executive Council to carry out day-to-day decision-making on behalf of the KNC. It includes the Chief of each of the four Ktunaxa communities in Canada and the Chair of each of the Sector Councils as set out in the organizational structure of Ktunaxa Nation Council, and the chief negotiator of the treaty negotiations. It organizes its programs according to five pillars of nation rebuilding (KNC, 2016a):

- Lands and Resources Sector;
- Traditional Knowledge and Language Sector;
- Social Sector;
- Education and Employment Sector; and
- Economic Investment Sector.

The core support services is part of the common operational and functional requirements of the Sectors and consists of strategic planning, financial management, human resources, information technology, communications, buildings and infrastructure, events coordination, and administrative support (KNC, 2021e). The Ktunaxa Nation Council exercises governance, sets policy, and conducts planning in order to benefit their citizens and uphold their stewardship responsibility to the land and resources in Ktunaxa ʔamakʔis. These three functions are essential to the Nation's autonomy and to its ability to protect the Title and Rights and interests of its citizens, and as such are fundamental Aboriginal Title and Rights and related interests. Ktunaxa policies, standards and accepted practices (collectively referred to as policies) are intended to guide and assist the Ktunaxa in exercising stewardship and management responsibilities for lands and resources in the Ktunaxa ʔamakʔis (KNC, 2021f). According to publicly available information, the Ktunaxa Lands and Resources Council (KLRC) is a standing committee of the Ktunaxa Nation Executive Council, with the authority and mandate to make lands and resources decisions on behalf of the Ktunaxa Nation Council within Ktunaxa ʔamakʔis. One member from each community's elected Chief and Council sits on the KLRC (KN, 2021f).

The Ktunaxa Land and Resources agency (KLR) is the operational entity responsible for managing the lands and resources within the Traditional Territory of the Ktunaxa Nation. They provide support to, and take direction from, the KLRC. The KLR is responsible for land stewardship, research and planning (including land use planning, traditional use studies, policy development, and research), cultural resources negotiations with third parties on lands and research projects, and information management (KNC, 2021f). The vision statement for the KLR provides an indication of the core values and goals that guide Ktunaxa Nation Council lands governance (KNC, 2021f):

> *"As a Nation we are striving to achieve strong, healthy citizens and communities, speaking our language(s) and celebrating who we are and our history in our ancestral homelands, working together managing our lands and resources within a self-sufficient, self-governing Nation."*

As such the KLR adopts a Lands Sector Vision Statement (KNC, 2021f) that states:

> *"We the Ktunaxa envision ourselves working together as one Nation to responsibly care for the lands and resources within our Territory. Our stewardship of the lands and resources will be based on our sacred covenant with the Creator and our traditional values of:*
>
> *1. Ensuring land, air and water will be clean and healthy;*

2. Ensuring access to, and protection of, traditional foods and medicines;
3. Balancing the economic use of land with cultural and spiritual values;
4. Ensuring that long-term sustainability and ecological integrity take precedence; and,
5. Following natural law; taking only what you need."

Since the signing of the Qat'muk Declaration in November 2010 (KNC, 2010), the Stewardship Principles that were outlined in the declaration as below:

"Ktunaxa stewardship values will:

- *Contribute to the betterment of future generations;*
- *Balance the economic use of land with cultural and spiritual values;*
- *Follow natural law of taking only what is needed;*
- *Ensure that long-term sustainability and ecological integrity take precedence;*
- *Ensure access to, and protection of, traditional foods, medicines, resources, and spiritual sites;*
- *Maintain, protect, manage and restore healthy and diverse ecosystems;*
- *Ensure land, air, and water are and will be clean and healthy"* (KNC, 2010).

The Ktunaxa Lands and Resources Sector Policy Framework sets out authoritative policy statements of KNC, KLRC, and KLR (KNC, 2011). The Ktunaxa principle of ʔa'kxaʔna'kxamnapiqapsin can be translated to mean a responsibility for stewardship of all living things. Yaqaŧ Hankatiŧiŧki na ʔamak is the Ktunaxa phrase that captures interconnectedness and the stewardship concepts applicable to land management. This phrase translates to "our people care for the land, the land cares for our people." It is about the Ktunaxa's relationship with the land (KNC, 2010). Caring for the land also includes both local and more global perspectives (B.C. Hydro, 2017). Ktunaxa recognize the global impacts of their stewardship, and of coal mining and use, including related carbon emissions and associated climate change (Teck, 2019).

According to publicly available information, the Ktunaxa ʔamakʔis, which is wholly within the unceded and unsurrendered territory of the Ktunaxa Nation has been occupied continuously by the Ktunaxa Nation since time immemorial and is maintained as Aboriginal Title by the Ktunaxa Nation. The British Columbia (B.C.) portion of the traditional territory is subject to ongoing treaty negotiations with the Province of B.C. and the Government of Canada. The Ktunaxa Nation (formerly known as Ktunaxa Kinbasket Treaty Council) treaty table is in Stage 5 negotiations (i.e., negotiations to finalize a Treaty). In June 2017, the Constitution Working Group for the Ktunaxa Nation was established and with the support of the Citizen Engagement team it is in the early stages of engagement with Ktunaxaniṅtik (Ktunaxa Citizens) regarding the draft Ktunaxa Constitution (KNC, 2021g). In May 2019, the interim Ktunaxa Nation Citizenship code was ratified, and the Registrar, Enrollment Board, and Review and Appeal Board became operational (B.C. Treaty Commission, 2020).

In 2020, the Parties noted above adopted a stepping-stone approach to the negotiations, involving drafting of a Ktunaxa Nation Recognition Agreement, core treaty discussions and mandate co-development. Ktunaxa continues to engage members on its constitution development. In November 2018, the Parties signed the Ktunaxa Nation Rights Recognition & Core Treaty Memorandum of Understanding (MOU), advancing from Stage 4 (i.e., negotiation of an Agreement in Principle) to Stage 5 negotiations (i.e., negotiating to finalize a Treaty). The MOU sets out the basis for the final Stage of treaty

negotiations. The Treaty will recognize and protect Ktunaxa's inherent Title and Rights and related interests, establish how the First Nation's laws interact with federal and provincial laws, recognize harvesting and resource rights throughout its territory, and establish the land, cash, and governance provisions of the Treaty (B.C. Treaty Commission, 2020).

23.7 Ktunaxa Nation's Rights and Interests

This section describes the baseline conditions for the Ktunaxa Nation[12] and its members Band's rights and interests as they relate to the Project as identified by IAAC (IAAC, 2015a) and included in Section 23.5.4. This section includes information regarding the Ktunaxa Nation's rights and interests based on based on feedback from the Ktunaxa Nation (Appendix 23-A, Table 23.A-2), Ktunaxa perspectives from previous EIS/Applications in the Elk Valley, publicly available secondary information sources, and consultation and engagement activities summarized in Section 23.5 relating to the Sectors identified by Ktunaxa Nation in terms of their historic and current use of lands and resources for traditional purposes such as water, fishing, hunting and trapping, harvesting and gathering, ceremonial and sacred sites, access and travel routes, as well as physical and cultural heritage and social, health, and economic conditions.

All information compiled and presented in Section 23.7 has been authored by NWP utilizing Ktunaxa Nation's HHRA and sensory receptor locations for current and rights-based use, Ktunaxa perspectives from previous EIS/Applications in the Elk Valley, and publicly available secondary information sources. The information presented throughout is not intended to supersede traditional knowledge or specific information of the citizens and Elders of the Ktunaxa Nation by IAAC (IAAC, 2015a). The Ktunaxa Nation's rights and interests described in this section are in consideration of the existing and potential future use of the lands and resources within the Project footprint, the KNRI LSA, and the KNRI RSA by the Ktunaxa Nation to exercise their rights and interests without the Project. This section also notes where applicable that the potential future use of the Ktunaxa Nation to exercise its rights in the KNRI LSA and RSA have likely been influenced by past and ongoing development activities that have been included in the setting of the baseline conditions utilizing the assessment methodology identified in Chapter 5 and referenced in Section 23.3.

23.7.1 Overview of the Historic and Current Use of the Elk Valley by Ktunaxa Nation

Current and historic Ktunaxa use of the Elk Valley, as well as oral historical information likely pre-dating 1846, provides insight into the importance of the Project footprint, including the area of Sparwood, to Ktunaxa peoples. While the alienation of Ktunaxa rights through land privatization, coal-related industrial development, and government policy (particularly provincial mining and hunting regulations) has been widespread in the Elk Valley, Ktunaxa Elders and land users report ongoing use of the KNRI LSA (defined in Section 23.8.2.2) and the surrounding area (KLR et al., 2011).

[12] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƛi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

Traditional practices and key cultural values of the Ktunaxa Nation in both historic and current times are described below, and Figure 23.7-1 depicts some of the important areas for traditional purposes identified by the Ktunaxa Nation utilizing their provided HHRA and sensory receptor locations for current and rights-based use. The HHRA and sensory receptor locations in proximity to the proposed Project footprint were provided by KNC based on Ktunaxa categories for traditional use including dwellings (permanent and seasonal), transportation use (upland seasonal), subsistence use (full and upland seasonal), and habitation and subsistence use sites. Table 23.7-1 outlines the available HHRA and sensory receptor sites by number and their related information on portions of the range and geographic extent of Ktunaxa practice in the Elk Valley and nearby areas. To maintain confidentiality, the exact geographic location of each numbered Ktunaxa site is not included in Figure 23.7-1, and general descriptors for each site are provided in Table 23.7-1.

Table 23.7-1: Ktunaxa Nation Council's Proposed Crown HHRA and Sensory Receptor Locations and Durations

KNC Crown HHRA and Sensory Receptor Activity Type	KNC Crown HHRA and Sensory Receptor Sites	Assumed Activity Description, Rationale, and Duration at Location
Dwelling (Permanent)	Site #1	• Valley bottom permanent dwelling for full subsistence use upstream of confluence and in immediate proximity of documented Ktunaxa habitation area, with habitation value and known subsistence harvesting locations. • Year-round use.
	Site #11	• Valley bottom permanent dwelling for full subsistence use upstream of confluence in immediate proximity to documented Ktunaxa habitation area, with habitation value and subsistence hunting use, trail. • Year-round use.
	Site #13	• Valley bottom permanent dwelling for full subsistence use downstream of major confluence in immediate proximity to Ktunaxa documented fishing use, habitation values, Sparwood, and subsistence harvesting location at river confluence. • Year-round use.
	Site #14	• Valley bottom permanent dwelling for full subsistence use upstream of confluence in proximity to recorded habitation values. • Year-round use.
Dwelling (Seasonal)	Site #4	• Valley bottom permanent dwelling for full subsistence use upstream of confluence, in proximity to recorded habitation values, including water capturing point. • Year-round use.
	Site #5	• Valley bottom seasonal dwelling for full subsistence use draining into waterbody, within immediate proximity to documented Ktunaxa habitation area and seasonal habitation value, located within close proximity of known elk habitat and subsistence harvesting. • Year-round use.

KNC Crown HHRA and Sensory Receptor Activity Type	KNC Crown HHRA and Sensory Receptor Sites	Assumed Activity Description, Rationale, and Duration at Location
	Site #10	• Valley bottom seasonal dwelling for full subsistence use upstream of confluence, in immediate proximity to documented Ktunaxa habitation area, subsistence hunting use, trail. • Year-round use.
Transportation Use (Upland Seasonal)	Site #2	• Valley bottom permanent dwelling for full subsistence use immediately upstream of confluence, in proximity to subsistence use including transportation (water). • Less than 14 days/year.
	Site #3	• Upland seasonal transportation uses immediately upstream of confluence, in proximity to subsistence use including transportation (water) and prior to dilution effects. • Less than 14 days/year.
Subsistence Use (Full)	Site #6	• Full subsistence uses upstream of convergence of waterbody. • 14 to 90 days /year.
Subsistence Use (Upland Seasonal)	Site #7	• Upland seasonal subsistence uses downstream of confluence and prior to dilution effects. • 14 to 90 days/year.
	Site #8	• Upland seasonal subsistence uses with drainage into waterbody for background receptor and reference. • Less than 14 days/year.
	Site #9	• Upland seasonal subsistence uses upstream of confluence and in preferred harvesting area. • 14 to 90 days/year.
Habitation and Subsistence Use	Site #12	• Upland habitation and subsistence use immediately upstream of confluence in proximity to recorded habitation area, subsistence hunting use, trail. • 14 to 90 days/year.

INSET

Elkford

Crown Project Footprint

Grave Prairie AMA/MVCA

Qukin ?amak?is

Alexander Creek AMA/MVCA

qukin ?akit‡a?is (Crowsnest Mountain)

Sparwood

1:300,000
0 5 10
Kilometers

Elk Lakes Park

Alberta

Elk River

Fording River

Elkford

Qukin ?amak?is

Grave Prairie AMA/MVCA

Alexander Creek AMA/MVCA

Sparwood

qukin ?akit‡a?is (Crowsnest Mountain)

?aknuq‡u‡am ?amak?is

Top of the World Park

Kootenay River

?aqam (St. Marys)

?AQ'AM (ST. MARY'S INDIAN BAND)

Bull River

Kimberley

Cranbrook

93

95

3

Lake Koocanusa

Elko

Ku‡wia?ki (Crowsnest Lake)

Pass

Elk River

Michel Creek

Fernie

Flathead River

¢am̓na ?amak?is

?AKINK'UM‡ASNUQ‡I?IT (TOBACCO PLAINS BAND)

uq‡i?it (Tobacco Plains)

?a¢pu ?amak?is

CANADA

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KTUNAXA NATION

Date: 09/10/2015

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Crown Mountain Coking Coal Project

Figure 23.7 1
Georeferenced Ktunaxa Nation Site-Specific Values and HHRA and Sensory Receptors in Proximity to the Project

Ktunaxa Nation Traditional District: Land of the Raven

LEGEND

- Ktunaxa Sites
- Ktunaxa Communities

Ktunaxa Recpetors, Buffered, July 2023

- Dwelling (Permanent and Seasonal)
- Habitation and Subsistence Use
- Subsistence Use (Full and Upland Seasonal)
- Transportation Use (Upland Seasonal)

- Project Footprint
- Ktunaxa Nation Traditional District
- Grave Prairie Access Management Areas/Motorized Vehicle Closed Areas (AMAs/MVCAs)
- Alexander Creek Access Management Areas/Motorized Vehicle Closed Areas (AMAs/MVCAs)
- Teck Conservation Lands
- British Columbia/Alberta Border

Teck Coal Limited, November 2015, Map Legend

Reported Ktunaxa Site Specific Values within the Ktunaxa Baldy Ridge Extension Project Regional Study Area

- Regional Study Area
- Ktunaxa Local Study Area (5kms)
- Cultural
- Environmental

- Habitation
- Subsistence
- Transportation
- Elkview Operations C-2 Permit Boundary
- Baldy Ridge Extension Project Footprint
- Parks & Protected Areas
- Ktunaxa Traditional Districts
- Ktunaxa Reserves
- Major Highways

Scale 1:550,000
Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada. Imagery Provided By Landsat 8 (Aug 2018), and GeoBC Ortho Imagery (Aug 2016). Ktunaxa Recived Receptors, July 2023.
Georeference map:'Reported Ktunaxa Site Specific within the Ktunaxa Baldy Ridge Extension Project Regional Study Area', Teck Coal Limited, November 2015, Page C3-11.

Map Created By: LMM
Map Checked By: MN
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: PUBLIC
Date: 2023-12-05

Document Path: K:\126231_Crown_Mountain\For Client\KtunaxaNationPublic_20230720\126231_F06_KNC_Overlay.mxd

The information presented in Table 23.7-1 is based on the living knowledge and practice of today's Ktunaxa citizens as provided by the KNC. Detailed information regarding the use of water, lands, and resources in proximity to these receptor locations has not been provided including the frequency of specific activities, their seasonality, and the cultural values linked to their usage. Ktunaxa information from previous EIS/Applications in the Elk Valley including categories for traditional use were also utilized in the assessment of potential impacts on Ktunaxa Nation's rights and interests (Section 23.11) where practicable in relation to the Project. Specifically, based on KNC's Section C submission to Teck's Baldy Ridge Extension Project Environmental Assessment Certificate Application (KNC et al., 2015), Figure 23.7-1 overlays the spatial distribution of site-specific knowledge and use values (reported by Ktunaxa citizens through Elk Valley interviews for the Section C submission) based on the five broad categories of use (described earlier in this section and further in Section 23.8.1.2) over the Project's areas of influence to depict potential Ktuaxa interaction with the Project.

The inset in Figure 23.7-1 specifically outlines the Project's footprint and overlays the HHRA and sensory receptor locations in proximity to the proposed Project footprint as provided by the KNC. Figure 23.7-1 also identifies Alexander Creek AMA (MVCA) which was based on the critical importance of the Alexander Creek Valley and served as the reason for the legislated establishment of the Alexander Creek Management Area (KNC, 2018). As noted by the KNC (KNC, 2018):

> *"The purpose of the AMA is to provide refugia for wildlife populations from motorized activity in high quality wildlife habitats and to reduce the risk of displacement and disturbance of wildlife and adverse impacts to high habitat quality and effectiveness. The rationale for creating the AMA was because the area has had extensive access development for coal exploration and forest harvesting. The objective of the AMA was to maintain wildlife accessibility and utilization at early 1990 levels and to address concerns raised by stakeholder groups".*

As depicted in Figure 23.7-1 and noted in Section 23.6.3, the Project footprint overlaps with the Alexander Creek AMA (MVCA) and the Project's rail loadout overlaps with the Grave Prairie AMA (MVCA), lands that are jointly managed for conservation purposes protecting significant fish and wildlife habitat that are of importance to Ktunaxa communities, and the KNC is involved in the conservation planning for these lands.

As noted in Section 23.5, at the time of the Application/EIS submission, Ktunaxa Nation did not author a Section C submission and additionally did not provide a Traditional Land-Use Study (TLU) to NWP. Limitations of information for assessing the Project effects to Ktunaxa's rights and interests include the lack of specific information regarding the spatial distribution of site-specific knowledge and use values reported by Ktunaxa citizens in the Project footprint based on subsistence sites, ceremonial and cultural/spiritual uses, transportation features, habitation values, and environmental features. Where Indigenous Knowledge was provided by Ktunaxa Nation (during the review of Project Planning and Design documents and during Pre-Application Engagement) it has been incorporated into the effects assessment for the use of water, lands, and resources in relation to the Project. As such, the limitations of the information sources considered include those publicly available (e.g., other development project EA/IA applications, including Baldy Ridge Extension Project, the Castle Project, Grassy Mountain Coal Project, the Line Creek Operations Project) and those activities and correspondence that detail Project-specific information available to be shared publicly related to traditional activities. Information provided by Ktunaxa Nation related to mitigation measures has been included in the Indigenous Impact Management Plan (Section 23.10).

In addition to any site-specific values mapped by Ktunaxa knowledge holders and based on Ktunaxa oral histories, any non-site specific values that may include reported Ktunaxa cultural properties or heritage sites in the vicinity of the Project including particular oral histories regarding Elders, ceremonies, and events that took place in the area and non-site specific values associated with oral histories of the area were those included from publicly available sources as no Project-specific information was provided. For the use of water, lands, and resources for traditional purposes, site-specific knowledge and use values associated with subsistence sites, transportation, and related environmental features including seasonal access and usage from Ktunaxa Nation knowledge holders would further support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle.

It is understood by NWP that present day availability of lands for the practice of traditional activities is reduced from the increased pressure on those lands by agriculture, residential development, mining, forestry, and park creation, among other modern developments in the KNRI LSA and RSA. There is recognition within the assessment process that current use may not be reflective of desired current use, as communities have been impacted in many ways that may have impeded their ability to undertake some traditional activities (e.g., loss of knowledge between generations). Current use as defined in Chapter 23 is reflective of current use of lands and resources for traditional purposes as well as potential future use as desired by Ktunaxa Nation.

As noted above in Section 23.6.5, based on interviews and oral histories collected in the late nineteenth and early twentieth centuries, ethnographers clearly identify the area of the Elk Valley, including the Crowsnest Pass area, as being originally and continuously occupied by Ktunaxa speaking people. Each of these sources supports an understanding that the Elk Valley, and the larger area of Qukin ʔamakʔis in its entirety, was used, occupied, and effectively controlled by Ktunaxa speaking people for a long period of time prior to, and extending beyond, the assertion of British, Canadian, or American sovereignty in the region (KNC et al., 2015).

Ktunaxa oral histories, supported by historic archival and ethnographic data, suggest that Ktunaxa presence in the Elk Valley has long been centred on an important habitation area named ḵaqawakanmituk, a Ktunaxa settlement at the confluence of Michel Creek and the Elk River near present-day Sparwood (KLR et al., 2011). This was a historic Ktunaxa community with close ties to the current Ktunaxa community of Tobacco Plains whose annual round included hunting bison on the eastern slopes of the Rocky Mountains. This is an important cultural area in the Elk Valley and was occupied annually, and likely for a long period of time up to the late 1800's, by the Michel Prairie people, also referred to as the Fernie Band, or ḵaqawakanmituknik̓ (KLR et al., 2011). As described above in Section 23.6.5, many Michel Prairie people died as a result of early smallpox epidemics, likely in the late 1700s.

According to publicly available information, the settlement of ḵaqawakanmituk at Michel Prairie included important tobacco cultivation areas, as well as habitation areas, processing areas, and other features including trails that connected the valley to mountain passes to the east. Another recorded Ktunaxa name connected to the associated cultural landscape surrounding ḵaqawakanmituk is wisiya‡ referring to a Ktunaxa ceremonial sweat lodge or house, and an important figure in Ktunaxa ceremonial practice. The sweat lodge was one of the main structures left for the people to utilize for purification, prayer, and for mental, physical, and spiritual healing. It was uncommon to find a home or family without a sweat lodge and many people today still utilize the sweat lodge (Yaqan Nuʔkiy First Nation, 2021c). Ktunaxa knowledge

holders interpret the name as likely referring to the rounded ridges behind ƙaqawakanmituk (now Sparwood) that are being removed by the existing Elkview Coal Mine. Nearby areas, extending into the Crowsnest Pass, and including Crowsnest Lake, and areas east of the Rocky Mountains, contains values of central cultural and ceremonial importance for Ktunaxa people (KNC et al., 2015).

While surviving ƙaqawakanmituknik went to live with other Ktunaxa communities, regular Ktunaxa occupancy was maintained in the Elk Valley through the twentieth century and is ongoing; there is no evidence that Ktunaxa authority over the Elk Valley was successfully challenged. Increasing conflicts with neighbouring Nations, including the Blackfoot Confederacy, in the early and mid-1800's, decimation of the bison in the late 1800's, and increased non-indigenous use of lands and resources resulted in reduced Ktunaxa use of the Crowsnest Pass and eastern foothills area of ʔamakʔis Ktunaxa. Ktunaxa families maintained a seasonal round that included travel through the Crowsnest Pass for harvesting bison until at least the 1880's. Travel and use of the pass for cultural purposes continued following development of road and rail links. The exercise of Ktunaxa rights over the eastern slopes of the Rockies was also confirmed by agreements, or treaties, negotiated between the Ktunaxa and the Stoney Nakoda and Piikani Nations in the late nineteenth century that recognized the continued right of Ktunaxa to hunt on the eastern slopes (KNC, 2020a).

Other important nearby Ktunaxa settlements were at Whiteswan Lake (Kaʔintak), northwest of the Project footprint, and Tobacco Plains to the south. Ktunaxa knowledge holders also reported that there were important camping or settlement locations at Grave Prairie, Round Prairie, and near Elkford, as well as elsewhere along the Elk River. As wage labour in the mining or forestry industry became more important to Ktunaxa livelihood, Ktunaxa families lived in work camps and other centres in the valley, but also maintained rights-based subsistence practices (KNC et al., 2015).

As noted by Ktunaxa Nation, industrial changes and the lack of recognition of Ktunaxa Title and stewardship by successive governments has resulted in the erosion of Ktunaxa governance and measurable and perceivable adverse impacts on culturally important rights and practices that are of concern to Ktunaxa citizens. The ability of Ktunaxa citizens to maintain relationships with the lands and waters in the Elk Valley, including the fulfillment of their stewardship obligations, is anticipated to be impaired by industrial development and its operations (KNC et al., 2015).

Based on a review of publicly available information, Ktunaxa Nation views their Title and Rights and related interests as extending beyond the protection of traditional hunting, fishing, trapping, and gathering practices to include overarching pillars of nation rebuilding. For the purpose of this chapter, Ktunaxa Nation's rights and interests are organized into Sectors that align with the pillars described in Section 23.6.8. These pillars are categorized as Sectors in this section and the assessment that follows (Sections 23.8 and 23.11) and are outlined as:

- Lands and Resources Sector representing use of lands and resources for various traditional purposes including fishing, hunting and trapping, and harvesting and gathering;
- Traditional Knowledge and Language Sector including ceremonial/sacred areas, access and travel routes, and physical and cultural heritage;
- Social (and Health) Sector;
- Education and Employment Sector; and
- Economic Investment Sector.

Water is an overarching issue and while other Sectors (the Land and Resources and the Traditional Knowledge and Language Sectors) cover various aspects related to water such as fishing, access and travel routes, and physical and cultural heritage; water also includes its own characterization of effects and is allocated its own Sector.

As Ktunaxa Nation did not author a Section C submission and additionally did not provide a Project-specific Traditional Land-Use Study (TLU), the information available to describe the baseline information for Ktunaxa Nation's rights and interests in the following sections was based on the HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use, publicly available information (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a), and those activities and correspondence that detail Project-specific information available from Ktunaxa Nation to be shared publicly. NWP's understanding of Ktunaxa Nation's rights and interests is limited to those confirmed by Ktunaxa Nation in Section 23.5.4 with limitations identified in Section 23.4.1.1. Other than the mapped values related to Ktunaxa features within the Project footprint and in direct proximity based on Ktunaxa perspectives from previous EIS/Applications in the Elk Valley, no additional detailed information on the description and characterization of the location of hunting camps and cabins, transportation and movement corridors including access and travel routes for conducting traditional activities, drinking water sources, and harvesting and natural resource sites was used to inform the determination of the appropriate spatial boundaries to describe the baseline information provided by KNC or publicly available. No information on the description of commercial activities of the Ktunaxa Nation within the KNRI LSA/RSA were provided by KNC or publicly available. No information on the description of Ktunaxa Nation citizens' recreational uses other than the HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use were provided by KNC or publicly available. No input from Ktunaxa Nation was directly provided in establishing the baseline conditions related to health and socio-economics.

Further information on Ktunaxa Nation's use of navigable waters, forestry and logging operations, commercial fishing, hunting, trapping, and gathering activities, commercial outfitters, and recreational use, including wildlife viewing, will be updated if provided through continued engagement with the Ktunaxa Nation during the assessment processes where applicable. Based on the information sources outlined in Section 23.4.1, the limitations of the information sources considered include those that are publicly available (e.g., other development project EA/IA applications) that are applicable to the Project. For Ktunaxa Nation's physical and cultural heritage, the only information provided by Ktunaxa Nation and publicly available is included in Section 23.7.1.3 under the Traditional Knowledge and Language Sector.

23.7.1.1 Water Sector

As discussed above, Napituk (water) is an overarching Ktunaxa value that spans the five Ktunaxa Nation Council governing Sectors (KNC et al., 2014). Water, is an aspect of the environment considered sacred under Ktunaxa law as an essential part of all living things. As noted in the Ktunaxa Governance Section 23.6.8, the Ktunaxa Nation is the steward of land and water. The Ktunaxa Nation strives to maintain and restore natural flow and water quality conditions as well as hydrological function, riparian ecosystems, and habitat for fish and other water dependent species. As per Ktunaxa oral history and worldview, water is fundamental to the Ktunaxa creation story, and is understood by Ktunaxa knowledge holders to be the basis for all living things within Ktunaxa ʔamakʔi (B.C. Hydro, 2017). As noted in Section 23.6.5 above, Ktunaxa perspectives recognize the lands and waters of the Ktunaxa Territory as

alive, and evolving, and as the home of powerful sacred beings whose travels, battles and lives have left marks and remains across the Ktunaxa landscape, including the Elk Valley (KNC et al., 2011).

23.7.1.1.1 Historic Use

According to publicly available information, Ktunaxa Creation Story follows the waterways within Ktunaxa traditional territory, highlighting the importance of the Columbia and Kootenay Rivers; both being central to Ktunaxa worldview as noted in Ktunaxa perspectives (KNC et al., 2014). Rivers, streams, lakes, and riparian areas provide essential habitat for the fish, and many of the animals and plants that Ktunaxa harvesters rely on, and responsible stewardship of water is a critical component of Ktunaxa responsibility to living things. Ktunaxa trails, harvesting areas, and cultural use areas are often oriented along streams, rivers and lakes within Ktunaxa ʔamakʔis and access to clean drinking water is essential to the ability of Ktunaxa citizens to spend time on the land, especially when travelling or hunting for extended periods in remote areas (B.C. Hydro, 2017). Water bodies are traditional and current travel corridors and the cultural landscape – shaped by flooding – is central to teaching and passing on Ktunaxa knowledge and language (Kapell, 2016). Confidence in water is compromised in portions of the Michel Creek and the Elk River due to the presence of contaminants that have been released by coal-mining activities (KNC et al., 2014).

23.7.1.1.2 Current Use

As a fundamental resource essential for ʔa'kxaṁ is q̓apiqapsin (all living things), water plays a major role for Ktunaxa lands and resources. Ktunaxa Nation's rights and traditions rely on water and its flow, which are central to life and sacred. There are numerous important environmental values associated with water including fish and fish habitat, habitat for the creatures that fish eat (benthic invertebrates), and wildlife species dependent on water and riparian habitat, including wetland birds and plants, among others. Impacts to water quality in the vicinity and downstream of the Project have the potential to create wide ranging ecological impacts for fish and the range of other living things that depend upon them (B.C. Hydro, 2017). As part of early engagement activities conducted for the Castle Project[13], the Ktunaxa Nation indicated that in particular, water is an overarching concern, as water influences all aspects of Ktunaxa assessment including social, education and employment, traditional knowledge and language, economic and land and resources (B.C. EAO, 2020b).

Groundwater is the primary drinking water source for residents in the Elk Valley. It is noted by the Elk Valley Water Quality Hub (EVWQ, 2023) that possible influences from mining on the municipal groundwater wells at Sparwood have been a subject of concern in the past. Actions have been taken to ensure a safe drinking water supply for this community. Private wells in the Elk Valley are sampled as part of a Regional Drinking Water Monitoring Program and in 2021, nine wells exceeded the *B.C. Drinking Water Quality Guidelines* for selenium. Three of these wells also exceeded the guideline for sulphate. As noted by the Hub, Elk Valley residents are encouraged to have their wells tested regularly. Surface water quality in the Elk Valley exceeds *B.C. Drinking Water Quality Guidelines* for several substances. Surface water is not used as a source for municipal or private residential drinking water in the Elk Valley. The local health authority advises against drinking any untreated surface water due to the risk of exposure to harmful bacteria. The risk of exposure to mine-related substances from drinking surface water is being assessed in case it becomes a dedicated drinking water source in the future (EVWQ, 2023).

[13] The Castle Project was recently renamed the Fording River Extension Project

Based on a review of publicly available information, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access water in sufficient quantity and quality, in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations. As identified in Section 23.5.4, the potential for impacts to Ktunaxa Nation's rights and interests related to water also include water quality and flow related to the potential for biological/ecological effects due to oxidation of waste rock materials, stream crossings that may lead to alteration of waterbodies, and potential water diversions (IAAC, 2015a). Along with the use of water rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water according to the Ktunaxa law, ʔaknumu¢tiɬiɬ. From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaʕa'k q̓apiqapsin (all living things). Over time this may lead to significant impacts on Ktunaxa stewardship responsibilities (ʔaknumu¢tiɬiɬ) and compromises the transmission of knowledge and practices related to those water systems for future Ktunaxa generations (KNC et al., 2015).

The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Certain receptor locations as depicted in Figure 23.7-1 and outlined in Table 23.7-1, are assumed to be related to water use based on information provided by the KNC. Project-impacted watercourses within the Project area of influence have not been specifically identified by the KNC as being used but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA (IAAC, 2015a). During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds stating that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing them cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Tables 23.A-1 and 23.A-2). No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was provided. It is noted that the exercise of Ktunaxa Nation's rights and interests related to water use in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., water quality concerns in the Elk Valley). The potential future use of water in these areas without the Project in place is expected to be similar to existing conditions (i.e., past and ongoing development activities may impact potential future use of water in the KNRI LSA and RSA) (KNC, 2021m).

For the use of water for traditional purposes, site-specific knowledge and use values associated with subsistence sites, water transportation, and related environmental features including seasonal access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of this specific information requires continued consultation with the Ktunaxa Nation.

23.7.1.2 Lands and Resources Sector

The Lands and Resource Sector pertains to fishing, hunting and trapping and harvesting and gathering activities for traditional purposes. As discussed above, Ktunaxa Nation has noted that the Elk Valley region of British Columbia (including the Project footprint) is an integral part of the ancestral and traditional territory of Ktunaxa Nation and continues to be an important area of use in present day (IAAC, 2015a). While the frequency and intensity of Ktunaxa use of the Elk Valley diminished in the twentieth century, due to the effects of colonization, population loss and displacement by settlers, national parks and

industrial activities, Ktunaxa have continued to use and remain deeply connected to the Crowsnest Pass area. The Ktunaxa people continue to hold important spiritual and cultural connections to the area, evidenced by the oral histories and landforms named after particular events or ceremonial practices. Ktunaxa citizens continue to visit the area for harvesting purposes, including fishing and plant gathering (KNC, 2020b). The Project footprint and KNRI LSA host a number of Ktunaxa Nation's traditional game, fish, and medicines based on field studies, publicly available information, and guidance from IAAC (IAAC, 2015a).

In December 2012, Ktunaxa Nation undertook a diet study with 92 households across the Canadian portion of the Ktunaxa territory participating in the survey. Until April 2013, community researchers travelled to Ktunaxa homes on and off reserve to interview the study participants. In each household, one person, who was at least 18 years of age and self-identified as a Ktunaxa citizen, was asked questions related to the household's use of traditional food. A second participant was invited to answer a shorter questionnaire. In the Community Report 2015 published by the Firelight Group Research Cooperative for the Ktunaxa Nation Council, ninety-eight Ktunaxa citizens (59 women and 39 men) in the 92 households were listed as having participated in the diet study and just over half lived in the Cranbrook area, with the remainder on or off reserve in the Grasmere, Creston, and Columbia Valley areas (KNC & Firelight Group, 2015).

Based on the survey results, despite multiple barriers to harvesting, Ktunaxa households maintained a very active presence on the land, with most reporting having fished, hunted, and gathered berries in the preceding year. Sharing between households is common and while just over half of households reported hunting, more than 90% of those surveyed reported eating game meat. To understand recent harvesting patterns, households were asked to share how often, in the last ten (10) years, they had harvested five traditional foods (elk, deer, moose, huckleberry, and trout) in each of the six traditional districts identified in Figure 23.6-2. In all, 30% of survey respondents reported that they had harvested in the Elk Valley (Qukin ʔamakʔis or Land of the Raven) and Lake Koocanusa areas. In the last 10 years, 17% said they had harvested either occasionally, or every year, in Qukin ʔamakʔis for huckleberries, 9% for elk, and 8% for trout. Distance to the Elk Valley (Qukin ʔamakʔis) was reported as the most common barrier to using these lands (KNC & Firelight Group, 2015).

Country foods include traditionally used resources that are fished, hunted, trapped, harvested, gathered, or grown by Indigenous Communities for subsistence or medicinal purposes outside of the commercial food chain. In relation to the Ktunaxa Nation's country food consumption, food insecurity has been increasing in recent years for many communities and has been further exacerbated by the temporary supply chain disturbances, and the rising cost of living. In the coming years, other factors will influence food security, including the conversion of arable land for natural resources developments and climate change, which will put traditional food systems at risk, and might lead to further serious consequences for livelihoods and health. Food security, as defined by the Food and Agriculture Organization of the United Nations (FAO)[14] , exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are: food availability, food access, utilization, and stability (FAO, 2016).

[14] Defined at the World Food Summit, 1996 (FAO, 2016).

There are many considerations when discussing food insecurity, as food insecurity may be long term or temporary. It may be influenced by several factors including income, employment, race/ethnicity, and disability. A number of factors can affect food security including population growth, climate change, urbanization, industrialization, land use shifts, water scarcity, income growth, nutritional trends; and trends in global energy supply and food trade. The impact of food insecurity on health extends beyond diet and nutrition. In addition to income, housing tenure is an economic risk factor for food insecurity (Morrison, 2008). As relationship with the land is fundamental for Ktunaxa Nation and provides the foundation for their belief systems, identity, knowledge, and livelihoods, food security is an important driver of subsistence harvesting as country foods are fundamental to Indigenous cultures; disruptions to access to these resources impacts food security for Ktunaxa Nation.

23.7.1.2.1 Fishing

Historic Use

According to publicly available information, fishing was a part of the Ktunaxa Nation's traditional practices for sustenance; the ƙ̓aqawakanmituk are discussed in Ktunaxa oral histories documented in Schaeffer's field notes (1935-37, 1966) as relying on a seasonal round that included fishing for Westslope Cutthroat Trout, Kokanee, Sturgeon and other fish in streams and lakes, fishing Salmon at Columbia Lakes and along the Columbia River drainage (Turney-High, 1941). The winter harvest of Burbot (also called Mariah or Ling) was of particular cultural importance to the winter seasonal round (Schaeffer, 1935).Though past Ktunaxa fishing practices included net and weir methods, current fishing is generally by hook and line from shore or under ice (Yaqan Nuʔkiy First Nation, 2021c). As noted above, water, including streams, rivers, and lakes, were essential to Ktunaxa Nation and was an important element of their territory (KNC, 2016a).

Current Use

Based on a review of publicly available information, waterbodies continue to be viewed by the Ktunaxa as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation (KNC, 2016a). Fishing (including access to wild meat) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Fish and fish habitat are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values, particularly in light of the historic loss of salmon from the upper Columbia after the construction of the Grand Coulee Dam. There are also numerous recorded fishing sites for fish species including Bull Trout, Westslope Cutthroat Trout, and Rainbow Trout within the mainstream of the Elk River and adjacent streams, as well as Burbot, Kokanee, Whitefish, Sturgeon, and freshwater mussels and other species in the lower reaches of the Elk River and the Lake Koocanusa Reservoir (Yaqan Nuʔkiy First Nation, 2021c). The winter harvest of Burbot in Lake Koocanusa (formerly the Kootenay River and not within the Project footprint) remains of great importance for the Ktunaxa Nation and has been recognized as being of particular cultural importance to the winter seasonal round (KNC et al., 2015).

To practice their fishing rights, the Ktunaxa Nation require access to healthy streams and rivers within their traditional territory (KNC, 2016a). As identified in Section 23.5.4, Ktunaxa Nation's fishing rights and interests include fish species, fish health, related aquatic resources, alteration or loss of fish habitat, and enhanced access to the Project's area of influence that may result in potential increases to fishing pressure.

The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of these receptor locations are assumed to be related to traditional fishing activities based on the information provided by the KNC. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional fishing purposes as well as other watercourses in the KNRI LSA (IAAC, 2015a). During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds sustaining healthy Westslope Cutthroat Trout populations, and that as per the KNC, these two watersheds also provide Ktunaxa Nation cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Tables 23.A-1 and 23.A-2). No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was available at this time.

As the exercise of Ktunaxa Nation's rights and interests related to fish and fishing opportunities in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduction in fish populations, reduced access to waterways, water quality concerns in the Elk Valley), the possible future use of these areas for fishing without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future fishing activities in the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's traditional fishing rights and interests, site-specific knowledge and use values that may include fishing sites/locations of fish species of interest, cultural values and teachings related to certain fish species, Ktunaxa knowledge on fish health, and perspectives on fish abundance from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA. For traditional fishing, seasonal access and usage information from Ktunaxa Nation knowledge holders on the fish species would support and guide the assessment of Project-related effects in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of this specific information requires continued consultation with the Ktunaxa Nation.

23.7.1.2.2 Hunting and Trapping

Historic Use

According to publicly available information, hunting traditionally provided the Ktunaxa Nation with an essential source of protein and resources such as clothing and tools, and was essential to their way of life (KNC, 2020a). The most abundant and most important big game animals hunted in their territory were bison (linii). The Ktunaxa Nation's economy and culture centered on the bison hunt and the migrations of the herd throughout the seasons within the extents of their territory. The k'aqawakanmituk are discussed in Ktunaxa oral histories documented in Schaeffer's field notes (1935-37, 1966) as relying on a seasonal round that included regular bison hunts east of the Rockies, as well as residence, agriculture, and harvesting in the Elk Valley and nearby areas. The annual round included hunting for sheep, mule deer, whitetail deer, elk, and goat, as well as other species in the Elk Valley and adjacent valleys (B.C. EAO, 2010). Bison were hunted along the sheltered eastern slopes of the Rockies in the winter season, or farther afield on the plains in the summer. Hunting of other game such as grizzly, bear, black bear, moose, caribou,

beaver, wolverine, marten, muskrat, gopher, Spruce grouse, weasel, duck, American coot, and Canada geese occurred on travel routes throughout the territory based on seasonal availability/accessibility. These animals were hunted for meat and hide. Other smaller game were also hunted for their hides and meat (KNC & the Firelight Group, 2015).

Ktunaxa Nation used various methods to trap depending on the species. Traditionally for harvesting wild game, Ktunaxa hunters would drive deer into corrals which could be easily constructed and relocated as needed. Waterfowl was harvested by constructing large traps around waterbodies such as ponds. Hunters would use their canoe paddles to disturb waterfowl from the bulrushes and into nets supported on poles of up to 9 meters in height (Yaqan Nu?kiy First Nation, 2021c).

The grizzly bear was identified as having significance within spiritual and ceremonial teachings, songs, ceremonies, medicine, as evidenced by the Qat'muk Declaration, (KNC, 2010). The Ktunaxa have a deep spiritual connection to the animal, the Grizzly Bear Spirit, was born, goes to heal itself, and returns to the spirit world. The Grizzly Bear Spirit is an important source of guidance, strength, protection and spirituality for the Ktunaxa. Qat'muk's importance for the Grizzly Bear Spirit is inextricably interlinked with its importance for living grizzly bears now and in the future. The Ktunaxa have a stewardship obligation and duty to the Grizzly Bear Spirit and Qat'muk (KNC, 2010). The Ktunaxa historically hunted bison on a regular, seasonal basis, and more recently signed the *Buffalo Treaty: A Treaty for Cooperation, Renewal, and Restoration* with plains Nations, including the Blackfoot Confederacy. This treaty reflects the Ktunaxa's commitment to restoring a species that was once central to the Ktunaxa economy and culture to the eastern foothills of ?amak?is Ktunaxa (U.S. NPS, 2017).

Current Use

Grave Prairie, Upper Grave Creek, and Crown Mountain areas support very significant year-round populations of ungulates (i.e., Rocky Mountain elk, mule deer, moose, as well as provincially Blue-listed Rocky Mountain bighorn sheep and mountain goat). Warmer aspects with lower snow depths provide critical ungulate wintering range, and these areas are very important for spring fawning/calving and as fall range. Upper elevations represent key summer range and riparian zones in these drainages also provide important winter habitat for moose. The Alexander Creek and adjoining Grave Creek watersheds are widely acknowledged as being of critical importance to a number of wide-ranging carnivores (Apps et al., 2007). Alexander Creek is a "core carnivore area", an area of unprecedented concentration for grizzly bear, wolverine, badger, fisher, as well as for Canada lynx, wolf, cougar, and black bear (KNC, 2018). Other local furbearers of significance to the Ktunaxa including beaver, river otter, bobcat, and coyote are also abundant in the area (Apps et. al., 2007).

The Grave Prairie, Upper Grave Creek, and Crown Mountain area represent high suitability habitat for a diverse assemblage of mammals, birds, amphibians, reptiles and invertebrates, including critical and/or potential habitat for a wide range of wildlife species at risk (KNC, 2018). The latter include federally and/or provincially listed grizzly bear, wolverine, fisher, mountain goat, bighorn sheep, American badger, little brown myotis, Townsend's big-eared bat, southern red-backed vole, least chipmunk, red-tailed chipmunk, peregrine falcon, prairie falcon, northern goshawk, Swainson's hawk, short-eared owl, great blue heron, American avocet, American bittern, Lewis woodpecker, Williamson's sapsucker, long-billed curlew, black swift, barn swallow, rusty blackbird, evening grosbeak, and eared grebe (Stuart-Smith et al., 2019).

During early engagement activities for the Castle Project[15], birds, including the Woodpecker Guild, which is culturally important based on Ktunaxa creation story and an important keystone species, and the Migratory Raptor Guild, which has specific cultural importance tied to Qukin ʔamakʔis, and the American dipper, which has a strong link between aquatic-riparian health and wildlife-habitat impact pathways were identified. Interests in wildlife, including moose, were identified as the Castle Project area is important to maintain connectivity with populations in Alberta and to maintain seasonal movements, as migratory movement corridors are critically important as are seasonal habitats (B.C. EAO, 2020b). Ktunaxa citizens hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail; hunting is conducted by small hunting parties. (KNC et al., 2015).

As noted in Section 23.5.4, and based on a review of publicly available information, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access wildlife species such as grizzly bear, moose, deer, elk, fur-bearing mammals, and migratory birds, including rare and endangered species. The potential for impacts to Ktunaxa Nation's rights and interests with respect to hunting and trapping include the potential impacts of the alteration or loss of wildlife habitat and disruption to migration movements and the increased potential hunting and trapping pressure and wildlife mortality.

The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of these receptor locations are assumed to be related to hunting and trapping subsistence use based on information provided by the KNC. There is also potential for Ktunaxa Nation to utilize the KNRI RSA for traditional activities (IAAC, 2015a). It is noted that the exercise of Ktunaxa Nation's rights and interests related to hunting and trapping in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduction in wildlife populations, reduced access to areas for traditional activities), the potential future use of these areas for hunting and trapping without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future hunting and trapping activities in the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's rights and interests in relation to traditional hunting and trapping, site-specific knowledge and use values that may include kill sites/traplines, noted locations of species of interest, further information on cultural values and teachings related to certain species, Ktunaxa knowledge on species health, and perspectives on species abundance would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA. For traditional hunting and trapping, seasonal access and usage information from Ktunaxa Nation knowledge holders on the species of interest would support and guide the assessment of Project-related effects in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of the specific information noted above in relation to the Project requires continued consultation with the Ktunaxa Nation.

[15] The Castle Project was recently renamed the Fording River Extension Project

23.7.1.2.3 Harvesting and Gathering

Historic Use

According to publicly available information, plant resources were an important part of Ktunaxa Nation's traditional economy as they were harvested for their nutritional, spiritual, and medicinal significance (KNC & the Firelight Group, 2015). Traditionally used plant species included huckleberry (especially black), thimbleberries, soapberries, strawberries, Saskatoon, bitterroot, shaggy mane mushrooms, whitebark pine, and balsamroot (KRL et al., 2011).

Current Use

Project-specific information related to the harvesting and gathering of culturally significant plants and ecosystems by the Ktunaxa Nation was based on information provided by the Ktunaxa Nation on plant species generally assumed to occur within the Project's area of influence (KNC, 2018). As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of the HHRA and sensory receptor locations related to current and rights-based use within the Project footprint and the KNRI LSA that are utilized for traditional activities by the Ktunaxa included information related to harvesting and gathering. The identification of culturally significant plants and ecosystems in combination with the receptor locations supported the characterization of existing conditions of culturally significant plants and ecosystems in the KNRI LSA.

As a result of consultation activities and publicly available information, the characterization of baseline conditions/current use is also based on the best available, publicly accessible information related to the traditional use of culturally significant plants by the Ktunaxa Nation. The information presented here has not been confirmed by the Ktunaxa Nation for its application to the Project and consequently, there could be other culturally significant plants or ecosystems located within the Project footprint or the KNRI LSA. Plant communities assessed within Chapter 13: Landscapes and Ecosystems Assessment and Chapter 14: Vegetation Assessment may contain plant species that Ktunaxa Nation citizens use for harvesting of plants and medicines. NWP acknowledges that the significance of plants and ecosystems may vary in time and space depending on the cultural use and sustenance of the Ktunaxa Nation.

Plant species previously identified for other proposed mining developments, traditional use and economic planning studies as having cultural significance to the Ktunaxa Nation, include (KLR et al., 2011; KNC & Firelight Group, 2015; KNC et al., 2015; Kapell, 2019; Stuart-Smith et al., 2019; Yaqan Nukiy First Nation, 2021c):

- Western white pine (*Pinus monticolal)*, birch (*Betula* spp.), maple (*Acer* spp.), coniferous tree species (Pinaceae, in general), western red cedar (*Thuja plicata*), black cottonwood (*Populus balsamifera* [incl. ssp. *trichocarpa*]), Pacific yew (*Taxus brevifolia*), beaked hazelnut (*Corylus cornuta*), highbush and lowbush cranberry (*Viburnum* spp., *Vaccinium vitis-ideae*), Devil's club (*Oplopanax horridus*), Oregon grape (*Mahonia* spp.), red osier dogwood (*Cornus sericea*), currants and gooseberries (*Ribes* spp.), cow parsnip (*Heracleum maximum*), choke-cherry (*Prunus virginiana*), kinnikinnick (*Arctostaphylos uva-ursi*), huckleberry (*Vaccinium membranaceum*), shaggy mane mushroom (*Coprinus comatus*), and ?ayut (Ligusticum spp.);
- Roots of bitterroot (*Lewisia redviva*), camas (*Camassia quamash*, *Zigadenus* spp.), nodding onion (*Allium cernuum*), biscuit root (*Lomatium* spp.), balsamroot (*Balsamorhiza sagittata*), yampa (*Perideridia gairdneri*), tiger lily (*Lilium columbianum*), yellow avalanche lily (*Erythronium*

grandiflorum), mariposa lily (*Calochortus apiculatus*), bugleweed (*Ajuga reptans*), spring beauty (*Claytonia* spp.), wild thistle (*Cirsium* spp.);
- Sprouts, stems, and leaves of leafy herbaceous vegetation ("greens") and prickly pear cactus (*Opuntia* spp.);
- Lichen; and
- Cambium (inner bark) of lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosae*), and cottonwood (*Populus balsamifera*).

The above-listed species are considered to be potentially culturally significant plants to Ktunaxa Nation and are summarized further in Table 23.7-2. Excluding the broadly defined "greens" and "lichen", 21 of the identified 33 potential culturally significant plants used by Ktunaxa Nation are known to occur or have a known or probable occurrence in the Project footprint (Table 23.7-2). Potential occurrence of the above-listed species in the Project footprint was evaluated in consideration of the results from the Project Terrestrial Ecosystem Mapping (TEM) including the habitat types known to occur in the Project footprint (Chapter 13), and historically identified occurrences within the KNRI LSA (Klinkenberg, 2021). Assigned levels of probability include:

- Known: Documented occurrence of the species while undertaking field studies in support for the Project TEM (Chapter 13). Species "known" to occur in the Project footprint are also considered to be "known" to occur in the KNRI LSA.
- Probable: The species' identified habitat is known to occur or considered to have a high potential for occurrence based on other features or related habitat types within the Project footprint or KNRI LSA.
- Possible: There are no detected occurrences or considered to have a low potential for occurrence based on other features or related habitat types within the Project footprint or KNRI LSA.
- Unlikely: Historically detected occurrences nor the applicable habitat are anticipated to occur in the Project footprint or KNRI LSA.

None of the identified species are currently identified as a listed or sensitive species (Chapter 14) and are considered to be reasonably common in B.C. and Canada. As these potential culturally significant plant species were identified by the Ktunaxa Nation as part of studies for projects elsewhere in the KNRI LSA (KLR et al., 2011; Stuart-Smith et al., 2019), it is reasonable to assume that the potential culturally significant plants with known or probable occurrence in the Project footprint are also found in the remainder of the KNRI LSA.

Table 23.7-2: Potential Occurrence of Ktunaxa Nation Culturally Significant Plants in the Project Footprint[1]

Common or Traditional Name	*Scientific Name*	Conservation Status[2]		Potential Occurrence	
		Provincial Rank[5]	National Rank[6]	Project Footprint	KNRI LSA
Western white Pine	*Pinus monticola*	S4	G4G5	Possible	Probable
Birch	*Betula neoalaskana; B. papyrifera.*	S5	G5	Known	Known
Maple	*Acer* spp.	S5	G5	Known	Known
Western red cedar	*Thuja plicata*	S5	N5	Unlikely	Probable

Common or Traditional Name	*Scientific Name*	Conservation Status[2]		Potential Occurrence	
		Provincial Rank[5]	National Rank[6]	Project Footprint	KNRI LSA
Cottonwood (incl. black cottonwood)	*Populus balsamifera* (incl. ssp. *trichocarpa*)	S5	N5	Probable	Probable
Lodgepole pine	*Pinus contorta*	S5	N5	Known	Known
Pacific Yew	*Taxus brevifolia*	S5	N5	Unlikely	Probable
Ponderosa pine	*Pinus ponderosa*	S5?	N5?	Possible	Probable
Beaked hazelnut	*Corylus cornuta*	S5	N5	Unlikely	Probable
Highbush and lowbush cranberry	*Viburnum* spp., *Vaccinium vitis-ideae*	S5	N5	Known	Known
Devil's Club	*Oplopanax horridus*	S5	N5	Unlikely	Probable
Oregon grape	*Mahonia* spp.	S5	N5	Known	Known
Red osier dogwood	*Cornus sericea*	S5	N5	Known	Known
Currants and gooseberries	*Ribes* spp.	S5	N5	Known	Known
Choke-cherry	*Prunus virginiana*	S5	N5	Probable	Probable
Kinnikinnick	*Arctostaphylos uva-ursi*	S5	N5	Known	Known
Huckleberry	*Vaccinium membranaceum*	S5	N5	Known	Known
Cow parsnip	*Heracleum maximum*	S5	N5	Known	Known
Bitterroot	*Lewisia redviva*	S4	N4N5	Possible	Probable
Camas	*Camassia quamash*, *Zigadenus* spp.	S4?	N4N5	Known	Known
Nodding onion	*Allium cernuum*	S5	N5	Known	Known
Biscuit root	*Lomatium* spp.	S4S5	N4N5	Known	Known
Balsamroot	*Balsamorhiza sagittata*	S5	N5	Known	Known
Yampa	*Perideridia gairdneri*	S3S4	N3N4	Possible	Probable
Tiger lily	*Lillium columbianum*	S5	N5	Probable	Probable
Yellow avalanche lily	*Erythronium grandiflorum*	S5	N5	Probable	Probable
Mariposa lily	*Calochortus apiculatus*	S4S5	N4N5	Known	Known
Bugleweed	*Ajuga reptans*	SNA	NNA	Unlikely	Probable
Spring beauty	*Claytonia* spp.	S3 to S5	N3 to N5	Possible	Probable
Wild thistle	*Cirsium* spp.	S3 to S5	N4N5	Known	Known
Prickly pear cactus	*Opuntia* spp.	S4S5	N5	Possible	Probable

Common or Traditional Name	*Scientific Name*	Conservation Status[2]		Potential Occurrence	
		Provincial Rank[5]	National Rank[6]	Project Footprint	KNRI LSA
?ayut	*Ligusticum canbyi*	S4	N4	Possible	Probable
Shaggy mane mushroom	*Coprinus comatus*	Not Assessed	Not Assessed	Possible	Probable

Notes:

1. KLR et al., 2011; Stuart-Smith et al., 2019

2. Conservation Status ranks according to Natureserve (2021): N# - National Status Rank; S# - Subnational (Provincial/Territorial) Status Rank; S5/N5 – Secure: At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats; S4/N4 – Apparently Secure: At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors; S3/N3 – Vulnerable: At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; ? – Inexact Numeric Rank: Denotes inexact numeric rank; this should not be used with any of the Variant National or Subnational Conservation Status Ranks, or NX, SX, NH, or SH.

3. Klinkenberg (2021)

4. Refer to the Project TEM (Chapter 13) for the described ecosystem type.

5. B.C. Conservation Data Centre (2021)

6. Canadian Endangered Species Conservation Council (2015)

Reference to specific ecosystems of inherent cultural significance could not be identified in the reviewed literature (KLR et al., 2011; Stuart-Smith et al., 2019; Yaqan Nukiy First Nation, 2021c). As part of early engagement activities for the Castle Project, interests in ecosystems of conservation interest, including wetland, riparian and floodplains ecosystems, avalanche path ecosystems, karst ecosystems, old growth forests and mature forests, grassland and brushland ecosystems and all listed ecological communities were identified (B.C. EAO, 2020b). The Ktunaxa Nation has previously identified the importance of these habitats as they relate to biodiversity in the KNRI LSA in general (KLR et al., 2011). Assessment of potential Project effects on these ecosystems is described in Chapter 13.

For the purposes of the assessment of potential effects on culturally significant plants, the ecosystems that provide habit for potential culturally significant plants are considered to be potential culturally significant ecosystems. Culturally significant ecosystems account for as much as 94% of the Landscapes and Ecosystems LSA (i.e., 11,131 ha out of 12,886 ha) and as much as 93% of the Project footprint (1,193 ha out of 1,283 ha), as indicated in Chapter 13.

For the Ktunaxa Nation, vegetation species of importance to traditional use include those for crafting tools, camps, and canoes (Yaqan Nu?kiy First Nation, 2021c). Canoes were constructed with Western white pine, birch, cedar, maple sap, or pitch from coniferous trees (Yaqan Nu?kiy First Nation, 2021c). Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall (KNC et al., 2015).

As noted in Section 23.5.4, and based on a review of publicly available information, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access culturally significant plants and the related harvesting and gathering activities may potentially be impacted by the alteration or loss of vegetation and increased potential dust loading. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of these receptor locations are assumed to be related to harvesting and gathering activities based on information provided by the KNC. There is also

potential for Ktunaxa Nation to utilize the KNRI RSA for undertaking traditional and ceremonial activities (IAAC, 2015a). It is also noted that the exercise of Ktunaxa Nation's rights and interests related to harvesting and gathering sites in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to areas for traditional activities). The potential future use of these areas for harvesting and gathering opportunities without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact potential future harvesting and gathering activities in the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's rights and interests in relation to traditional harvesting and gathering, site-specific knowledge and use values that may include further information on culturally significant plant species, their sites/locations, cultural values and teachings related to certain plant species, Ktunaxa knowledge on plant species health, and perspectives on the seasonality of access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of the specific information noted above in relation to the Project requires continued consultation with the Ktunaxa Nation.

23.7.1.3 Traditional Knowledge and Language Sector

23.7.1.3.1 Ceremonial/Sacred Areas

Historic Use

As discussed above, according to publicly available information, Ktunaxa Nation ancestors lived in an intimate relationship with their territory and with all of the dimensions of the environment around them. These relationships were renewed and connected through the use of ceremonial practices including ritual and reciprocity for the land. These ceremonies were conducted at different times, for different reasons, and at sacred sites or included sacred components of the environment such as for the bison, which sustained them. Grave Prairie is a place of historical and cultural importance to the Ktunaxa. This area was the location of Ktunaxa village site where people were decimated by smallpox and the graves of Ktunaxa ancestors remain there today. As such, this area holds cultural, historical, and biodiversity values (RDEK, 2018).

Current Use

It is acknowledged that the ceremonial practices and sacred areas of Ktunaxa Nation are held closely to its community members and may not be fully described or divulged in detail in publicly available information sources. It is also acknowledged that the ceremonial practices of the Ktunaxa Nation are tied to the environmental and ecological attributes of their lands, as they were with their ancestors. Because of the cultural emphasis on oral story telling as a means of transferring knowledge, the knowledge of these practices has endured and is kept sacred with the community's knowledge holders. The Ktunaxa have names for geographically and culturally significant locations in the KNRI RSA, including Qukin ʔakitɬaʔis (Raven's House or Crowsnest Mountain) and Kuɬwiaʔki (Crowsnest Lake), indicating the time depth of Ktunaxa use and occupation of the area. The Ktunaxa hold the headwaters of Crowsnest River (within the KNRI LSA) to be especially sensitive and sacred, as it is considered the home of the creation-being Raven. Nearby areas, extending into the Crowsnest Pass (which is within the KNRI LSA), and

including Crowsnest Lake and areas east of the Rockies, contains values of central cultural and ceremonial importance for Ktunaxa people (KNC, 2021a).

As noted in Section 23.7.1.1.2, and based on a review of publicly available information, Ktunaxa Nation considers water rights to be a critical issue and has a long history of defending its right to water and for the protection of the Elk Valley and its watersheds (KNC, 2021a). As noted earlier in Section 23.7.1.2.2, the Ktunaxa have a deep spiritual connection to the animal world and, in particular, to the grizzly bear. Qat'muk is a very special place where the Grizzly Bear Spirit was born, goes to heal itself, and returns to the spirit world (KNC, 2010). The Ktunaxa Nation Council and the federal government entered into an agreement, with substantial federal funding to support the Ktunaxa Nation to create an Indigenous Protected and Conserved Area (IPCA) in the Southern Purcells, in August 2019. The Ktunaxa Nation Council in collaboration with the government of B.C., will be determining the draft boundaries and culturally based principles for the area (KNC, 2020b).

The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of these receptor locations are assumed to be related to areas used for conducting traditional activities that may have potential links to ceremonial aspects of Ktunaxa culture based on information provided by the KNC. There is also potential for Ktunaxa Nation to utilize the KNRI RSA for traditional ceremonial/sacred activities (IAAC, 2015a). As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities (IAAC, 2015a).

Based on information provided by Ktunaxa Nation Council (KNC, 2018; KNC, 2022b), Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. The area of Grave Prairie has cultural significance to Ktunaxa and any additional infrastructure, is not compatible with this cultural landscape as stated by the KNC. Based on the direction from Ktunaxa Knowledge Holders, the area is currently known as the "Grave Prairie Cultural Landscape" and contains two "zones":

- a "Culturally Significant Area" where no new activities or infrastructure will be accepted, and
- a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to Ktunaxa Nation contemplating additional development (KNC, 2022b).

The Ktunaxa Nation Council notes that the impacts to the Grave Prairie site from any proposed development cannot be mitigated, and simply avoiding the physical remains of their ancestors is not enough to justify any land alteration in the area (KNC, 2018; 2022b). It is also expected that the Ktunaxa Nation utilizes the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a). KNC also noted the unique cultural importance of Grave Prairie as a sacred cultural landscape and that industrial and related cumulative effects in the Elk Valley have already impacted other cultural and stewardship values (KNC, 2016b; 2018; 2021m; 2022b). The Project includes a proposed rail load-out facility in the Grave Prairie Cultural Landscape that is currently undergoing further consultation with the KNC and member Bands on the siting of the facility.

As the exercise of Ktunaxa Nation's rights and interests related to ceremonial practices and use of sacred areas in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites), the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact ceremonial practices and use of sacred areas in the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's rights and interests in relation to traditional ceremonial/sacred areas, site-specific knowledge and use values that may include further information on culturally significant areas, their sites/locations (e.g., locations for sources used for ceremonial bundles), cultural values and teachings related to certain ceremonial/sacred areas, Ktunaxa oral histories related to areas used for ceremonial/sacred purposes, and perspectives on the seasonality of access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of the specific information noted above in relation to the Project requires continued consultation with the Ktunaxa Nation. Discussions with Ktunaxa Nation in relation to the location of the rail load-out are on-going at the time of the writing of this chapter.

23.7.1.3.2 Access and Travel Routes

Historic Use

According to publicly available information, the Ktunaxa Nation lived harmoniously with the seasons and resources throughout their territory. Specific routes were traveled around the territory in patterned seasonal rounds, stopping and camping at the areas which provided food and shelter. Trails and corridors were also used for visiting other communities for trade. A network of trails, passes, and preferred river-based (canoe and boat) routes that travel north and south through the Elk Valley and along the Elk River extended to passes to the west, including the Crowsnest Pass. These passes were also used by groups from the east of the Rockies visiting Ktunaxa ʔamakʔis, with the Elk Valley providing an important location for trade and interaction between Ktunaxa and groups including the Stoney Nakoda and Piikani (Peigan) of the Blackfoot Confederacy. Large portions of these trails are still in use where they have not been intersected by road networks, including hunting trails along the eastern slopes, and major east-west trails that are used for Ktunaxa culture camps and for training and educating youth. Use of boat-access water routes is most common in the lower Elk near where it joins Koocanusa (KNC et al., 2015).

Current Use

As discussed above, based on a review of publicly available information, the Ktunaxa Nation have a strong connection to their traditional territory and undertake present day traditional practices and stewardship of the land. These areas are now accessed through modern-day roads and access points in combination with the traditional knowledge and wisdom of Ktunaxa Nation territory and traditional trails. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. As depicted in Figure 23.7-1 and outlined in Table 23.7-1, some of these receptor locations are assumed to be related to travel through Ktunaxa Nation's traditional areas based on information provided by the KNC. Traditional hunting trails were tied strongly to wildlife trails and other key habitat types and continue to exist as such today where they have been able to be preserved (KNC & the Firelight Group, 2015). While Ktunaxa use and occupation of Crowsnest Pass was temporarily attenuated by the effects of colonization, including the decimation of

bison herds, smallpox epidemics, forcible displacement from territorial lands and residential schools, the Ktunaxa continue to travel to and through the Project footprint to maintain the Ktunaxa connection to their territory and exercise Ktunaxa Rights (KNC, 2021i).

Ktunaxa families maintained a seasonal round that included travel through the Crowsnest Pass for harvesting bison until at least the 1880's. Travel and use of the pass for cultural purposes continued following development of road and rail links (KNC, 2020a). Ktunaxa Nation continues to access the upper Elk and Fording Valleys for trails and transportation that are associated with resource harvesting, cultural practices, and camp sites (KLR et al., 2011). As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. It is expected that the Ktunaxa Nation utilizes the KNRI LSA for maintaining their seasonal round (IAAC, 2015a). It is noted that the exercise of Ktunaxa Nation's rights and interests related to access and travel in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). The potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's rights and interests in relation to traditional access and travel routes, site-specific knowledge and use values that may include further information on culturally significant access routes, their specific sites/locations, cultural values and teachings related to certain access and travel routes, Ktunaxa oral histories related to areas used for access and travel routes, and perspectives on the seasonality of access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of the specific information noted above in relation to the Project requires continued consultation with the Ktunaxa Nation.

23.7.1.3.3 Physical and Cultural Heritage

Historic Use

According to publicly available information, the Elk Valley includes multiple locations associated with Ktunaxa burials, ceremonial areas, rock art sites, and archaeological values. Several of these locations are known by Ktunaxa knowledge holders, and accounts from the ethnographic record and from oral histories indicate a strong continuity of Ktunaxa cultural and ceremonial use in the valley extending from prehistoric times to the present. High mountain areas, including high elevation forests, are spiritually important and especially susceptible to impacts from mountain-top removal and open-pit coal mining (KNC et al., 2015).

Current Use

Based on a review of publicly available information, the Ktunaxa Nation physical and cultural heritage of today revolves around the traditional practices discussed herein. Monuments and landmarks that were cherished by Ktunaxa Nation ancestors are still present in the landscape and are also sometimes protected

by governments or other non-Indigenous groups in partnership with First Nations. Archaeological finds may be in the form of dedicated ancient burial grounds, campsites or other relics such as discarded tools or by-products present throughout the landscape on trails, corridors, or areas of cultural importance.

Based on information provided by Ktunaxa Nation Council (KNC, 2018; KNC, 2022b), Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. As noted earlier in Section 23.7.1.3.1, the area of Grave Prairie has cultural significance to Ktunaxa based on the direction from Ktunaxa Knowledge Holders (KNC, 2022b). Ktunaxa knowledge holders have also identified the Qukin ʔakit‡aʔis (Crowsnest Mountain) which is 13 km away from the Project and separated by a mountain ridge with relatively few passes. The potential for negative changes to the view-scape and sensory environment (e.g., noise, smell, air quality) associated with direct (e.g., mine construction and operations) and incidental (e.g., rail traffic) Project activities are a primary concern for Ktunaxa current and future use, and stewardship of the values associated with of Qukin ʔakit‡aʔis, Ku‡wiaʔki (Crowsnest Lake), and nearby areas associated with place-based cultural-spiritual practices (KNC, 2020a).

As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact unknown historical or archaeological sites. There is potential for Ktunaxa Nation utilizing the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a). It is noted that the exercise of Ktunaxa Nation's rights and interests related to physical and cultural heritage in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites), and the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

For the Ktunaxa Nation's physical and cultural heritage resources, site-specific knowledge and use values that may include further information on culturally significant areas, their specific sites/locations, cultural values and teachings related to certain Ktunaxa physical and cultural heritage resources, Ktunaxa oral histories related to physical and cultural heritage resources, and perspectives on the seasonality of access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of the specific information noted above in relation to the Project requires continued consultation with the Ktunaxa Nation. Discussions with Ktunaxa Nation in relation to the location of the rail load-out are on-going at the time of the writing of this chapter.

23.7.1.4 Social and Health Sector

Ktunaxa Nation views their Title and Rights and related interests as extending beyond the protection of traditional hunting, fishing, trapping, and gathering practices to include overarching pillars of nation rebuilding. As noted earlier in Section 23.5.4, Ktunaxa Nation's rights and interests are organized into Sectors that align with the pillars as described. For the Application/EIS, the social and health conditions categorized under the Social and Health Sector are regarded as Ktunaxa Nation's interests within their Traditional Territory based on publicly available information.

23.7.1.4.1 Housing, Transportation, and Social Services

Based on a review of publicly available information, over multiple decades, census data have revealed that the Indigenous population has grown quickly, at a pace far surpassing that of the non-Indigenous population. In Canada, the Indigenous population surpassed the growth rate of the non-Indigenous population from 2016 to 2021 (Statistics Canada, 2022e) while this growth was not as rapid as in years past (from 2011 to 2016) (Statistics Canada, 2022e). Indigenous populations generally have a younger overall demographic than the general population. Across Canada, nearly half of all Indigenous Peoples in Canada live off reserve in primarily urban areas while almost half (49.3 per cent) with registered Indian status live on reserve (Statistics Canada, 2011), the Indigenous population living in large urban centres has since grown by 12.5 per cent from 2016 to 2021 (Statistics Canada, 2022e).

The Ktunaxa demographics mirror these trends with a higher birth rate and younger population than the B.C. average, though the Ktunaxa birth rate has been dropping and population growth trends moderating in recent years. Like other First Nations, Ktunaxa struggles with outmigration, and over half of Ktunaxa citizens live off reserve as per Table 23.6-1. Several Ktunaxa families currently live in the Elk Valley at Fernie, Elko, and elsewhere (KNC et al., 2015).

According to publicly available information, while Ktunaxa citizens face housing challenges both on reserve and off, overcrowding in Ktunaxa Nation on average is at 9% (Statistics Canada, 2016d). With a higher birth rate, Indigenous population growth will place higher pressures on housing into the future than is the case in the broader population. With regard to the issue of on- and off-reserve residence, KNC has expressed a commitment to maximizing the number of Ktunaxa citizens choosing to reside on their home reserves or on reserves in general. Housing challenges being addressed by the Ktunaxa also relate to the quality and conditions of the housing, as well as access issues including adequate stocks and affordability. This is the case for both off and on reserve populations. The Ktunaxa Nation is building a Government-to-Government relationship with B.C. Housing, providing another opportunity to model how B.C. Government works with the Ktunaxa Nation and to change the outcomes of their most vulnerable citizens and other Indigenous people residing within Ktunaxa territory. The Social Investment Sector is working with B.C. Housing to develop and implement additional urban supportive housing (KNC, 2020b).

Based on a review of publicly available information, the vision for the Ktunaxa Nation begins with "Strong, Healthy citizens…" – the Social Sector's objective is to create and maintain vital health and wellbeing systems that are integrated, culturally grounded, easily accessed and oriented to achieving this goal. Ktunaxa Nation's Regional Social Governance researches, develops, and assists in the implementation of Ktunaxa Nation social governance systems that support the elimination of the access-to-service gaps currently facing Indigenous people in the Region. The overall goal is to have Ktunaxa Governance over an integrated social investment service delivery and governance model for all Indigenous people within the Ktunaxa Traditional Territory, providing individuals and families access to culturally relevant service through which to gain strength and independence (KNC, 2021h).

The Social Investment Sector indicators of a 'Strong, Healthy Ktunaxa Citizen' have been developed and are a compilation of two decades of sharing, listening and learning. The breadth of involvement spans from Community Gatherings to Band and Sector Council Meetings to Agency, Community and Nation Strategy Sessions. The Ktunaxa Nation's strategic framework and the vision, values and principles supplied many of the overarching indicators. The majority of child-specific indicators originated from

Ktunaxa/Kinbasket Child and Family Services' work in defining a "strong, safe, supported child". It was this range of input, both in terms of age, community, and type of engagement that created the Ktunaxa Nation's comprehensive list of Social Investment Indicators (KNC, 2021h).

23.7.1.4.2 Health Services

Based on a review of publicly available information, the Ktunaxa Nation hosts the Public Health Nursing services which include clinic visits for preventative health, pregnancy education and baby care, school visits, child health clinics, immunization, community workshops, communicable disease control, environmental health prevention and education, human immunodeficiency virus (HIV) screening and sexually transmitted infection (STI) education, and harm reduction supplies. Also hosted by Ktunaxa Nation is the Home Care Nursing where services include First Nation and Non-Insured Health Benefits information, direct client care for nursing interventions such as wound treatment, foot care, physical assessments and screening activities, consultation, referral and liaison with other care providers, organizations and institutions, medication management and understanding, palliative care, linkages to community service providers, and learning resources (books, videos and pamphlets) (KNC, 2021h).

Ktunaxa Nation runs Nurse Practitioner programs: Outreach/In-reach and Operation Street Angel program where nurse practitioners are health professionals who have achieved the advanced nursing practice competencies at the graduate level of nursing education. Nurse practitioners provide health care services from a holistic nursing perspective, integrated with the diagnosis and treatment of acute and chronic illnesses, including prescribing medications to the Ktunaxa Communities (KNC, 2021h).

Aboriginal Patient Navigator services include navigation at the East Kootenay Regional Hospital, advocacy, discharge planning, promoting access to services, and assistance in understanding the hospital system, and referral to Aboriginal Community Liaison services. The Aboriginal Community Liaison services include discharge planning, navigation to community services, advocacy, promoting access to community services, assistance in understanding community service systems and referral to Aboriginal Patient Navigator services (KNC, 2021h).

Community Dietitian services include individual and group sessions, diabetes, chronic disease management, lifestyle and nutrition coaching. Community Exercise Therapy services include recovery from injury, better management of chronic pain such as arthritis and back pain through gentle movement and exercise, improvement of control of blood sugars with daily light exercise, encouraging increased general activity levels at home, in the community or at fitness facility, and healthy activity for weight management (KNC, 2021h).

Ktunaxa Nation Council provides services for urban Indigenous members including the Ktunaxa Aboriginal Wellness Center where Operation Street Angel services the homeless and vulnerable populations in the Cranbrook area including nurse practitioner services, mental health and substance use, street outreach advocacy and registered nurses (RN), nutrition, advocacy, justice, and linkage/referrals to services and providers within the community and region. Adult Supported Recovery Program where Ktunaxa Nation Council operates an 8-bed supportive recovery residential home in Cranbrook providing life skills, re-connection/culture, community and social engagement, and service linkage to Indigenous and non-Indigenous people either waiting for or returning from treatment (KNC, 2021h).

The Ktunaxa First Nation Health Authority Community Engagement hub brings grassroots voices into the implementation of the Tripartite First Nations Health Plan to work with First Nations communities to help determine and achieve their own health priorities. Community Engagement hubs (are groups of First Nations communities who agree to plan, collaborate, and communicate to meet their nation's health priorities. Community Engagement hubs also provide a vehicle for First Nations Communities to partner with the First Nations Health Council to implement the Tripartite First Nations Health Plan. Community Engagement hubs are collaborations between First Nations communities working through one agreed upon organization. The formation of Community Engagement hubs encourages natural collaborations based on tribal and geographical factors, and provides resources to existing capacity (KNC, 2021h).

At the time of the submission of this Application/EIS, based on desktop review of publicly available information, HHRA and sensory receptor locations related to current and rights-based use (Figure 23.7-1 and Table 23.7-1) within the Project footprint and the KNRI LSA were utilized for the Human Health and Ecological Risk Assessment (HHERA; Chapter 22: Human and Ecological Health Assessment). Chapter 22 utilizes localized receptors for both Indigenous and non-Indigenous persons to address identified health indicators used to simulate the potential exposure of human and wildlife to contaminants of potential concern over the life of the mine and beyond, and in the case of cancer risks, over the lifetime of an individual.

As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. Ktunaxa Nation's rights and interests in relation to social and health conditions may potentially be impacted as a result of Project-related effects that may result in the reduction of access to healthy country foods and the potential for contamination to areas where country food resources are utilized by the Ktunaxa Nation citizens within the Project footprint and the KNRI LSA. It is noted that the exercise of Ktunaxa Nation's rights and interests related to access to country foods in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users), and the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's social and health conditions, site-specific knowledge and use values associated with subsistence sites, water and land transportation, and related environmental features in relation to country foods, including seasonal access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of this specific information requires continued consultation with the Ktunaxa Nation.

23.7.1.4.3 Gender Related Baseline Information

For this Project, the potential for disproportionate effects to diverse or potentially vulnerable population groups or subgroups was explored from an economic and socio-community lens as noted in the *Human and Community Well-Being: Guidelines for Assessing Social, Economic, Cultural and Health Effects in*

Environmental Assessments in B.C. (B.C. EAO, 2020b). The Gender Based Analysis Plus (GBA+) analysis to support this impact assessment was undertaken in 2022 and 2023 through two studies. As part of the first study undertaken in 2022, in addition to reviewing gender related issues in the Elk Valley for contextual information, a desktop review of gender related issues in the mining industry at a national, provincial, and local level was completed. The GBA+ study undertaken in 2023 considered socio-community barriers faced by Indigenous Communities, and Indigenous women, girls, and Two-Spirited[16] and Indigenous LGBTQIAA+[17] peoples in the context of mining both in Canada and the Elk Valley region (Chapter 18: Socio-Community Assessment, Section 18.4.4.6). Requests for interviews were sent to all potentially impacted and/or interested Indigenous Nations and Communities and positive responses were received and interviews conducted with leaders, female, youth, and Elders as members of the Yaq̓it ʔa·knuqƛi'it First Nation.

The GBA+ study carried out in 2023 was focused on socio-community barriers affecting Indigenous employment in mining (overlapping with Chapter 17: Economic Conditions Assessment), as well as the safety and security of Indigenous women, girls and Two-Spirited and Indigenous LGBTQQIA+ people in relation to mining. These sub-groups were identified based on:

1. The potential for Indigenous Peoples to benefit from employment in mining but with an awareness of socio-community barriers that can prevent them from reaching that potential; and
2. Safety and security issues associated with mining which Indigenous women, girls, and Two-Spirited and Indigenous LGBTQQIA+ people in the Elk Valley region as well as other mining areas across Canada may experience.

Both a desktop review of existing literature and primary data collection was undertaken as part of the 2023 GBA+ study. Indigenous Peoples comprise a critical potential current and future workforce for the mining industry based on living in relative proximity to many mine sites in Canada, as well as having a relatively young demographic compared to the rest of the Canadian population. In addition, economic opportunities in mining may help to provide a pathway out of colonial-induced poverty and deprivation for Indigenous groups. There remain important barriers and opportunities to understand in relation to the aforementioned issues. These issues were explored first through a desktop review of the broader literature concerning opportunities and barriers to economic participation of Indigenous Peoples in mining in Canada and also focused on safety and security issues for Indigenous women, girls, and 2SLGBTQQIA+ [18] people as well as socio-demographic and incident-based crime statistics. Existing literature on these topics was found to be fairly limited. This phase also included interviews at the local scale with Indigenous Nations and Communities, as well as mining councils to better understand barriers and opportunities to economic participation in mining that may be specific to the Elk Valley Region and also comprised of interviews with representatives of potentially impacted Indigenous Nations and community members concerning socio-community barriers to economic development and employment and safety issues in mining.

[16] Two-Spirited is used by some Indigenous people to refer to having both a masculine and feminine spirit and can indicate sexual, gender, and/or spiritual identity.
[17] LGBTQQIA+ stands for: L- Lesbian, G-Gay, B-Bisexual, T-Trans, Trans-gendered or Trans identified, Q-Queer, Q- Questioning, I-Intersex, A-Asexual, and +-any identity not represented by the acronym. Note that there are different acronyms that can/may be used by different groups.
[18] 2SLGBTQQIA+ stands for: 2S-Two-Spirited, L- Lesbian, G-Gay, B-Bisexual, T-Trans, Trans-gendered or Trans identified, Q-Queer, Q-Questioning, I-Intersex, A-Asexual, and +-any identity not represented by the acronym. Note that there are different acronyms that can/may be used by different groups.

The GBA+ analysis also included a review of statistical information to identify potential safety and security issues for Indigenous women, girls and 2SLGBTQQIA+ people who may be living in Sparwood, Elkford, or Fernie. Based on the socio-demographic and crime statistics for the Elk Valley (Chapter 18, Section 18.4.4.6.3), both Elkford and Sparwood had higher than provincial rates of those identifying as Indigenous and Women+ in 202 while Fernie's population identifying as Indigenous and Women+ was lower than the provincial rate. In general, the Elk Valley region has a lower level of crime than the provincial average with the exception of Fernie which has a higher rate of harassing communications. While these statistics indicate that the Elk Valley is a relatively safe region, they do not indicate whether crimes were committed against Indigenous women, girls, and Two-Spirited and Indigenous LGBTQQIA+ people. It is to be noted that data may also be unavailable as some crimes are never reported to the police especially relevant to where Indigenous Peoples and Indigenous women are extremely distrustful of police in Canada based on the forced removal of Indigenous children into the residential school system and apprehensions during the Sixties Scoop, experiences of violence and mistreatment by the police, and racism pervading law enforcement (McKay, 2021).

As previously noted, the GBA+ study undertaken in 2023 considered socio-community barriers faced by Indigenous Communities, and Indigenous women, girls, and Two-Spirited and Indigenous LGBTQIAA+ peoples in the context of mining both in Canada and the Elk Valley region (Chapter 18, Section 18.4.4.7). The GBA+ interviews revealed a variety of socio-community related barriers and concerns related to the mining industry in Canada and the Elk Valley region. While there will not be temporary work camps for the Project, and the workforce will primarily be drawn locally, hyper-masculine and sexist cultures can still pervade mining regions (NWAC 2020), including urban areas where off-reserve Indigenous women, girls, and 2SLGBTQQIA+ people may reside for this Project. The themes have been classified as housing barriers, childcare, cost of living, the safety of Indigenous women, girls, and Two-Spirited and Indigenous LGBTQIAA+ people, health barriers, and other social and cultural barriers. The focus of the interviews was to understand Indigenous perspectives and knowledges with respect to socio-community barriers in the mining industry. In addition, while the above themes have been separated and parsed out in order to generate understanding and meaning, there is also some overlap across these themes and those presented in Chapter 17. It is to be noted that positive responses received, and interviews conducted with leaders, female, youth, and Elders as members of the Yaq̓it ʔa·knuq̓ti'it First Nation may have included perspectives of the interviewees that may not be representative of the Yaq̓it ʔa·knuq̓ti'it First Nation. Interviewees highlighted barriers[19] associated with socio-community conditions specific to mining in the Elk Valley region, or to mining in general and the highlights of themes and findings are further outlined in Chapter 18.

23.7.1.5 Education and Employment Sector

Ktunaxa Nation views their Title and Rights and related interests as extending beyond the protection of traditional hunting, fishing, trapping, and gathering practices to include overarching pillars of nation rebuilding. As noted earlier in Section 23.5.4, Ktunaxa Nation's rights and interests are organized into Sectors that align with the pillars as described. For the Application/EIS, the education and employment conditions categorized under the Education and Employment Sector are regarded as Ktunaxa Nation's interests within their Traditional Territory based on publicly available information.

[19] Note that not all of these barriers are not necessarily specific to Indigenous People but may apply to non-Indigenous peoples as well.

23.7.1.5.1 Education and Training

As Table 23.6-1 indicates, basic education statistics are improving for Indigenous populations in Canada, and Ktunaxa citizens follow this trend, with higher level education than the B.C. Indigenous average for post-secondary: 74 per cent of Ktunaxa citizens (on and off reserve) aged fifteen and over have a high school equivalency, while 53 per cent have post-secondary education (Statistics Canada, 2016d).

23.7.1.5.2 Employment Services

Based on a review of publicly available information, the Ktunaxa Nation Council Education & Employment Sector is located at the Ktunaxa Nation Government Building and offers a wide range of employment and training related services. The KNC Employment Service Centre recently renovated and now offers a range of self-serve resources to meet the needs of clients who prefer to work independently on their job search. Their resources include a daily updated job board that includes all areas within the Ktunaxa region as well as information for those seeking jobs in other areas, client computer station with access to various job search, career planning, and job maintenance tools to help achieve employment goals. The KNC Employment Service Centre provides a temporary job pool list where an active list of job seekers is maintained for employers needing either short- or long-term employees. The KNC Employment Services Centre also provides labour market information including information on industry employment partners and members of the Employment team are available to assist with navigating the Service Centre, answer job search questions, and provide referrals to other community resources or to get community members started with a supported plan (KNC, 2021c).

As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., transmission and transfer of cultural knowledge) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional activities. Ktunaxa Nation's rights and interests in relation to education and employment conditions may potentially be impacted as a result of Project-related effects due to the reduction or elimination of potential commercial activities (e.g., tourism, activities related to cultural knowledge transfer and transmission) of the Ktunaxa Nation within the KNRI LSA. It is noted that the exercise of Ktunaxa Nation's rights and interests related to access to areas of cultural value in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). The potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

For education and employment conditions, site-specific knowledge and use values associated with subsistence sites, water and land transportation, and related environmental features including seasonal access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of this specific information requires continued consultation with the Ktunaxa Nation.

23.7.1.6 Economic Investment Sector

Ktunaxa Nation views their Title and Rights and related interests as extending beyond the protection of traditional hunting, fishing, trapping, and gathering practices to include overarching pillars of nation

rebuilding. As noted earlier in Section 23.5.4, Ktunaxa Nation's rights and interests are organized into Sectors that align with the pillars as described. For the Application/EIS, the economic conditions categorized under the Economic Investment Sector are regarded as Ktunaxa Nation's interests within their Traditional Territory based on publicly available information.

As with most First Nations, Ktunaxa economic well-being lags behind that of non-Indigenous Canadians. The 2016 Ktunaxa Census data indicates that the median Ktunaxa income was $19,264 and for the Ktunaxa at present appears to equate to those of about 15 to 20 years ago for average British Columbians; in addition, Ktunaxa citizens appear to be over-represented in low income and poverty. Low incomes are detrimental to health and wellness. Almost half (44 per cent) of Ktunaxa households included in the KNC Diet Study are food insecure (KNC & the Firelight Group, 2015).

The Community Well-Being (CWB) index measures socio-economic well-being for communities across Canada over time. It has 4 components: education, labour force activity, income, and housing conditions which are used to calculate a community's CWB index score. The single number that can range from a low of 0 to a high of 100, provides a systematic, reliable summary measure of socio-economic well-being for individual Canadian communities with the range of scores being used to examine the effect on well-being of a variety of factors including isolation, maternal health, income inequality, and the respective treaties (ISC, 2019). Overall, Table 23.7-3 illustrates that the community well-being indices for the Indigenous population in the Regional District of Eastern Kootenay are substantially lower than those of non-Indigenous population in the region. It is worth noting that each CWB score represents an average of all residents of a given community (Indigenous or non-Indigenous) since all residents contribute economically, socially, and culturally to the communities in which they live. First Nations communities have distinct socio-cultural environments and encounter different circumstances to non-Indigenous Communities. While the index identifies the gaps between these two community types, it is not intended to suggest that conditions in non-Indigenous Communities represent a goal to which First Nations communities should aspire (ISC, 2019).

Table 23.7-3: Community Well-being Indices[20] for the Indigenous Population of the Regional District of Eastern Kootenay

Ktunaxa Member First Nation	Community Well-Being Index 2016
Yaq̓it ʔa·knuqƛiʾit First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band)	69
ʔakisq'nuk (Columbia Lake Band)	71
ʔaqam (St. Mary's Band)	66
Yaqan Nu?kiy (Lower Kootenay Band)	62
Regional District of Eastern Kootenay (all)	79 – 85
B.C. Indigenous Communities	63
British Columbia	79

[20] The Community Well-Being (CWB) Index combines various indicators derived from Statistics Canada's Census of Population to give each community a well-being "score". A score allows an "at-a-glance" look at the relative well-being across First Nations and Inuit communities and comparing it with well-being in other Canadian communities. The higher the score (to a maximum of 100) the better the community well-being is expected (ISC, 2019). Source: ISC, 2019; Statistics Canada, 2016a-d.

The Ktunaxa Nation Economic Sector Mission is:

> *"To cultivate a healthy, self-sufficient Ktunaxa economy. Along with communities, partners and neighbours, achieve sustainable economic growth through equitable access to economic resources and opportunities, while respecting Ktunaxa culture and values"* (KNC, 2021c).

And the goals of the Sector are to build the Economic and Investment Sector structure and capacity to become the catalyst for a strong, diversified, and sustainable Ktunaxa economy. The goal also includes enhancing the economic development capacity of Ktunaxa communities and completing the corporate reorganization for KNC-owned businesses to focus on Ktunaxa entrepreneurs. In this way, the Ktunaxa Economic and Investment Sector aims to build Ktunaxa human capital while improving access to lands and resources and thus improving access to capital. The Ktunaxa Economic and Investment Economic Sector plans to establish an autonomous revenue base for the Ktunaxa government and work together with communities and other Sectors to create capacity building initiatives. The Ktunaxa Economic and Investment Sector aims to support the Ktunaxa Treaty Team and engage in relevant research and advocacy initiatives as well (KNC, 2021c). According to publicly available information, the Economic and Investment Sector is working to build a strong economy for the Ktunaxa citizens, and this is being done through the creation or expansion of businesses, joint ventures with other companies, and facilitating opportunities for the Nation (KNC, 2021c).

In 2020, the Ktunaxa Economic and Investment Sector launched the Ktunaxa Ready website to provide a consolidated location for anybody to research businesses that they would like to connect with. The website showcases Ktunaxa businesses to promote short and longer-term business to business relationships. Ktunaxa Ready makes it easy to identify Ktunaxa businesses and the intent is to provide information and contact details to simplify the process of making direct contact (KEIS, 2020). Initiated by the Ktunaxa Economic and Investment Sector, the Ktunaxa Ready Business Directory was developed in response to a need for a central resource with details on products and services that are available from Ktunaxa businesses. Ktunaxa businesses are strong, occupy many market sectors, and offer trusted resources, products and services that satisfy the needs of organizations throughout British Columbia. The directory provides a page for each Ktunaxa business containing contact details, links to websites and social media channels, a description of products and services with photographs, areasof operation and location maps. The directory is fully searchable and can be sorted by categories (KEIS, 2020).

The recently signed Teck Impact Management Benefits Agreement had a major impact on the Economic Investment Sector. The Procurement and Business Development Officer position was designed as per strategic needs of the Impact Management Benefits Agreement. The mandate is to support the development of Ktunaxa Businesses and align them with procurement opportunities from Teck (KNC, 2021c).

The Industry Engagement Officers work within the industry engagement function for the Ktunaxa Nation throughout the entire Ktunaxa Territory with special emphasis on economic capacity. These positions work closely with the Economic and Investment Sector Director and members of local and regional government agencies, industry, corporate representatives, and Ktunaxa Community Economic Development Officers (KNC, 2021c). According to publicly available information, the Business Development Officers are part of the Kootenay Aboriginal Business Development Agency (KABDA). KABDA helps Indigenous Entrepreneurs make their business dreams come true. KABDA Business Development

Officers assist with things like business plans and financial assistance through loan applications to various companies. Business Development Officers travel all over the Kootenays from Christina Lake to the Alberta Border and from Golden to the United States. Recently, KABDA and the Ktunaxa Nation Council developed a micro-lending program for Ktunaxa Nation Citizens. It is intended to provide financial support for entrepreneurial and general economic activities (KNC, 2021c).

As noted in Section 23.5.4, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. Ktunaxa Nation's rights and interests in relation to economic conditions may potentially be impacted as a result of Project-related effects to the reduction of access to country foods and increased food security concerns, and the reduction or elimination of potential commercial activities (e.g., tourism, activities related to cultural knowledge transfer and transmission, commercial harvesting) of the Ktunaxa Nation within the KNRI LSA.

It is noted that the exercise of Ktunaxa Nation's rights and interests related to access to areas of traditional activities (e.g., country foods to support the rights-based economy) in the KNRI LSA and the KNRI RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users), and the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

For Ktunaxa Nation's economic conditions, site-specific knowledge and use values associated with subsistence sites, water and land transportation, and related environmental features in relation to country foods, including seasonal access and usage from Ktunaxa Nation knowledge holders would support and guide the assessment of Project-related effects within the Project footprint, the KNRI LSA, and the KNRI RSA in terms of potential interactions during the Project lifecycle. At the time of the assessment the lack of this specific information requires continued consultation with the Ktunaxa Nation.

23.7.2 Summary of Ktunaxa Nation's Rights and Interests

The following Table 23.7-4 presents a summary of the Ktunaxa Nation's rights and interests as identified within the background and contextual information provided in Section 23.7 and preliminary consultation with Ktunaxa Nation in relation to the Project, as well as the feedback received on this chapter (Appendix 23-A, Table 23.A-2). All information compiled and presented in this summary has been authored by NWP utilizing the HHRA and sensory receptor locations related to current and rights-based use within the Project footprint and the KNRI LSA, input from the Ktunaxa Nation where provided, and secondary sources that are publicly available. The information presented is not intended to supersede traditional knowledge or specific information of the citizens and Elders of the Ktunaxa Nation (IAAC, 2015a).

Table 23.7-4: Summary of Understanding of Ktunaxa Nation's Rights and Interests in Relation to the Project

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
Water Sector	As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access water in sufficient quantity and quality, in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations. The potential for impacts to Ktunaxa Nation's rights and interests related to water also include water quality and flow related to the potential for biological/ecological effects due to oxidation of waste rock materials, stream crossings that may lead to alteration of waterbodies, and potential water diversions. Ktunaxa trails, harvesting areas, and cultural use areas are often oriented along streams, rivers, and lakes within Ktunaxa ʔamakʔis and access to clean drinking water is essential to the ability of Ktunaxa citizens to spend time on the land, especially when travelling or hunting for extended periods in remote areas. Water bodies are part of the cultural landscape – shaped by flooding – which is central to teaching and passing on Ktunaxa knowledge and language. Along with the use of water rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water according to the Ktunaxa law, ʔaknumu¢tiɬiɬ. From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaƛ'a'k q̓apiqapsin (all living things). Over time this may lead to significant impacts on Ktunaxa stewardship responsibilities (ʔaknumu¢tiɬiɬ) and compromises the transmission of knowledge and practices related to those water systems for future Ktunaxa generations. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use for water. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa Nation cultural opportunities that are relatively free from the impacts of industrial coal mining. No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was available at this time. Confidence in water quality is compromised in portions of the Michel Creek and the Elk River due to the presence of contaminants that have been released by on-going coal-mining activities. It is the perspective of the Ktunaxa Nation that their rights related to water use in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., water quality concerns in the Elk Valley).

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
Lands and Resources Sector: Fishing	Ktunaxa Nation has the right to harvest fish and have access to water resources. They also are understood to have interests related to fish species, the health of fish and related aquatic resources, alteration or loss of fish habitat, and potential for increased access to waterbodies that may result in potential increases to fishing pressure. Ktunaxa Nation has indicated that Westslope Cutthroat Trout, Kokanee, Burbot, Bull Trout, Rocky Mountain Whitefish, Rainbow Trout, Sturgeon, and freshwater mussels are species of importance. Access to healthy aquatic systems for fish to support fishing is important to Ktunaxa Nation. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use for fishing purposes. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional fishing purposes as well as other watercourses in the KNRI LSA. During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds sustaining healthy Westslope Cutthroat Trout populations, and that as per the KNC, these two watersheds also provide Ktunaxa Nation cultural opportunities that are relatively free from the impacts of industrial coal mining. No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was available at this time. It is the perspective of the Ktunaxa Nation that their rights related to fish and fishing opportunities in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity in the Elk Valley (e.g., reduction in fish populations, reduced access to waterways, water quality concerns).
Lands and Resources Sector: Hunting and Trapping	Hunting and trapping continue to be a traditionally and culturally important activity for subsistence, medicinal, and ceremonial purposes for Ktunaxa Nation. Ktunaxa people have cultural importance (including hunting or trapping rights) for the following species: • Ungulates – deer (mule and whitetail) and elk in their territory; bison (Iinii), mountain goat, bighorn sheep; and moose. • Carnivores – black bear, grizzly bear, wolverine, cougar, wolf, Canada lynx, bobcat, fisher, and coyote. • Small mammals – badger, little brown myotis, Townsend's big-eared bat, southern red-backed vole, least chipmunk, red-tailed chipmunk, beaver, and river otter. • Birds - Peregrine Falcon, Prairie Falcon, Northern Goshawk, Swainson's Hawk, Short-eared Owl, Grouse, Great Blue Heron, American Avocet, American Bittern, American Dipper, Lewis Woodpecker, Williamson's Sapsucker, Long-billed Curlew, Black Swift, Barn Swallow, Rusty Blackbird, Evening Grosbeak, Eared Grebe, Migratory Raptor Guild, and Woodpecker Guild (a culturally important species). • Waterfowl – Harlequin duck and Canada geese. As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access wildlife species such as grizzly bear, moose, deer, elk, fur-bearing mammals, and migratory birds, including rare and endangered species. Ktunaxa Nation have expressed concerns relating to the impacts from the alteration or loss of wildlife habitat and disruption to migration movements and the increased potential hunting and trapping

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
	pressure and wildlife mortality. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use for hunting and trapping purposes. There is also potential for Ktunaxa Nation to utilize the KNRI RSA for traditional hunting and trapping activities. It is the perspective of the Ktunaxa Nation that their rights related to hunting and trapping in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., reduction in wildlife populations, reduced access to areas for traditional activities).
Lands and Resources Sector: Harvesting and Gathering	As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access culturally significant plants and the related harvesting and gathering activities may potentially be impacted by the alteration or loss of vegetation and increased potential dust loading. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use for harvesting and gathering activities. There is also potential for Ktunaxa Nation to utilize the KNRI RSA for undertaking traditional and ceremonial activities. Many medicines, foods and materials that are provided by Ktunaxa Nation's traditional territory are still important. Today, there are a diversity of culturally important plants in these drainages that the Ktunaxa rely on for foods, medicines, and spiritual uses. Ktunaxa Nation citizens potentially harvest and gather plants such as: • Western red cedar, black cottonwood, Pacific yew, beaked hazelnut, highbush and lowbush cranberry, Devil's club, Oregon grape, red osier dogwood, currants and gooseberries, and cow parsnip. • Roots such as bitterroot, camas, nodding onion, biscuit root, balsamroot, yampa, tiger lily, yellow avalanche lily, mariposa lily, bugleweed, spring beauty, wild thistle, greens (e.g., sprouts, stems, leaves), prickly pear, lichen, cambium, lodge pole pine, ponderosa pine, and cottonwood were gathered for food. • Choke-cherry bark, kinnikinnick, huckleberry, shaggy mane mushroom, and ?ayut – a culturally important plant in the genus Ligusticum. It is the perspective of the Ktunaxa Nation that their rights related to harvesting and gathering sites in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to areas for traditional activities).

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas	As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. Ktunaxa Nation citizens potentially have ceremonial/sacred activities tied to environmental and ecological attributes available within the Project footprint. The Ktunaxa have names for geographically and culturally significant locations in the Project footprint, including the Grave Prairie Cultural Landscape. KNC also noted the unique cultural importance of Grave Prairie as a sacred cultural landscape and that industrial and related cumulative effects in the Elk Valley have already impacted other cultural and stewardship values. Areas and sites of cultural significance also include Qukin ʔakit‡aʔis (Raven's House or Crowsnest Mountain) and the Ku‡wiaʔki (Crowsnest Lake) which are within the KNRI RSA. The Ktunaxa people have a deep spiritual connection to the animal world and to the grizzly bear. Qat'muk is a very special place where the Grizzly Bear Spirit was born, goes to heal itself, and returns to the spirit world. The Ktunaxa hold the headwaters of Crowsnest River (which is within the KNRI LSA) to be especially sensitive and sacred, as it is considered the home of the creation-being Raven. Nearby areas, extending into the Crowsnest Pass (which is within the KNRI LSA), and including Crowsnest Lake and areas east of the Rockies, contains values of central cultural and ceremonial importance for Ktunaxa people. There is also potential for Ktunaxa Nation to utilize the KNRI RSA for traditional ceremonial/sacred activities. It is the perspective of the Ktunaxa Nation that their rights related to ceremonial practices and use of sacred areas in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites).
Traditional Knowledge and Language Sector: Access and Travel Routes	As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. It is expected that the Ktunaxa Nation utilizes the KNRI LSA for maintaining their seasonal round. Ktunaxa Nation continues to access the upper Elk and Fording Valleys for trails and transportation that are associated with resource harvesting, cultural practices, and camp sites. The Ktunaxa Nation has identified some HHRA and sensory receptor locations related to current and rights-based use within the Project footprint and the KNRI LSA that are utilized for travel through the area. Ktunaxa Nation citizens potentially also have travel routes tied to hunting trails or wildlife trails or key habitat types such as waterbodies in the KNRI LSA. Ktunaxa families maintained a seasonal round that included travel through the Crowsnest Pass for harvesting bison until at least the 1880's. Travel and use of the pass for cultural purposes continued following development of road and rail links. It is the perspective of the Ktunaxa Nation that their rights related to access and travel in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users).

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
Traditional Knowledge and Language Sector: Physical and Cultural Heritage	As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact unknown historical or archaeological sites. There is potential for Ktunaxa Nation utilizing the KNRI LSA for undertaking traditional and ceremonial activities. Ktunaxa Nation potentially has physical and cultural heritage sites related to the archeological potential within the Project footprint. Ktunaxa knowledge holders have identified the Grave Prairie Cultural Landscape as culturally significant within the Project footprint. KNC also noted the unique cultural importance of Grave Prairie as a sacred cultural landscape and that industrial and related cumulative effects in the Elk Valley have already impacted other cultural and stewardship values. Areas and sites of cultural significance also include Crowsnest Pass (within the KNRI LSA), the Qukin ʔakit‡aʔis (Raven's House or Crowsnest Mountain), and the Ku‡wiaʔki (Crowsnest Lake) which are within the KNRI RSA. Ktunaxa Nation considers water rights to be a critical issue and has a long history of defending its right to water and for the protection of the Elk Valley and its watersheds. It is the perspective of the Ktunaxa Nation that their rights related to physical and cultural heritage in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity (e.g., reduced access to cultural sites).
Social and Health Sector	Based on publicly available information, social and health conditions for the Ktunaxa Nation are regarded as an interest within their Traditional Territory. With a higher birth rate, on- and off-reserve residence, the quality, and conditions of housing, as well as access issues including adequate stocks and affordability are the challenges the KNC has expressed a commitment to addressing. The Social Investment Sector is working with B.C. Housing to develop and implement additional urban supportive housing. Ktunaxa Nation's Regional Social Governance researches, develops, and assists in the implementation of Ktunaxa Nation social governance systems that support the elimination of the access-to-service gaps currently facing Indigenous people in the Region. The Ktunaxa First Nation Health Authority Community Engagement hub brings grassroots voices into the implementation of the Tripartite First Nations Health Plan to work with First Nations communities to help determine and achieve their own health priorities. These hubs are groups of First Nations communities who agree to plan, collaborate, and communicate to meet their nation's health priorities. As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. It is the perspective of the Ktunaxa Nation that their interests related to social and health conditions in the KNRI LSA and RSA have likely been impacted by past and ongoing development

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
	activity (e.g., reduced access to cultural sites, few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users, reduced access to healthy country foods, potential for contamination of country food resources). The GBA+ study carried out in 2023 was focused on socio-community barriers affecting Indigenous employment in mining as well as the safety and security of Indigenous women, girls and Two-Spirited and Indigenous LGBTQQIA+ people in relation to mining. These sub-groups were identified based on the potential for Indigenous Peoples to benefit from employment in mining but with an awareness of socio-community barriers that can prevent them from reaching that potential and safety and security issues associated with mining which Indigenous women, girls, and Two-Spirited and Indigenous LGBTQQIA+ people in the Elk Valley region as well as other mining areas across Canada may experience. The GBA+ interviews revealed a variety of socio-community related barriers and concerns related to the mining industry in Canada and the Elk Valley region. The themes have been classified as housing barriers, childcare, cost of living, the safety of Indigenous women, girls, and Two-Spirited and Indigenous LGBTQIAA+ people, health barriers, and other social and cultural barriers. It is to be noted that positive responses received, and interviews conducted with leaders, female, youth, and Elders as members of the Yaq̓it ʔa·knuqƛiʾit First Nation may have included perspectives of the interviewees that may not be representative of the Yaq̓it ʔa·knuqƛiʾit First Nation. The GBA+ analysis also included a review of statistical information to identify potential safety and security issues for Indigenous women, girls and 2SLGBTQQIA+ people who may be living in Sparwood, Elkford, or Fernie. In general, the Elk Valley region has a lower level of crime than the provincial average with the exception of Fernie which has a higher rate of harassing communications. While these statistics indicate that the Elk Valley is a relatively safe region, they do not indicate whether crimes were committed against Indigenous women, girls, and Two-Spirited and Indigenous LGBTQQIA+ people.
Education and Employment Sector	Based on publicly available information, education and employment conditions for the Ktunaxa Nation are regarded as an interest within their Traditional Territory. The KNC Employment Service Centre offers a range of self-serve resources to meet the needs of clients who prefer to work independently on their job search. The Centre provides a temporary job pool list where an active list of job seekers is maintained for employers needing either short- or long-term employees and labour market information including information on industry employment partners and members of the Employment team are available to assist with navigating the Service Centre, answer job search questions, and provide referrals to other community resources or to get community members started with a supported plan. As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., transmission and transfer of cultural knowledge) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional activities. It is the perspective of the Ktunaxa Nation that their interests related to education and employment conditions in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity.

Ktunaxa Nation Sector: Right and Interest	Indigenous Resource, Use, or Species of Interest
Economic Investment Sector	Based on publicly available information, economic conditions for the Ktunaxa Nation are regarded as an interest within their Traditional Territory. The Ktunaxa Economic and Investment Sector aims to build Ktunaxa human capital while improving access to lands and resources and thus improving access to capital. The Sector plans to establish an autonomous revenue base for the Ktunaxa government and work together with communities and other Sectors to create capacity building initiatives and it aims to support the Ktunaxa Treaty Team and engage in relevant research and advocacy initiatives as well. The Ktunaxa Economic and Investment Sector launched the Ktunaxa Ready website to provide a consolidated location for anybody to research businesses that they would like to connect with. As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting, and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. It is the perspective of the Ktunaxa Nation that their interests related to access to areas of traditional activities (e.g., country foods to support the rights-based economy) in the KNRI LSA and RSA have likely been impacted by past and ongoing development activity.

23.8 Assessment of the Effects of the Changes to the Environment on Ktunaxa Nation

This section outlines the assessment of Project changes to components to the environment that are understood to be important to Ktunaxa Nation[21] and its member Bands (IAAC, 2015a). The effects assessment in this section is focused on the environmental Sectors identified by Ktunaxa Nation and which categorize their use of lands and resources for traditional purposes in terms of water, fishing, hunting and trapping, harvesting and gathering, ceremonial and sacred sites, access and travel routes, as well as physical and cultural heritage and social, health, and economic conditions.

The assessment of the effects of the changes to the environment compares projected future conditions with the Project against projected future conditions without the Project and considers that both existing and future conditions are influenced by past and ongoing development activities. These have been considered in the description of the baseline conditions in Section 23.7. This assessment of the effects of changes to the environment is considered in the assessment of impacts on the rights and interests of the Ktunaxa Nation that is subsequently presented in Section 23.11. The methods for assessing potential effects on the Ktunaxa Nation in relation to the Project followed the approach outlined in Chapter 5 and previously described in Section 23.3.

In the absence of specific input being received from Ktunaxa Nation (e.g., Project-specific Traditional Knowledge/Traditional Land and Resource Use study for the Project footprint and the KNRI LSA), KNC's Crown HHRA and sensory receptor locations related to current and rights-based use within the Project footprint and the KNRI LSA (described in Section 23.7.1), publicly available information (described in Section 23.4.1), and the preliminary understanding of Ktunaxa Nation's rights and interests potential rights and interests (described in Section 23.5.4) were utilized to determine components of the environment of potential importance to the Ktunaxa Nation. This assessment of changes to the environment is largely based on the assessment work of other study disciplines/VCs as described in detail elsewhere in this application in combination with the information sources described previously. All information considered in the assessment of potential Project effects is not intended to supersede traditional knowledge or specific information of the citizens and Elders of Ktunaxa Nation (IAAC, 2015a).

23.8.1 Assessment Methods

The methods for assessing potential effects that may result in potential changes to the environment that may affect the Ktunaxa Nation and their rights and interests in relation to the Project followed the approach outlined in Chapter 5 and is described in Section 23.3.

23.8.1.1 Thresholds for Determining the Significance of Residual Effects

Threshold criteria used to determine the significance of residual effects on each relevant VC (i.e., receptor, specified intermediate VCs, and federal VCs) are as outlined in Chapter 5. Significance thresholds were established in consideration of the technical guidance for *Determining Whether a Designated Project is*

[21] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƛi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

Likely to Cause Significant Adverse Environmental Effects under the CEAA 2012 as well as the Ktunaxa Nation Council's *Recommended Minimum Standards for Proponents in Determining Significance of Effects in Environmental Assessments (EAs) in the Elk Valley* (Candler, 2020). Thresholds used to determine the significance of residual effects to Ktunaxa Nation related to the Project include:

- Potential change to use of water for traditional purposes - A significant residual effect to use of water for traditional purposes is defined as the permanent loss of access or ability to conduct traditional activities which cannot be mitigated.
- Potential change to use of lands and resources for traditional purposes - A significant residual effect to the use of lands and resources for traditional purposes is defined as the permanent loss of access or ability to conduct traditional land and resource use which cannot be mitigated.
- Potential change to physical and cultural heritage, and potential change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance - A significant residual effect to physical and cultural heritage is defined as the permanent loss of physical and cultural heritage through the permanent loss of a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to Ktunaxa Nation, which cannot be mitigated.
- Potential change to social, health, and economic conditions - Specific to changes in health conditions, a significant residual effect to social and health conditions is defined as persistent, frequent, and long-lasting exceedance in ecological and human health risk assessment hazard quotients (HQs) and risk magnitudes for non-carcinogenic and carcinogenic contaminants of potential concern. Additionally, a significant residual effect to socio-economic conditions is defined as the permanent loss of access to social and economic resources used by Ktunaxa Nation as a result of the Project and that cannot be mitigated for.

23.8.1.2 Determination of Valued Components

This section outlines the Valued Components considered in the assessment of the effect of the Project on the environment that are of interest to the Ktunaxa Nation and which in turn could result in impact to the traditional activities of Ktunaxa citizens.

To promote a comprehensive assessment of the potential effects associated with a proposed project, environmental assessments in B.C. employ a values-based framework. The values-based framework relies on the use of VCs to focus environmental assessments on aspects of the natural and human environment that are of greatest importance to society and have the potential of being affected by a proposed project. The EAO (B.C. EAO, 2013) defines a VC as:

> *"components of the natural and human environment that are considered by the proponent, public, Aboriginal groups, scientists and other technical specialists, and government agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance."*

Similarly, at a federal level, the Impact Assessment Agency of Canada (IAAC) defines VCs as *"environmental, biophysical or human features that may be impacted by a project"* (IAAC, 2015b) and includes features that hold scientific, social, cultural, economic, historical, archaeological, or aesthetic importance. The identification of VCs provides a way to focus on what is most important regarding a particular project.

The Ktunaxa Nation Council participated in various meetings from 2012 through 2020 focusing on scoping, addressing proposed Project changes, and discussions on modelling, field studies, and exploration activities. The Ktunaxa Nation Council also provided input, direction, and (in some cases) participation in selected Project baseline programs. The VCs for this assessment were determined through the following specific activities:

- An initial Project meeting that took place on May 14, 2012 at the KNC offices in Cranbrook, B.C. to review the Project description;
- Review of other materials, including KNC governance, policy and planning objectives for the Elk Valley beginning in 2012 through 2019;
- A tour of the proposed Project area with KNC representatives including Working Group members (provincial and federal government representatives) on October 14, 2015;
- An in-person Project Working Group meeting on October 15, 2015 to review and discuss proposed Project VCs;
- The KNC reviewed and commented on the draft VCs for the Environmental Assessment and the draft Application Information Requirements (AIR) for the Project from 2015 to 2018;
- A community open house held on May 25, 2016 in Sparwood, B.C. on the draft VCs for Environmental Assessment;
- KNC feedback on wildlife VCs in a terrestrial Working Group meeting on February 22, 2018; and
- The selected VCs were presented in the final AIR, issued April 26, 2018 (B.C. EAO, 2018), and the final EIS Guidelines, issued February 20, 2015 (IAAC, 2015b).

As noted by the First Peoples' Cultural Council, not all heritage is "tangible" and can be quantified as physical sites and objects. Intangible cultural heritage for B.C. First Nations includes traditional knowledge, practices, and skills which can define culture such as language, oral history, art techniques, rituals, stories, intergenerational transfer of knowledge, representations, values, landscapes[22], and place names. The connection that Ktunaxa Nation have with the land is an example of intangible cultural heritage, and during a period of environmental change, rapid urbanization, and industrial development, maintaining that connection increases in significance. Ktunaxa Nation's language and culture, which are intangible cultural resources are understood to include non-site-specific values that are based in Ktunaxa Traditional Ecological Knowledge, but which may be spatially indistinct or difficult to record using maps. For this assessment, wherever possible, these intangible cultural heritage resources are included within the Ktunaxa Traditional Knowledge and Language Sector.

For the Ktunaxa Nation, cultural areas and properties (tangible cultural resources) include site-specific values that may be mapped and are reported as specific and spatially distinct (though the locations may be considered confidential). Site-specific values, such as cabins, or kill sites, reflect specific instances of use that anchor the wider practice of rights and livelihood within a particular landscape. Site-specific values imply a much wider range of activities, and a wider geographic area, upon which the meaningful practice of that use relies. The actual area covered by recorded site-specific use values should be understood as a portion of the area actually required for the practice of Ktunaxa livelihood (KNC et al., 2015). Documentation of site-specific data include five categories of site-specific values where available:

[22] Parks Canada defines an aboriginal cultural landscape as: *"a place valued by an Aboriginal group (or groups) because of their long and complex relationship with that land. It expresses their unity with the natural and spiritual environment. It embodies their traditional knowledge of spirits, places, land uses, and ecology. Material remains of the association may be prominent, but will often be minimal or absent (Parks Canada, 2008)".*

- Subsistence values (including harvesting and kill sites, plant food collection areas, and trapping areas);
- Habitation values (including temporary or occasional, and permanent or regularly used camps and cabins);
- Cultural/spiritual values (including place names, burials, gathering places, ceremonial areas, and medicinal plant collection areas);
- Transportation values (including trails, water routes, and navigation sites such as landmarks, or passes); and
- Environmental feature values (including specific highly valued fish or wildlife habitat, mineral licks, or other specific environmental features).

The categories listed above in terms of site-specific values correspond to the Sectors listed in Section 23.7 and are utilized mostly under the Lands and Resources Sector unless noted otherwise in the Traditional Knowledge and Language Sector. This is acknowledged in the site-specific data as it relates to fishing, hunting and trapping, harvesting and gathering, ceremonial and sacred areas, access and travel routes, and physical and cultural heritage outlined in Section 23.7.1 where the categories for the HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use are identified (Figure 23.6-1).

Quantifiable indicators such as site-specific values are utilized where they may be effective in gauging potential direct, indirect, and induced effects of the Project. It is to be noted that where applicable, quantifiable indicators for social, health, economic conditions were challenging to select as they can be broader and tend to be potentially affected by a wide range of other factors. As a further complication, in many instances baseline data are not easily accessible and in in the absence of quantitative baseline data, qualitative methods have been used to identify gaps in the relationship between the Ktunaxa Nation and the Project-related effects. Wherever possible, baseline and trends for social and economic conditions of Ktunaxa Nation are compared to those of non-Indigenous populations.

For the purpose of the assessment of the Project's potential for impact on Ktunaxa Nation, the assessment of changes to the environment is organized based on Ktunaxa Nation's rights and interests as identified in Sectors described in Section 23.7. The Sectors are outlined as:

- Water Sector referring to groundwater and surface water quantity and quality cross-referenced with fish and fish habitat as well as aquatic resources as represented by benthic invertebrates;
- Lands and Resources Sector representing uses of lands and resources for various traditional purposes (including fishing, hunting and trapping, and harvesting and gathering;
- Traditional Knowledge and Language Sector including intangible cultural heritage resources and ceremonial/sacred areas, access and travel routes, and physical and cultural heritage;
- Social and Health Sector;
- Education and Employment Sector; and
- Economic Investment Sector.

Due to the interdependence of the Sectors in some cases, VCs are often applicable to more than one Sector and in some cases apply to all Sectors. For the purposes of this assessment, VCs have been allocated primarily to one Sector, and are cross-referenced under other Sectors. Cumulative effects to all the Sectors are discussed separately in Section 23.8.3 as the assessment crosses all of the above identified Sectors.

Table 23.8-1 shows each VC listed under the Sector to which it is relevant and those that cross Sectors may be listed more than once. Where appropriate, effects on the Indigenous resources, use, or species of interest outlined in Table 23.8-1 were evaluated using the results of receptor and intermediate VC effects assessments (e.g., grizzly bear is a receptor VC and alteration of surface water quantity is an intermediate VC). In some cases, no receptor or intermediate VC corresponds to the Indigenous resource, use, or species of interest (e.g., bison is not a VC and not in the Project's area of influence) and as such, representative VCs were selected to serve as surrogates for the effects assessment on Ktunaxa Nation's rights and interests. Where no appropriate representative VC was identified to serve as a surrogate for effects, additional biophysical information from Project-specific baseline studies, HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use, and publicly available information was used, where applicable, to allow for an understanding of potential effects to Indigenous resources, use, or species of interest (e.g., bison is not a VC being assessed for the Project and yet information on its cultural impact on Ktunaxa Nation's rights and interests can be utilized to assume that the ungulate VCs being assessed for the Project may have cultural significance).

For the Water Sector, surface water quantity and quality are the VCs that are assessed as they interact with groundwater, fish and fish habitat, and aquatic resources. Where a receptor and/or intermediate VC is not carried forward under a specific Sector in the potential Project-related effects assessment (e.g., Recreation and Tourism under the), it may be further assessed during the cumulative effects assessment or addressed in a broader manner in the context of potential impact on Ktunaxa rights and interests in the assessment, where applicable. Similarly, where certain Sectors are detailed in Section 23.7, potential impacts on Ktunaxa Nation's rights and interests may not have been identified (and/or not requiring further mitigation measures) and therefore the Sector is not carried forward through any VC interactions in the assessment process (e.g., the Education and Employment Sector).

Table 23.8-1: Valued Components by Ktunaxa Nation Sectors for the Assessment

Ktunaxa Nation Sector	Sector Descriptors	Identified Receptor/Intermediate VC
Water	Ecosystem health, including water quality, lake stewardship, and channel morphology	• Groundwater Quantity and Quality • Surface Water Quantity and Quality • Fish and Fish Habitat, as represented by: o *Westslope Cutthroat Trout* o *Bull Trout* o *Kokanee* o *Burbot* o *Longnose Sucker* o *Mountain Whitefish* • Aquatic Resources, as represented by Benthic Invertebrates

Ktunaxa Nation Sector	Sector Descriptors	Identified Receptor/Intermediate VC
Lands and Resources	Biodiversity, including culturally important ecosystems, wildlife, culturally important plants, and fish	• Groundwater Quantity and Quality • Surface Water Quantity and Quality • Air Quality • Greenhouse Gas Emissions • Climate • Noise and Vibration • Wildlife Health • Aquatic Resources as listed above • Fish and Fish Habitat, as listed above • Landscape and ecosystems: • Avalanche Chutes • Grassland Ecosystems • Wetland Ecosystems • Riparian Habitat • Old Growth and Mature Forests • Vegetation: o *Listed and Sensitive Plant Communities* o *Limber Pine* o *Whitebark Pine* o *Culturally Significant Plants and Ecosystems* • Wildlife: o *Carnivores (Grizzly Bear, Wolverine, American Badger, American Marten, and Canada Lynx)* o *Ungulates (Elk, Bighorn Sheep, Mountain Goat, and Moose)* o *Bats (Little Brown Bat, Northern Myotis, and Eastern Red Bat)* o *Amphibians (Western Toad and Columbia Spotted Frog)* o *Birds:* – Waterbirds (Harlequin Duck, Red-winged Blackbird, Spotted Sandpiper, Mallard, American Dipper) – Raptors (Northern Goshawk) – Migratory Birds (Olive-sided Flycatcher and Woodpeckers) o *Gillette's Checkerspot*
	Ecosystem health, including water quality, air quality, lake stewardship, and channel morphology	
	Long term soil productivity and slope stability	

Ktunaxa Nation Sector	Sector Descriptors	Identified Receptor/Intermediate VC
Traditional Knowledge and Language	Ktunaxa language and culture (intangible cultural resources)	• Archaeological Resources
	Cultural areas and properties (tangible cultural resources) including all site specific and non-site-specific use and occupancy values	
	Future Ktunaxa relationship with and knowledge of the land	
Social and Health	Housing, transportation, and social services	• Housing and Community Services Infrastructure • Community Health and Well-Being • Human Health • Wildlife Health • Land Use and Access • Recreation and Tourism • Visual Aesthetics
	Ecological approach to human health, and confidence in country foods	
Education and Employment	Education and training	• Economic Conditions • Community Health and Well-being
	Employment	
Economic Investment	Business development	• Economic Conditions • Recreation and Tourism • Community Health and Well-being
	Ktunaxa rights-based economy	
Cumulative Effects	Assessment included at the Sector level and discussed separately in Section 23.7.4 as the assessment crosses all of the above identified Sectors	• All Receptor and Intermediate VCs listed above carried forward though the potential residual effects assessment

It is noted that the assessment of effects on intermediate and receptor VCs, such as wildlife, plants, fish, social, health, and economic conditions may not fully capture the conditions that influence Indigenous historic and current use of lands and resources for traditional purposes. It is important to note that the assessment of effects to Indigenous resources, use, and species of interest in this section was not undertaken from the standpoint of the Ktunaxa Nation's experience of being on the land as no such information was conveyed. Additional information may be provided by Ktunaxa Nation throughout the consultation process that would be incorporated into the effects assessment process and mitigation planning in addition to what is presented in this document. As noted in Section 23.7.1, current use is reflective of current use of lands and resources for traditional purposes as well as potential future use as desired by Ktunaxa Nation.

Karst which is an important landscape, ecosystem, and groundwater pathway as identified by KNC (Appendix 23-A, Table 23.A-1) was included in the analysis of all wildlife VCs (specifically bat modelling incorporated the karst potential), terrain assessment, and the groundwater Intermediate VC. Karst potential has been incorporated into baseline data collection using the following sources and analysis:

- Overlay of provincial mapping for karst;

- Review of the drilling campaigns' geophysical logs;
- Review of geochemical analysis of the rock; and
- Review of detailed LiDAR data of the proposed footprint and adjacent areas showing potential karst cavern outcrops.

For the quantitative human health and ecological risk assessment (HHERA) in Chapter 22, the focus was on the provided Ktunaxa receptor locations which are understood to represent the presence and use of land in the Project vicinity by community members. Human health risk assessment (HHRA) and ecological risk assessment (ERA) define and quantify potential health risks, which in the present instance serve as surrogate measures of potential health impacts from the Project and are detailed in Chapter 22. The baseline assessment method is fundamentally as described in Chapter 22 and relies primarily on measured biophysical data, especially baseline studies of concentrations of contaminants of potential concern in environmental media and is conducted to establish current "benchmark risk estimates" in the form of either hazard quotients (HQs) or as incremental lifetime cancer risks (ICLRs). The baseline benchmarks are subsequently used in the Project Case and Cumulative Case in Chapter 22 to examine the "incremental" risk resulting from releases associated with the Project and reasonably foreseeable future projects or activities. Documents from which Base Case information and data were obtained relevant to the development of the quantitative HHERA are as follows:

- Baseline Air Quality: *Air Quality Baseline Report – Crown Mountain Coking Coal Project* (Dillon, 2020a);
- Baseline Soil Data: *Baseline Soil and Vegetation Chemistry Report – Crown Mountain Coking Coal Project* (Keefer Ecological Services Ltd., 2021);
- Baseline Water Quality: *Surface Water Quality Baseline Report: 2012 to 2019 Surface Water Quality Sampling Results – Crown Mountain Coking Coal Project* (Dillon, 2020b);
- Baseline Sediment Quality: *Crown Mountain Coking Coal Project – Aquatic Health Baseline Sampling Report* (Lotic Environmental, 2020); and
- Baseline Fish Tissue Quality: *Crown Mountain Coking Coal Project – Aquatic Health Baseline Sampling Report* (Lotic Environmental, 2020).

In addition to use of baseline studies on environmental quality noted above, baseline food chain modelling was conducted to ascertain the baseline dietary exposure and risk to wildlife health and human health. Food chain modelling is described further under Chapter 22 and in detail in the technical support document on human health and ecological risk assessment (Chapter 22, Appendix 22-A). As indicated in Chapter 22, there are no significant residual effects to ecological or human health anticipated as a result of the Project.

Chapter 23 identifies the potential Project-related impacts to Ktunaxa Nation's rights and interests to inform the EA regulatory decision-making process and planning of the Project in Section 23.11. Through this effects assessment and continued consultation with the Ktunaxa Nation, Project-related effects to Ktunaxa Nation Title and Rights and related interests may continue to be identified, and where applicable, mitigated, or accommodated.

23.8.1.3 Assessment Boundaries for the Effects of Changes to the Environment on the Ktunaxa Nation

Study areas represent the spatial boundaries that encompass the areas, at appropriate scales and spatial extents, in which the Project is anticipated to interact with a VC or VC group (Chapter 5). For the purposes of the assessment of impacts to Ktunaxa Nation's rights and interests, three spatial boundaries were considered in the assessment: the Project footprint, the KNRI LSA, and the KNRI RSA.

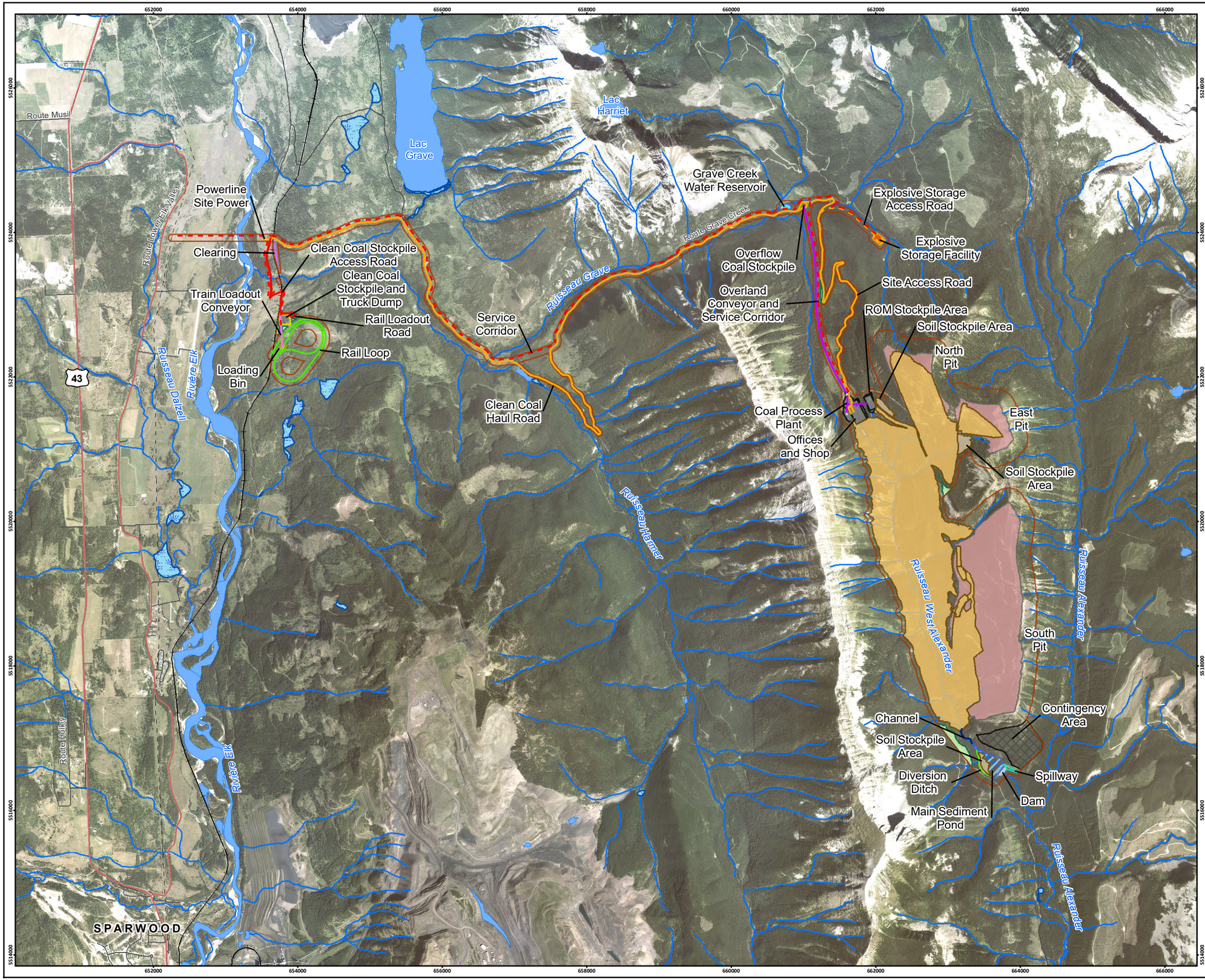
The Project footprint is the area of physical disturbance associated with the Project and encompasses all anticipated Project components, both temporary and permanent, covering approximately 13 square kilometres (km^2) or 1,283 hectares (ha). The Project footprint is the area of physical disturbance associated with the Project (Figure 23.8-1) and consists of the proposed surface extraction areas (three pits - north pit, east pit, and south pit); mine rock management areas; mine infrastructure and support facilities, including the plant area (raw coal stockpile area and processing plant); clean coal transportation route; rail loadout facility and rail siding; and ancillary facilities (i.e., water supply, power supply, natural gas supply, water, sewage treatment, fuel storage and explosives storage).

The KNRI LSA and RSA were developed in consideration of VCs (e.g., air quality) or VC groups (e.g., wildlife) and technical and scientific information (e.g., location and distribution of VCs) that may be potentially relevant to the assessment of Ktunaxa Nation's rights and interests (Figure 23.8-1 and Figure 23.8-2). The KNRI LSA, which is essentially the zone of influence of the Project on the Ktunaxa Nation's rights and interests, encompasses the LSAs of receptor and intermediate VCs and VC groups in which Ktunaxa Nation may have constitutionally protected rights to practice traditional activities, such as for fishing and hunting and gathering.

The KNRI RSA encompasses the RSAs of the receptor and intermediate VCs and VC groups in which Ktunaxa Nation may have constitutionally protected rights to practice traditional activities. The VC-specific study areas are outlined in each VC assessment chapter. The KNRI LSA is approximately 88,500 ha, while the KNRI RSA is approximately 3,193,000 ha.

The VC study areas (Figure 23.8-3) relevant to the assessment of effects to Indigenous historic and current use of lands resources for traditional purposes include:

- Project footprint;
- Fish and Fish Habitat LSA;
- Aquatic LSA and RSA;
- Terrestrial LSA and RSA;
- Landscapes and Ecosystems LSA and RSA;
- Grizzly Bear RSA;
- Birds, Bats, and Amphibians RSA;
- Socio-Community LSA and RSA;
- Economic Conditions LSA and RSA;
- Land Use and Access LSA and RSA; and
- Archaeological Resources LSA and RSA.



Crown Mountain Coking Coal Project

Figure 23.8-1
Project Footprint and Infrastructure

LEGEND

- Project Footprint
- Channel to Ultimate Pond
- Clean Coal Haul Road\Site Access
- Explosive Storage Access\Facility Road
- Rail Loadout Road
- Rail Loop
- Service Corridor
- Coal Process Plant Conveyor
- Coal Process Plant Duct
- Train Loadout Conveyor
- Waste Dump
- Mined Area
- Clean Coal Stockpile and Truck Dump
- Overflow Coal Stockpile
- Soil Stockpile Area
- Explosive Storage Facility\Pad
- Loading Bin
- Plant Site\ROM Stockpile Area
- Powerline-Site Power
- Water Reservoir
- Main Sediment Pond
- Dam
- Spillway
- Diversion Ditch
- Clearing
- Additional Area
- Contingency Area
- Highway
- Arterial/Collector Road
- Local/Resource Road
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- British Columbia/Alberta Border

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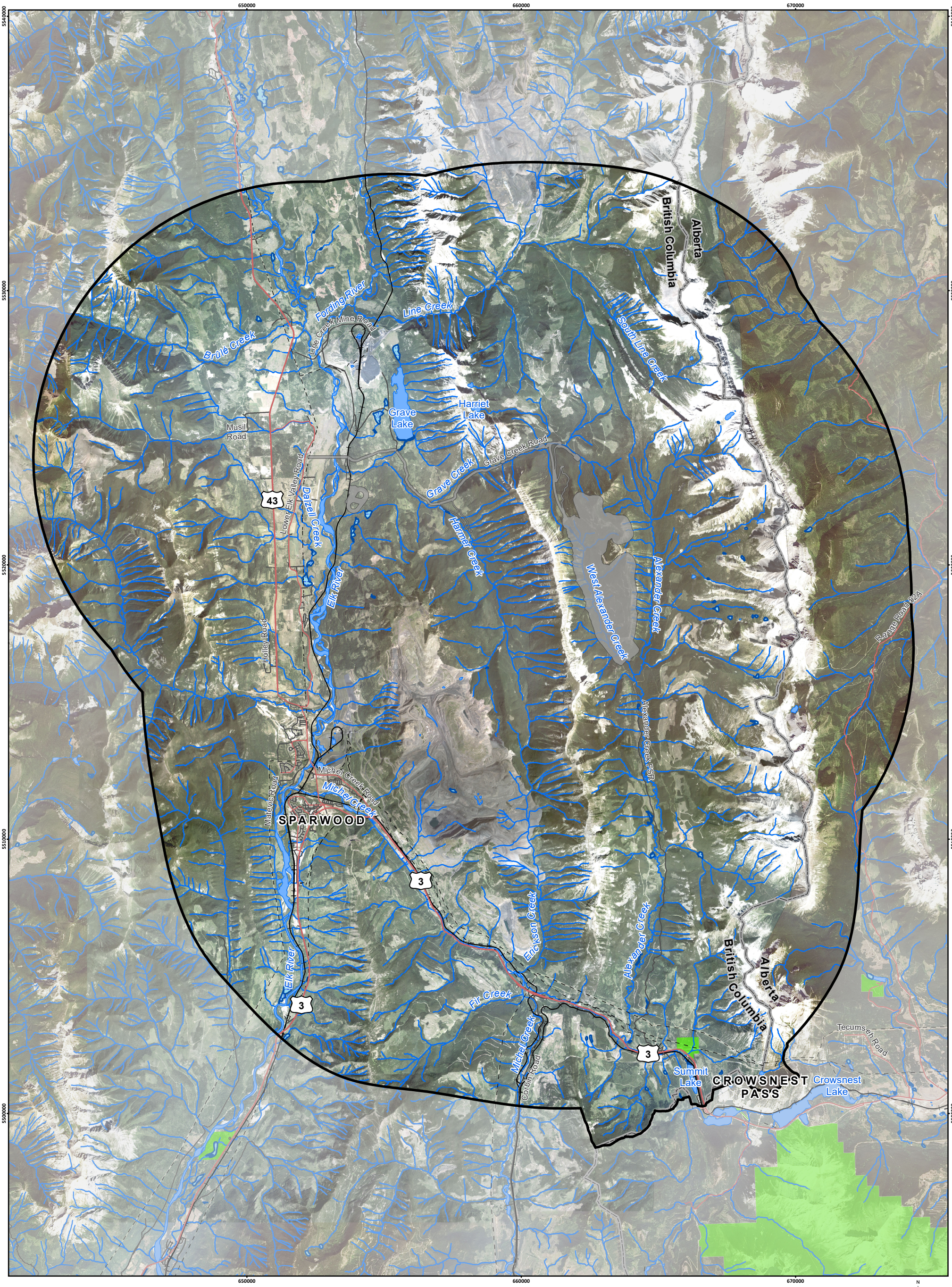
Scale 1:50,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada.
Imagery Provided By GeoBC OrthoImagery (Aug 2016).

Map Created By: RB
Map Checked By: HEB
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: FINAL
Date: 2023-07-19



Crown Mountain Coking Coal Project

Figure 23.8-2
Ktunaxa Nation Rights and Interests Local Study Area (KNRI LSA)

- Ktunaxa Nation Rights and Interests Local Study Area
- Project Footprint
- Highway
- Arterial/Collector Road
- Local/Resource Road
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- Provincial Park/Protected Area
- British Columbia/Alberta Border

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Kilometres

Scale 1:130,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada. Imagery Provided By Landsat 8 (Aug 2018), and GeoBC Ortho Imagery (Aug 2016).

Map Created By: RB
Map Checked By: HS
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: FINAL
Date: 2022-04-11

Document Path: \\42dillon\CAD\GIS\2012 and Prior\126231 Crown Mountain\EA_Report\EffectsAssessment\IndigenousInterest\126231_EA_II_KNRI_LocalStudyArea.mxd

Crown Mountain Coking Coal Project

Figure 23.8-3
Ktunaxa Nation Rights and Interests Regional Study Area (KNRI RSA)

LEGEND

- Ktunaxa Nation Rights and Interests Regional Study Area
- Project Footprint
- Highway
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- Provincial Park/Protected Area
- National Park
- British Columbia/Alberta Border

0 15 30
Kilometres

Scale 1:900,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada.
Imagery Provided By ESRI.

Map Created By: RB
Map Checked By: HS
Map Coordinate System: NAD 1983 UTM Zone 11N

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Project: 12-6231
Status: FINAL
Date: 2022-04-11

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In some instances, in the assessment of effects to Aboriginal and Treaty rights and interests, the specific VC study areas are referred to as VC baseline program, and data collection was confined to the boundaries of that specific VC for the purposes of the VC baseline assessment.

23.8.2 Potential Effects of the Changes to the Environment on Ktunaxa Nation

This section outlines the Project activities and components that may result in potential changes to the environment that may affect the Ktunaxa Nation. The assessment of potential Project effects focuses on planned Project activities. Potential effects related to unplanned events (e.g., spills, equipment malfunctions, accidents) are presented in Chapter 21. This section describes the potential changes to the environment related to the applicable VCs in consideration of Ktunaxa Nation's rights and interests.

As noted in Section 23.5.4, IAAC indicated their preliminary understanding of potential impacts of the Project on Ktunaxa Nation's Aboriginal rights (IAAC, 2015a) to include:

- Fishing;
- Hunting and Trapping;
- Harvesting and Gathering; and
- Archaeological sites (i.e., Physical and Cultural Heritage).

The discussion of effects has been organized into potential effects on Sectors that cover the historic and current use of lands and resources for traditional purposes as described in the previous section. This approach to the assessment of potential effects was undertaken to be similar to those that reflect effects assessment from the Ktunaxa Nation perspective. Thus, the evaluation of potential Project-related residual effects to Ktunaxa Nation are organized as follows:

- Water Sector: Change to use of water for traditional purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional fishing purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional hunting and trapping purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional harvesting and gathering purposes;
- Traditional Knowledge and Language Sector: Change to ceremonial/sacred areas including intangible cultural heritage resources;
- Traditional Knowledge and Language Sector: Change to access and travel routes;
- Traditional Knowledge and Language Sector: Change to physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance;
- Social and Health Sector: Change to social, and health conditions; and
- Economic Investment Sector: Change to economic conditions.

23.8.2.1 Project Components and Interactions

Project activities during the Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure phases have the potential to change the environment and in turn impact Ktunaxa Nation's rights and interests based on these interactions. Table 23.8-2 to Table 23.8-5 below provide a summary of the anticipated interactions between the Project and VCs (e.g., wildlife and wildlife habitat) related to the Ktunaxa Nation described throughout Chapter 23, by identifying the Project components/activities, the Indigenous interest, the associated VC, and the anticipated pathway for potential interactions with the Ktunaxa Nation. Refer to Chapter 3 for a description of the Project components/activities that are summarized below.

The interactions outlined in the table below are intended to identify the pathway between the VC and Ktunaxa Nation. All components and Project activities were assessed for potential pathways for interactions between the Project and Ktunaxa Nation's rights and interests as currently understood. For ease of reading, the components and activities with similar potential pathways of interactions with Ktunaxa Nation were grouped together within the following Table 23.8-2 to Table 23.8-5. Each separate table below reflects the potential interactions between Ktunaxa Nation's rights and interests as currently understood for each separate Project Phase (i.e., Construction and Pre-Production, Operations, Reclamation and Closure, and Post Closure) and where applicable the timing of traditional activities and practices that coincide with the specific Project phases.

With respect to Ktunaxa Nation's seasonal round, the Project components and activities were assessed based on the HHRA and sensory receptor locations related to current and rights-based use (Section 23.7.1) within the Project footprint and the KNRI LSA that included species of interest and/or locations of cultural significance and traditional use that are utilized seasonally and are as identified in Sections 23.7.1.1, 23.7.1.2, and 23.7.1.3 that have the potential to interact.

The potential residual environmental effects that may exist after the mitigation measures proposed by the other VCs are implemented are discussed below in Section 23.8.2.2. Upon receipt of further information from Ktunaxa Nation including a Project-specific TK/TLU study, this assessment may be further refined. Ktunaxa Traditional Knowledge may provide a better understanding of the Project's potential interactions with the Ktunaxa Nation's rights and interests as it relates to the timing of traditional activities and practices that coincide with the specific Project phases.

23.8.2.2 Characterization of Potential Residual Effects of the Changes to the Environment on the Ktunaxa Nation

Based on the interactions identified in Table 23.8-2 to Table 23.8-5, potential effects to Ktunaxa Nation are outlined in this section, using effects assessment information from the other VCs. The purpose of this assessment is to identify the potential Project-related residual effects to Ktunaxa Nation and to inform the impacts to rights assessment (Section 23.11). The residual effects to Ktunaxa Nation consider the residual effects for the associated VCs (e.g., Wildlife and Wildlife Habitat VCs) and anticipated effects to non-VC groups (i.e., broad ecosystem types). The potential effects and mitigation for Physical and Cultural Heritage as well as any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance are combined in Section 23.8.2.2.2.3 for the purposes of the residual effects assessment.

Table 23.8-2: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Construction and Pre-Production Phase

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Component Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Transportation Highway transport trucks, light duty vehicles and crew busses will use Highway 43, Line Creek Mine Road, Valley Road, and Grave Creek Road for all phases of the Project which include transportation of personnel, materials, and consumable items.	• Water Sector • Lands and Resources Sector: Hunting and Trapping	• Surface Water Quality (Chapter 11) - Potential interaction due to Project activities such as on-site transportation of personnel, construction material resulting in elevated total suspended solids (TSS) concentrations in nearby waterbodies through atmospheric deposition. • Wildlife and Wildlife Habitat (Chapter 15) - Potential interaction between vehicles with wildlife through disruption of their movements and potential direct mortality from vehicle strikes. These interactions have the potential to impact water and hunting and trapping rights as based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail.
Logging of Merchantable Timber Merchantable timber will be logged from the infrastructure and pre-production development footprint.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Traditional Knowledge and Language Sector: Access and Travel Routes • Traditional Knowledge and Language Sector: Physical and Cultural Heritage	• Surface Water Quality (Chapter 11) - Potential interaction through non-contact surface runoff/erosion where bare soils are exposed during logging. • Fish and Fish Habitat (Chapter 12) and Surface Water Quality (Chapter 11) - Potential interaction with fish and fish habitat through non-contact surface runoff/erosion where bare soils are exposed during logging. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential loss of vegetation communities and change in terrestrial ecosystems through introduction of invasive vegetation species. • Wildlife and Wildlife Habitat (Chapter 15) - Potential change of wildlife food sources and movements as a result of changes in vegetation communities and terrestrial ecosystems (i.e., degradation of wildlife habitat). Potential sensory disturbance to wildlife (i.e., noise and vibration). • Pre-contact archaeological resources (Chapter 16) - Potential loss of pre-contact archaeological artifacts (if present) and tree throws. • Potential loss/disconnection of historic and present-day travel routes and trails. • Potential loss of ceremonial or sacred areas within the Project footprint.

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Component Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		These interactions have the potential to impact water, fishing rights, hunting and trapping rights, harvesting and gathering rights, and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is not within the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Clearing and Grubbing After the merchantable timber has been removed, the remaining vegetation will be cleared and grubbed from the infrastructure and pre-production development footprint. Wood waste will be stockpiled within the confines of the Project footprint, and stockpiles will not be located adjacent to waterbodies.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Traditional Knowledge and Language Sector: Access and Travel Routes • Traditional Knowledge and Language Sector: Physical and Cultural Heritage	• Surface Water Quality (Chapter 11) - Potential interaction through non-contact surface runoff/erosion where bare soils are exposed during grubbing. • Fish and Fish Habitat (Chapter 12) and Surface Water Quality (Chapter 11) - Potential interaction with fish and fish habitat through surface runoff/erosion where bare soils are exposed during grubbing. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential changes to vegetation that may impact the ability to harvest and gather for traditional purposes. • Terrestrial Ecosystems (Chapter 13) - Potential change in landscape and terrestrial ecosystem types resulting in the change of wildlife food sources and movements. • Wildlife and Wildlife Habitat (Chapter 15) - Potential change of wildlife food sources and movements as a result of changes in vegetation communities and terrestrial ecosystems (i.e., degradation of wildlife habitat). Potential sensory disturbance to wildlife (i.e., noise and vibration). • Pre-contact archaeological resources (Chapter 16) - Potential loss of pre-contact archaeological artifacts (if present) and tree throws. • Potential loss of ceremonial or sacred areas within the Project footprint. • Potential loss/disconnection of historic and present-day travel routes and trails. These interactions have the potential to impact water, fishing rights, hunting and trapping rights, harvesting and gathering rights, and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Component Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is not within the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Quarry for Construction Materials Excavation of road bed materials from the North Pit footprint for use on Grave Creek Road.	• Water Sector • Traditional Knowledge and Language Sector: Physical and Cultural Heritage	• Surface Water Quality (Chapter 11) - Potential interaction through non-contact surface runoff/erosion where bare soils are exposed during excavation. • Pre-contact archaeological resources (Chapter 16) - Potential loss of pre-contact archaeological artifacts (if present) during quarrying activities. These interactions have the potential to impact water and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint.
Infrastructure and Road Construction • Water Management or Water Management Structures; • Road Upgrades and Construction; • Overland Conveyor; • Coal Handling Process Plant Construction; • Workshop/Mine Dry Construction; • Rail Loadout Construction;	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Traditional Knowledge and Language Sector: Access and Travel Routes • Traditional Knowledge and Language Sector: Physical and Cultural Heritage • Social and Health Sector	• Surface Water Quantity (Chapter 10), Surface Water Quality (Chapter 11), and Fish and Fish Habitat (Chapter 12) - Potential interaction with non-contact surface water and fish and fish habitat through erosion and sedimentation of bare soils. • Surface Water Quantity (Chapter 10) and Surface Water Quality (Chapter 11) - Potential interaction with ceremonial/sacred areas around water with changes in water levels and water quality. Potential change in the value of place as a result of the change in accessibility to water within the Project footprint and the KNRI LSA, and the loss of waterbodies within the Project footprint during all Project phases. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential interaction with riparian vegetation species of interest due to the loss of riparian habitat. • Fish and Fish Habitat (Chapter 12) and Wildlife and Wildlife Habitat (Chapter 15) - Potential localized changes in accessibility to wildlife associated with riparian areas due to changes to surface water quality, fish and fish habitat, and riparian vegetation/habitat. • Fish and Fish Habitat (Chapter 12) - Potential interaction with fish and fish habitat through the installation of water supply pipelines from Grave Creek and West Alexander Creek through changes in water level and erosion and sedimentation.

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Component Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
• Explosives Factory; and • Soil Salvage.		• Wildlife and Wildlife Habitat (Chapter 15) - Potential loss of wildlife habitat within road and infrastructure footprint and potential change in localized wildlife species of interest movement/accessibility. Potential sensory disturbance to wildlife species of interest (i.e., noise and vibration). Potential interaction with wildlife species of interest through transportation of materials and personnel to site (e.g., vehicle collisions and increased traffic). Potential loss of wildlife habitat within road and infrastructure footprint and potential change in localized wildlife species of interest movement/accessibility. Potential stressor on wildlife population with increased access roads potentially attracting hunters and increased road densities. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) – Potential loss of vegetation species of interest within road and infrastructure footprint. Potential for introduction of invasive species around development areas reducing the quality of vegetation communities/terrestrial ecosystems/ habitats for vegetation species of interest. Potential loss of grassland habitat, and therefore, potential loss of species of interest within footprint of Rail Loadout. Loss/fragmentation of grassland wildlife habitat, and therefore, potential loss of species of interest as a result of the workshop/mine dry footprint. • Pre-contact archaeological resources (Chapter 16) - Potential loss of archaeological artifacts (if present) within road and infrastructure construction footprint. Potential loss of pre-contact archaeological artifacts (if present) during construction of building foundations. Potential change due to a significant historic area located near the project's roads: Grave Lake, Grave Creek, and Grave Prairie. • Socio-community (Chapter 18) - Potential Project nuisance effects residents due to noise and vibration. Potential change in availability/reliance on country food. Potential public safety due to physical hazards. • Potential loss/disconnection of portions of historic and present-day travel routes and trails if present within or crossing new roads and infrastructure footprint. • Potential loss of ceremonial/sacred areas within road and infrastructure construction footprint. These interactions have the potential to impact water, fishing rights, hunting and trapping rights, harvesting and gathering rights, use of culturally significant areas, and social and health conditions where there is potential for Ktunaxa's rights and interests-based activities

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Component Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is not within the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Construction Waste Materials Collection and transfer to a recycling facility or other approved facility. Waste will be fenced and stored in sea containers or waste oil containers as appropriate.	• None identified	• None identified - there are no anticipated interactions between Indigenous interests and storage of construction waste, as the waste will be stockpiled in contained areas or appropriate containers that are not open to the environment. Accidents, malfunctions, and unplanned events are discussed in Chapter 21.

Table 23.8-3: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Operations Phase

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Labour Hiring of personnel for the mine, CHPP operations administration, and coal haul; Training of personnel.	• Economic Investment Sector • Social and Health Sector	• Economic Effects (Chapter 17) - Potential modest economic benefit for Ktunaxa Nation citizens that could be hired for the mine, CHPP operations administration, and coal haul. • Socio-community (Chapter 18) - Potential change in population and demographic. Potential change in community health and well-being. Potential modest positive change in availability of community services. Potential change due to the influx of new employees to the region that could potentially contribute to social impacts, including safety risks. This interaction has the potential to impact economic and social and health conditions.
Explosives Factory Ammonium nitrate/emulsion storage facilities which have the ability to load explosive agents into delivery trucks; Wash facility to decontaminate the bulk explosive delivery trucks; Storage of explosives (detonators and boosters).	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping	• Surface Water Quality (Chapter 11), Fish and Fish Habitat (Chapter 12), Vegetation (Chapter 14), and Wildlife and Wildlife Habitat (Chapter 15) - Potential interaction with fish and fish habitat, terrestrial ecosystems and vegetation, and wildlife species of interest through the release of nitrogen compounds and other contaminants from storage areas and wash facilities. These interactions have the potential to impact surface water quality, fishing rights and hunting and trapping rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is not within the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Fuel Storage Receiving bulk fuel deliveries; Onsite storage of fuel; Dispensing fuel; Transferring fuel to on-site delivery trucks.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping	• Surface Water Quality (Chapter 11), Fish and Fish Habitat (Chapter 12), Vegetation (Chapter 14), and Wildlife and Wildlife Habitat (Chapter 15) – None identified - there are no anticipated interactions between Indigenous interests and fuel storage. Accidents, malfunctions, and unplanned events are discussed in Chapter 21. These interactions have the potential to impact water, fishing rights and hunting and trapping rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is not within the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail.
Mining Progressive clearing; Removal of unconsolidated material; Loading, hauling and stockpiling of soil; Drilling and loading of blastholes; Detonating the explosives; Loading, hauling and dumping of mine rock; Loading hauling and stockpiling or coal.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Physical and Cultural Heritage • Social and Health Sector	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Loss of West Alexander Creek as a result of mine development and the storage of mine rock. • Fish and Fish Habitat (Chapter 12) - Potential interaction with fish and fish habitat as well as surface water quantity and quality through mining activities (sedimentation, erosion, spills, contact runoff, nitrate, selenium, sulphate contamination from broken rock and dust). Potential changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods due to mining activities. • Terrestrial Ecosystems (Chapter 13) - Potential changes in vegetation communities/terrestrial ecosystems and introduction and colonization of invasive vegetation species that outcompete species of interest. • Vegetation (Chapter 14) - Potential interaction with vegetation health through particulate matter and dust deposition. • Wildlife and Wildlife Habitat (Chapter 15) - Potential change of wildlife species of interest food sources and movements as a result of changes in vegetation communities and terrestrial ecosystems (i.e., degradation of wildlife habitat) or

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		sensory disturbances. Changes in wildlife species of interest movements/accessibility to these wildlife species due to presence of the mine. • Fish and Fish Habitat (Chapter 12) and Wildlife and Wildlife Habitat (Chapter 15) - Sensory disturbances to potential fish and wildlife species of interest due to detonation of explosives and other mine activities. • Pre-contact archaeological resources (Chapter 16) – Potential discovery of pre-contact archaeological resources (if present) in unconsolidated material or during progressive clearing activities. • Socio-community (Chapter 18) - Potential Project nuisance effects residents due to noise and vibration. Potential change in availability/reliance on country food. Loss of potential access to fish in West Alexander Creek. • Potential loss of ceremonial/sacred areas. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, harvesting, and gathering rights, use of culturally significant areas, and social and health conditions where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Site Water Requirements Using contact water as the primary process make-up water from Interim Sediment Pond (Year 1 to 5); Using contact water as the primary process make-up water from the North Pit (Year 5 to 15); Backup reservoir in Grave Creek as a secondary source of process make-up water.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Traditional Knowledge and Language Sector: Physical and Cultural Heritage • Social and Health Sector	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential reduction of flows in Grave Creek through use as a secondary source of process make-up water, with potential to impact fish species of interest and their habitat, as well as surface water quantity and quality. Potential for loss of downstream aquatic habitat resulting in the change or loss of access to traditionally/culturally important fish species or access to fish as country foods. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for changes to accessibility to aquatic wildlife species of interest (e.g., waterfowl) with the change or loss of aquatic habitats. • Socio-community (Chapter 18) – Potential change in availability/reliance on country food. • Potential for changes to ceremonial or sacred areas associated with Grave Creek or downstream habitats. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, use of culturally significant areas, and social and health conditions where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Coal Processing Run of mine coal sizing; Washing coal; Mechanical and thermal drying of coal; Coal reject disposal (part of loading, hauling and dumping of mine rock activities); Conveying clean coal; and mine roads development	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential reduction in flow of West Alexander Creek during coal reject disposal, hauling and dumping or mine rock, with potential to impact fish species of interest and their habitat, as well as surface water quantity and quality. Potential for loss of downstream aquatic habitat resulting in the change or loss of access to traditionally/culturally important fish species or access to fish as country foods.

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
	• Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Traditional Knowledge and Language Sector: Physical and Cultural Heritage	• Wildlife and Wildlife Habitat (Chapter 15) - Potential for changes to accessibility to aquatic wildlife species of interest (e.g., waterfowl) with the change or loss of aquatic habitat. Potential sensory disturbance and change in food sources for wildlife species of interest as a result of dust deposition/changes in vegetation communities. • Pre-contact archaeological resources (Chapter 16) - Potential for changes to ceremonial or sacred areas associated with West Alexander Creek or downstream habitats. These interactions have the potential to impact water, fishing rights, hunting and trapping rights, and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Sewage Treatment Sewage will be treated by a septic system constructed at the plant site which will support the administration, mine dry, and CHPP facilities.	• None identified	• There are no anticipated interactions between Indigenous interests and treated sewage, as the septic system will comply with the appropriate standards and regulations. Accidents, malfunctions, and unplanned events are discussed in Chapter 21.
Main Sediment Pond Construction of Main Sediment Pond in Year 4; Management of the Main Sediment Pond discharge for remainder of operational mine life.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping	• Surface Water Quantity (Chapter 10), Surface Water Quality (Chapter 11), and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water and fish species of interest and their habitat through sedimentation or changes in water levels through the management (discharge) of the Main Sediment Pond. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for changes to accessibility to aquatic wildlife species of interest (e.g., waterfowl) with the change or loss of aquatic habitat.

Project Components and Activities	Ktunaxa Nation's Title Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		• Potential for change in access to places that may be important for ceremonial or sacred areas. These interactions have the potential to impact water, fishing rights and hunting and trapping rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.
Progressive Reclamation Reclaiming available areas as soon as possible to achieve reclamation objectives.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water quality and fish and fish habitat through erosion and sedimentation and of bare soils. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential for changes in vegetation communities through the introduction and colonization of invasive species that outcompete species of interest resulting in a loss of traditionally/culturally important vegetation communities. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for changes in wildlife food sources through changes to ecosystems/vegetation communities resulting in changes to wildlife species of interest movements/migrations. • Potential changes to or loss of places that may be important for ceremonial or sacred areas through changes in landscape/ecosystems should reclamation activities not be effective. These interactions have the potential to impact water, fishing rights, hunting and trapping rights, harvesting and gathering rights, and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint.

Table 23.8-4: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Reclamation and Closure Phase

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Dismantling Infrastructure and Buildings Dismantling of the CHPP, maintenance facilities, administration, and other facilities; Dismantling, salvaging, collecting, and transferring materials to a recycling facility or other approved facility. Removal of the powerline; Removal of the natural gas line.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water quality and fish species of interest and their habitat through erosion and sedimentation of bare soils. Potential change to the interconnection throughout the ecosystem due to interaction of ecological features. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential for introduction of invasive species around development areas reducing the quality of vegetation communities/terrestrial ecosystems/habitats for species of interest. Potential for reestablishment of plant harvesting activities. • Wildlife and Wildlife Habitat (Chapter 15) - Potential sensory disturbance to wildlife species of interest (i.e., noise and vibration). Potential for reestablishment of wildlife habitat in the development footprint. Potential for reestablishment of wildlife food sources through reestablishment of habitat/vegetation communities. Potential for the reestablishment of hunting activities. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, and harvesting and gathering rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall.

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Progressive Reclamation Reclaiming available areas as soon as possible to achieve reclamation objectives.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Social and Health Sector	• Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water quality and fish species of interest and their habitat through erosion and sedimentation of bare soils. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential for restoration of ecosystems and related species of interest and areas used for harvesting and gathering. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for reestablishment of wildlife food sources through reestablishment of ecosystems/vegetation communities. Potential for reestablishment of wildlife accessibility in the development footprint for species of interest. • Socio-community (Chapter 18) – Potential for Ktunaxa Nation to take part in progressive reclamation opportunities. Potential change in community well-being. Potential change in availability/reliance on country food. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, harvesting and gathering rights, use of culturally significant areas, and social and health conditions where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component/Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Monitoring Reclamation monitoring; Geotechnical monitoring; Aquatic effects monitoring.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Traditional Knowledge and Language Sector: Ceremonial/Sacred Areas • Social and Health Sector	• Surface Water Quality (Chapter 11), Fish and Fish Habitat (Chapter 12), Terrestrial Ecosystems (Chapter 13), Vegetation (Chapter 14), and Wildlife and Wildlife Habitat (Chapter 15) - Potential for reduction of the quality and accessibility of fish, vegetation species of interest and wildlife species of interest for traditional/cultural purposes or country foods, should insufficient effects monitoring take place. • Socio-community (Chapter 18) - Potential for Ktunaxa Nation to take part in monitoring activities, in particular: aquatic effects monitoring. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, harvesting and gathering rights, use of culturally significant areas, and social and health conditions where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.

Table 23.8-5: Summary of Potential Interactions between the Project and Ktunaxa Nation's Title and Rights and/or Interests for Post-Closure Phase

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component / Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Water Management Management of the Main Sediment Pond discharge. Decommissioning the Main Sediment Pond once water quality objectives have been met.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering	• Surface Water Quantity (Chapter 10), Surface Water Quality (Chapter 11), and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water and fish species of interest and their habitat through erosion and sedimentation or changes in water levels through the decommissioning of the Main Sediment Pond. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential for changes in water levels resulting in potential impacts to riparian vegetation communities and wildlife habitats of interest. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for changes to accessibility to aquatic wildlife VC species of interest (e.g., waterfowl) with the change or loss of aquatic habitat. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, and harvesting and gathering rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall.

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component / Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
Rail Line and Road Use Branch C Road will remain as a permanent access road for future commercial and recreational use. The rail line will remain as a permanent feature.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering	• Surface Water Quality (Chapter 11), Fish and Fish Habitat (Chapter 12), Terrestrial Ecosystems (Chapter 13), Vegetation (Chapter 14), Wildlife and Wildlife Habitat (Chapter 15) - Potential for access within the Project footprint through the use of Branch C Road, which will remain as a permanent access road for future traditional activities such as fishing, harvesting and gathering, as well as hunting and trapping. • Surface Water Quality (Chapter 11) and Fish and Fish Habitat (Chapter 12) - Potential interaction with surface water and fish species of interest and their habitat through erosion and sedimentation due to permanent rail line. • Terrestrial Ecosystems (Chapter 13) and Vegetation (Chapter 14) - Potential for the introduction of weeds and invasive vegetation species in disturbed areas around the rail line resulting in a change of localized vegetation communities/loss of species of interest. • Wildlife and Wildlife Habitat (Chapter 15) - Potential for collisions with wildlife and disruption to wildlife movements resulting in changes to accessibility to wildlife species of interest. Potential stressor on wildlife population with increased access roads potentially attracting hunters and increased road densities. These interactions have the potential to impact water, fishing rights, hunting and trapping rights, and harvesting and gathering rights where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and

Project Components and Activities	Ktunaxa Nation's Title and Right/Interest	Valued Component / Valued Components Group and Effects Pathway for Potential Interaction with Ktunaxa Nation
		fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall.
Monitoring Reclamation monitoring; Geotechnical monitoring; Aquatic effects monitoring.	• Water Sector • Lands and Resources Sector: Fishing • Lands and Resources Sector: Hunting and Trapping • Lands and Resources Sector: Harvesting and Gathering • Social and Health Sector	• Surface Water Quality (Chapter 11), Fish and Fish Habitat (Chapter 12), Terrestrial Ecosystems (Chapter 13), Vegetation (Chapter 14), and Wildlife and Wildlife Habitat (Chapter 15) - Potential for reduction of the quality and accessibility of fish species of interest, vegetation species of interest, and wildlife species of interest for traditional/cultural purposes or country foods, should insufficient effects monitoring take place. • Socio-community (Chapter 18) - Potential for Ktunaxa Nation to take part in monitoring activities, in particular: aquatic effects monitoring. These interactions have the potential to impact water, fishing rights, hunting, and trapping rights, harvesting, and gathering rights, and use of culturally significant areas where there is potential for Ktunaxa's rights and interests-based activities to overlap with the Project footprint. Based on Ktunaxa perspectives, there is potential for seasonal interactions as Ktunaxa citizens fish for Burbot in the winter (in Lake Koocanusa, which is downstream of the Project footprint) and hunt large and small game in the Elk Valley in all seasons, but most commonly in summer and fall, with access generally by road, horse, or foot trail. Seasonal harvesting and gathering include huckleberry picking areas used in late summer and early fall, and large portions of trails are still in use where they have not been intersected by road networks, including major east-west trails that are used for Ktunaxa culture camps and for training and educating youth in the summer and fall seasons.

Criteria used to characterize residual effects are defined in Chapter 5, Section 5.3.4.5 and outlined in Section 23.3, and include duration, magnitude, spatial extent, frequency, reversibility, and context (i.e., the sensitivity and resilience of a VC to changes caused by the Project). As previously described, at the time of the submission of this chapter, the Ktunaxa Nation have yet to undertake their Section C and thus no Traditional Knowledge/Traditional Land and Resource Use study within the KNRI LSA for the Project is currently available.

Ktunaxa Nation did provide HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use that have been considered. Through this effects assessment and continued consultation with Ktunaxa Nation, Project-related residual effects to Ktunaxa Nation may continue to be identified, and where applicable, mitigated or accommodated. Considering the lack of Project specific information being provided by the Ktunaxa Nation, the confidence of the residual effects to the current use of lands and resources by the Ktunaxa Nation is considered to be low to moderate where applicable.

23.8.2.2.1 Water Sector: Change to Use of Water for Traditional Purposes

Ktunaxa Nation understand water to be an intrinsic value and a primary pathway independent of the other pathways that have been assessed in this report. In Chapter 10, in general, the Project has the potential to adversely affect surface water quantity in the receiving watercourses through the changing of streamflow characteristics (flows, volume, and timing) attributed to modifications to topography and surface cover, alterations of natural drainage pathways, and surface water withdrawals. In Chapter 11, surface water quality was defined as an intermediate valued component that contributes to assessment of effects on aquatic life, fish, and human health risk assessment among others. Minimal or no interaction with groundwater will occur during various Project phases with the exception of decommissioning of open pits and sediment ponds (discussed in Chapter 9: Groundwater Assessment). All of the Project activities ranked as Level I in Chapter 9 are not anticipated to result in adverse effects and have not been considered further in this effects assessment. Construction activities may introduce sediment to nearby watercourses, which may affect groundwater quality and quantity through groundwater-surface water interactions; these can be easily mitigated by best management practices to reduce erosion and minimize sediment introduction to watercourses. The potential environmental effects (including cumulative environmental effects) of these activities on groundwater during the Construction phase will not be significant and are not discussed further.

The assessment of effects on surface water quality focuses on water quality parameters that are predicted to increase in concentration above water quality guidelines as a result of the Project. It is important to note that exceeding a long-term water quality guideline does not imply that an unacceptable risk exists, but rather that the potential for adverse effects to aquatic life may be increased. In consideration of the above, a significant adverse residual environmental effect on surface water quality was defined in Chapter 11 as one where the Project degrades the physical and chemical characteristics of surface water to the extent that interaction with local surface water results in chemistry changes that may adversely affect aquatic life. Based on the evaluation of potential Project effects on surface water quantity and quality and related mitigation identified in Chapter 10 and Chapter 11, potential residual effects that may remain after implementation of proposed mitigation measures include:

- Change to surface water quantity due to site construction activities;
- Change to surface water quantity due to site closure and reclamation activities;
- Change in surface water quantity from non-contact water runoff;

- Change in surface water quality from the disposal of mine rock and coal rejects;
- Change in surface water quality due to surface water – groundwater interactions; and
- Change in surface water quality from the sediment pond discharge.

Potential effects related to unplanned events (e.g., spills, equipment malfunctions, accidents) are presented in Chapter 21. As a result of changes to the surface water quality VCs, potential effects on Ktunaxa Nation's opportunity to use of water include:

- Potential change in the ability to know and teach the cultural and social aspects of waterbodies within the Project footprint and the KNRI LSA during all Project phases.
- Potential change in the value of place as a result of the change in accessibility to water within the Project footprint and the KNRI LSA, and the loss of watercourses within the Project footprint during all Project phases.
- Potential change to water quality and change to accessibility to watercourses in Grave Creek and West Alexander Creek as a result of Project water management activities in all Project phases.
- Potential change in water access due to change in pressure associated with a change in access to watercourses as a result of Project development.

Mitigation measures have been recommended for each potential effect on surface water quantity and quality that are related to Ktunaxa Nation. For the purposes of this assessment, mitigation measures are defined to include Project design features, procedures, or practices that will reduce or eliminate Project-related effects to surface water quantity and quality. Potential Project-related changes to surface water quantity and quality will be reduced through design mitigation, regulatory requirements, BMPs, including management plans, monitoring, and adaptive management. Specific mitigation for surface water quantity and quality can be referenced in Chapter 10, Section 10.5.3 and Chapter 11, Section 11.5.3 respectively.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in this chapter in Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation measures presented in Section 23.10.1 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the use of water for traditional purposes. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

Chapter 10 includes the determinations of the predictions for the water and load balance model developed to address all major facilities associated with the Project. In addition, the surface water quantity assessment examined the potential effects on water quantity at various locations within the Aquatic RSA, including flow nodes along the Elk River and at Lake Koocanusa. For the purpose of the surface water quantity effects assessment, streamflow conditions were evaluated at multiple flow node locations along the receiving watercourses located in the Aquatic LSA (i.e., Grave Creek and West Alexander/Alexander Creeks). The results indicate that there is a reduction in average monthly flows for all of the Project phases, and that flow reductions are most notable in the spring and fall months during the Reclamation and Closure and Post-Closure phases, and to a lesser extent the Operations Phase. Chapter 11 includes the determinations of the model predictions for the Project effects assessment on surface water quality that indicated localized elevated levels of some parameters (i.e., cadmium, cobalt,

selenium) in West Alexander Creek and Alexander Creek. Concentrations of these parameters showed a distinct seasonal cycle, with higher concentrations in the winter and lower concentrations during the spring freshet. Modelling suggests that there will be no measurable change to surface water quality in the Elk River or Lake Koocanusa as a result of the Project.

Development of the mine site will result in the removal of approximately 5.5 km of West Alexander Creek, which may be used for traditional activities by the Ktunaxa Nation. While there is potential for traditional use of West Alexander Creek, it is anticipated to be relatively minimal and to a lesser extent compared to the mainstems of Alexander Creek and the Elk River. During Operations, use of Alexander Creek for water will be permitted, unless blasting activities are occurring. It is important to note that blasting restrictions will not affect access to the entire length of Alexander Creek, only those sections in close proximity to the pit undergoing blasting.

As assessed in Chapter 9, the construction of the Interim Sediment Pond and Grave Creek Reservoir may affect water levels on a local scale due to temporary damming and flooding, which may influence the local shallow water table. Some local mounding of the local shallow water table is anticipated to affect groundwater flow rates which may result in a temporary change in groundwater redox conditions and metal loadings in the immediate vicinity of the reservoir. These effects are anticipated to be highly localized and not extend beyond the local vicinity. Effects related to the construction of the Grave Creek Reservoir on the groundwater system due to Project infrastructure in the Grave Creek valley bottom (i.e., the Explosive Storage Facility, Grave Creek Water Reservoir, and Rail Loadout) are also not expected to have any significant effect on the groundwater system, since key mine components represent less than 1% of its total area.

The Project has the potential to result in residual adverse effects to surface water quantity and quality as a result of Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure activities. In particular, the Project may result in permanent changes to surface water quantity due to site construction, operation, and mine closure and reclamation activities. The Project may result in permanent changes to surface water quality from disposal of mine rock and coal rejects, surface water – groundwater interactions, and sediment pond discharge. Project residual effects to the surface water quantity and quality indicate the potential for a residual effect on Ktunaxa Nation's opportunity to access healthy aquatic systems for traditional purposes. Potential effects resulting from surface water withdrawals from Grave Creek Reservoir (which is to be constructed during the Construction and Pre-Production phase) can be mitigated though the implementation of withdrawal restrictions to ensure that environmental flow requirements are provided during period of low flow conditions.

There is a potential for streamflows within the Alexander Creek system to be affected by site reclamation and decommissioning activities during the Reclamation and Closure and Post-Closure phases. As evaluated in Chapter 10, positive effects are expected to surface water hydrology upon closure as streamflow is restored following decommissioning of water retention structures. Accordingly, changes to surface water quantity due to surface water withdrawals is not identified as a residual effect for surface water quantity.

The residual effects to the use of water by the Ktunaxa Nation for traditional purposes are characterized as follows:

- Duration: *Short-term to Long-term*, as the potential for adverse effects to opportunities for access to and use of water will be short-term as they will generally be limited to the Construction and Pre-Production, Operations, and Reclamation and Closure phases of the Project.
- Magnitude: *Low to Moderate,* as the opportunities to access to healthy aquatic systems in watercourses potentially used may be altered as a result of Project residual effects on surface water quantity and quality (e.g., sediment pond discharge within West Alexander Creek).
- Geographic Extent: *Local*, as changes in the opportunity to access aquatic systems is restricted to the KNRI LSA.
- Frequency: *Continuous*, as the opportunity to access aquatic systems potentially used by Ktunaxa Nation is anticipated to occur during Construction and Pre-Production, Operations, and Reclamation and Closure until Project activities are completed.
- Reversibility: *Reversible Long-term to Irreversible*, changes in opportunities to access to and use of watercourses and waterbodies is anticipated to be reversible as the Project footprint is reclaimed (though sections of West Alexander Creek will not be replaced) and water quality objectives are met as well as due to natural attenuation and gradual re-equilibration of the water table and natural groundwater flows. Changes in surface water quality and quantity resulting from Project activities are anticipated to be potentially irreversible until after the Post-Closure phase.
- Context: *Neutral*, as opportunities to access to and use of several watercourses within the KNRI LSA are readily available and these watercourses have been previously disturbed by human activities (e.g., Harmer Creek and mining activities). The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional activities related to water use within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use for water. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. Based on these HHRA and sensory receptor locations and information provided from publicly available sources authored by Ktunaxa Nation (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a), while it is assumed that Ktunaxa Nation utilize the KNRI LSA for traditional purposes, Ktunaxa Nation has not currently made available information regarding their use of Alexander Creek within the Project footprint. It is acknowledged that Ktunaxa Nation has the potential to use watercourses that support traditional activities as indicated by their interest in the management of water resources.

The Project is anticipated to result in short-term to long-term changes in opportunities for access to and use of watercourses and waterbodies as access to upstream West Alexander Creek is restricted over the course of the Project. The change in water quantity is projected to occur in West Alexander Creek. The resulting influence on the downstream reaches of Alexander Creek is considerably lower during this Project phase. The potential reduction in water quantity in Alexander Creek downstream of West Alexander Creek could result in a change in the natural flow regime, which may cause fluvial/geomorphologic changes (i.e., erosion potential, bedload movement) and sediment transport

capacity to downstream reaches of Alexander Creek. The residual effects on surface water quantity and quality due to site construction, operation, and mine closure and reclamation activities and from the disposal of mine rock and coal rejects from the Project, the surface water – groundwater interactions, and the sediment pond discharge are considered not significant and as such, no permanent losses to the ability to access to and use of watercourses and waterbodies is anticipated. It is noted that the results of the effect assessment indicate that the potential impacts of future climate change will have a substantially greater influence on surface water quantity (i.e., magnitude and timing of streamflows) along the downstream watercourses in the Aquatic RSA.

In addition, as noted in Chapter 10, in Grave Creek, the projected reduction in surface water quantity will be minimal during the Construction and Pre-Production phase and generally limited to the upper reaches of the watercourse.

As noted in Chapter 11, seepage and surface runoff will be captured by the water management infrastructure and contained within the Interim or Main Sediment Pond prior to discharge to the receiving environment during Operations, Reclamation and Closure, and Post-Closure. The potentially impacted groundwater is not expected to result in the degradation of surface water quality in the receiving environment to the extent that interaction with local surface water results in chemistry changes that may adversely affect aquatic life. Therefore, no direct effect to the receiving environment is expected that may result in water quality concentrations above the thresholds for significance described in Chapter 11. Effects to surface water quality as a result of the Project are not detectable from background conditions in the Elk River and Lake Koocanusa. Water quality will be monitored and managed to ensure it meets all permitting conditions and contingencies will be implemented on an as needed basis that are detailed in the Project Description (Chapter 3) and the Site Water Management Plan (Chapter 33). The monitoring approach and adaptive management program are further described in the Follow-up Strategy in Chapter 11.

In consideration of the above regarding available information with respect to use by Ktunaxa Nation of the Project footprint and the Project's design to reduce impacts to the aquatic system, the residual effect of the Project on the use of water for traditional purposes is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Confidence considers the reliability of data and analytical methods used in the assessment of effects. The confidence in the characterization of the residual effect to surface water quality from the disposal of mine rock and coal rejects, surface water – groundwater interactions, and sediment pond discharge is considered to be moderate. As described in the model assumptions and limitations in Chapter 11, Section 11.5.4.1, the surface water quality modelling is based on a series of expected and conservative assumptions developed to be representative of the water and chemical mass conditions observed at the current, undeveloped site or conditions expected during future development of the Project. Though modelling and baseline data was sufficient to evaluate effects for surface water quality, areas currently or potentially used by Ktunaxa to access and use watercourses and waterbodies was based on the HHRA and sensory receptor locations related to current or rights-based use by the Ktunaxa Nation within the Project footprint and that information publicly available. As such, the confidence of the residual effects to the use of water by Ktunaxa Nation for traditional purposes is considered to be moderate.

The residual effects to opportunities for access to and use of aquatic systems will be further discussed through continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Thus, the continued consultation and follow-up program to be implemented is expected to improve the moderate level of confidence.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation did not provide Project-specific information included in Section 23.10.1 that addressed their concerns regarding water use related to the Ktunaxa Nation's traditional activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access water in sufficient quantity and quality, in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water according to the Ktunaxa law, ʔaknumu¢tiɬiɬ (KLR et al., 2011).

From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaṁa'k ɖapiqapsin (all living things). Over time this may lead to significant impacts on Ktunaxa stewardship responsibilities (ʔaknumu¢tiɬiɬ) and compromises the transmission of knowledge and practices related to those water systems for future Ktunaxa generations (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on water quality, spatial disturbance, and other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a). During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa cultural opportunities that are relatively free from impacts of industrial coal mining (Appendix 23-A, Tables 23.A-1 and 23.A-2). No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was available at this time.

23.8.2.2.2 Lands and Resources Sector

Change to Use of Lands and Resources for Traditional Fishing Purposes

Based on these HHRA and sensory receptor locations, information provided from publicly available sources authored by Ktunaxa Nation, and based on preliminary consultation, Ktunaxa Nation identified Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, Bull Trout, and all fish in general as well as access to healthy aquatic systems for fishing as use and interests. The fish and fish habitat VCs and related residual effects assessment (Chapter 12) was used to support an understanding of Project-related residual effects that have the potential to change the opportunity to use and access Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, Bull Trout, and all fish in general by Ktunaxa Nation. Residual

effects to fish and fish habitat VCs, including the Westslope Cutthroat Trout VC, Kokanee VC, Burbot VC, Mountain Whitefish VC, Bull Trout VC, and all fish in general include:

- Instream habitat loss as a result of mine design;
- Habitat loss due to changes in water quantity;
- Riparian disturbance; and
- Changes in water quality.

Changes to abundance, disturbance, spawning areas, seasonal movements, movement courses, and habitat requirements for fish species identified by Ktunaxa Nation and considered in the EIS are included in Chapter 12, Section 12.4.2.2. Chapter 12 also notes that Alexander Creek, West Alexander Creek, Grave Creek, and 12 of 27 wetlands (surveyed for fish presence) which were connected to watercourses were considered fish bearing. 13 of the 27 wetlands surveyed had low probability for fish presence based on the lack of suitable habitat observed and/or disconnectedness with fish bearing watercourses.

As a result of changes to the fish and fish habitat VCs, potential effects on Ktunaxa Nation's opportunity to fish include:

- Potential change in the ability to know and teach the cultural and social aspects of fish VC species and waterbodies within the Project footprint and the KNRI LSA during all Project phases.
- Potential change in the value of place as a result of the change in accessibility of fishing opportunities within the Project footprint and the KNRI LSA, and the loss of waterbodies within the Project footprint during all Project phases.
- Potential change in accessibility to fishing opportunities in Grave Creek and West Alexander Creek as a result of fishing access restrictions and Project water management activities in Construction and Pre-Production, Operations, and Reclamation and Closure.
- Potential change in fishing opportunities due to change in fishing pressure associated with a change in access to watercourses as a result of Project development.

Mitigation measures have been recommended to avoid, minimize, or otherwise address potential adverse effects to the fish and fish habitat VCs that are related to Ktunaxa Nation. Specific mitigation for fish and fish habitat VCs can be referenced in Chapter 12, Section 12.5.3.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in this chapter in Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation measures presented in Section 23.10.2.1 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the fish and fish habitat VCs. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

Development of the mine site will result in the removal of approximately 5.5 km of West Alexander Creek, which may be used for traditional activities by the Ktunaxa Nation. While there is potential for traditional use of West Alexander Creek, it is anticipated to be relatively minimal and to a lesser extent compared to the mainstems of Alexander Creek and the Elk River. During Operations, use of Alexander Creek for fishing will be permitted, unless blasting activities are occurring. It is important to note that blasting restrictions

will not affect access to the entire length of Alexander Creek, only those sections in close proximity to the pit undergoing blasting.

Change will occur in the suspected resident Westslope Cutthroat Trout and Bull Trout populations in West Alexander Creek due to the direct removal of fish habitat. Habitat in downstream and adjacent waterbodies are similar and will be able to support the species in the current community. While the upper reaches of West Alexander Creek are not fish bearing, the construction of the Interim Sediment Pond has the potential to reduce downstream transport of benthic invertebrates, an important food source for fish including Westslope Cutthroat Trout and Bull Trout and may lead to an imbalance in the food web. Offsetting measures outlined in Chapter 12, Section 12.5.3 will also take place in areas of similar habitat that will support local fish populations. Though the loss of fish habitat will affect the biomass of invertebrates available, the reduction of short-range drift is anticipated to have a minimal effect on traditional users and will be limited to the upstream sections of Alexander Creek. As drift-feeding fish further downstream of West Alexander will likely continue to rely on more local sources of invertebrates, the potential impact on the aquatic food web and productivity is predicted to be minor.

During the Operations phase, the construction of the Main Sediment Pond and expansion of the Mine Rock Storage Facility is expected to result in additional loss of fish habitat in West Alexander Creek and its non-fish bearing tributaries. No potential adverse effects to fish and fish habitat are anticipated during Reclamation and Closure, as all activities with the potential to result in direct habitat loss as a result of mine design and development will be completed. Fish population composition through species and characteristics are overall unlikely to be changed as a result of the potential impacts to habitat in the Project footprint. Offsetting measures will also take place in areas of similar habitat that will support local fish populations.

Grave Creek Road and Branch C Road will remain as permanent access roads Post-Closure for future commercial and recreational use. As the majority of West Alexander Creek will be removed due to the Project and access to angling in Alexander Creek is already provided via the Alexander Creek Forest Service Road from the south, no changes to fishing pressure due to increased site access are anticipated to occur following Reclamation and Closure. Finally, changes to the use of Elk River for fishing activities due to Project activities, including from the development of the powerline, are considered to be negligible for the duration of the Project. Changes to fish populations due to increased fishing activities resulting from increased public access to West Alexander Creek, Alexander Creek, Grave Creek or the Elk River are therefore not anticipated.

It is generally accepted that as selenium concentrations in water increase, so does the risk of increased selenium concentrations in biota, even if the absolute relationship is not well understood. During Operations, all mine site drainage will be collected in the sediment ponds, either the Interim Sediment Pond during the first four years of Operations or the Main Sediment Pond beyond Year 4. Water in the sediment ponds will be monitored (as described in the Site Water Management Plan, Chapter 33, Section 33.4.1.8) to verify it meets approved discharge limits and released into the West Alexander drainage where it will flow to the confluence with Alexander Creek. Alexander Creek joins Michel Creek downstream near Highway 3, which subsequently discharges into the Elk River upstream of Sparwood.

Water quality impacts downstream of the Project in the Fish and Fish Habitat LSA have the potential to affect Westslope Cutthroat Trout, Bull Trout, and benthic invertebrates. Performance monitoring of the

sediment pond will provide information necessary to determine if the design is functioning optimally. Two temporary sediment ponds will be constructed to capture construction runoff water during the construction of the ROM pad and facilities pad. Two larger sediment ponds are proposed for managing the combined runoff from the mine footprint and non-contact water from the upper western slopes of West Alexander Creek. These ponds will be placed downstream of the Mine Rock Storage Facility and will be developed through the mine life to accommodate the advancing mine rock placement. Initially, the Interim Sediment Pond will capture seepage and runoff from the mine rock piles up until Year 4. During Year 5, the Main Sediment Pond will be built downstream of the advancing Mine Rock Storage Facility structure. Both the Interim Sediment Pond and the Main Sediment Pond will be lined to prevent infiltration of collected waters into the local groundwater. During Year 5, the Interim Sediment Pond will be decommissioned. The Main Sediment Pond will remain active throughout the life of the mine into the Post-Closure phase, until site reclamation activities are complete, and water quality objectives are met. Specific details on the sediment pond designs are provided in Chapter 3.

The Project has the potential to result in residual adverse effects to fish and fish habitat as a result of Project Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure activities. In particular, the Project may result in permanent changes to instream fish habitat, the loss of habitat due to changes in water quality, riparian disturbance, and changes in water quality that could affect fish health. Project residual effects to the fish and fish habitat VCs, including Westslope Cutthroat Trout, indicate the potential for a residual effect on Ktunaxa Nation's opportunity to fish and access healthy aquatic systems for fishing opportunities.

The residual effects to the use of lands and resources by the Ktunaxa Nation with respect to the opportunity to fish and the use of fish species for traditional purposes due to the Project are characterized as follows:

- Duration: *Short-term to Long-term*, as the potential for adverse effects to opportunities for fishing will be short-term as they will generally be limited to the Construction and Pre-Production and Operations phases of the Project.
- Magnitude: *Low to Moderate,* as the opportunities to fish and access to healthy aquatic systems in watercourses currently used or potential used in the future may be altered as a result of Project residual effects on fish and fish habitat VCs, including Westslope Cutthroat Trout (e.g., instream loss associated with West Alexander Creek).
- Geographic Extent: *Local*, as changes in the opportunity to fish and access aquatic systems is restricted to the Fish and Fish Habitat LSA and the KNRI LSA.
- Frequency: *Continuous*, as the opportunity to fish and access aquatic systems potentially used currently or in the future by Ktunaxa Nation is anticipated to occur during Construction and Pre-Production, Operations, and Reclamation and Closure until Project activities are completed.
- Reversibility: *Reversible Long-term to Irreversible*, changes in opportunities to fish are anticipated to be reversible as the Project footprint is reclaimed and off-site aquatic compensation is achieved. West Alexander Creek is anticipated to experience an irreversible effect due to loss of riparian habitat and Alexander Creek would likely experience reversible effects over the long-term.
- Context: *Neutral*, as opportunities to fish are present within several watercourses within the Fish and Fish Habitat LSA and the KNRI LSA, and these watercourses have been previously disturbed by human activities (e.g., Harmer Creek and mining activities). The context is also deemed neutral

due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional fishing within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on HHRA and sensory receptor locations and information provided from publicly available sources authored by Ktunaxa Nation (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a) Ktunaxa Nation has not currently made available information regarding their use of the watercourses in the Project footprint for fishing purposes while it is assumed that Ktunaxa Nation utilize the KNRI LSA for traditional purposes. It is acknowledged that Ktunaxa Nation has the potential to use watercourses that support Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, and Bull Trout VC given their current use and interest in these species, among other species of interest. The Project is anticipated to result in short-term to long-term changes in opportunities for fishing as access to upstream Grave Creek is already restricted and West Alexander Creek is restricted for some Project periods. Impacts to fish habitat, such as the loss of instream habitat, will be compensated for through the Fish and Fish Habitat Management Plan and as such, no permanent losses to the ability to fish the species of interest is anticipated. The Fish and Fish Habitat Management Plan will compensate the loss of available habitat to fish and benthic invertebrate communities in the Fish and Fish Habitat LSA and Aquatic RSA or for different uses as required for their life histories, thus resulting in no net loss of instream habitat as a result of the Project.

In consideration of the above including the lack of information regarding the use by Ktunaxa Nation of the Project footprint and affected watercourses and the Project's design to reduce impacts to fish and fish habitat VCs, the residual effect of the Project on the use of lands and resources for the traditional purpose of fishing is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Confidence considers the reliability of data and analytical methods used in the assessment of effects. Baseline conditions of relevant fish VCs within the Project footprint and Fish and Fish Habitat LSA are well established, providing sufficient data to assess effects to changes in the opportunity for Ktunaxa Nation to fish and access to healthy aquatic systems. Though baseline data was sufficient to evaluate effects for the fish and fish habitat VCs, areas currently or potentially used by Ktunaxa to fish were not available at the time of the assessment. As such, the confidence of the residual effects to the current use of lands and resources by Ktunaxa for fishing and fish opportunities is considered to be low to moderate.

The residual effects to opportunities for fishing and access to aquatic systems will be further discussed through continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Thus, the continued consultation and follow-up program to be implemented is expected to improve the low to moderate level of confidence.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation

did not provide Project-specific information included in Section 23.10.2.1 that addressed their concerns related to the Ktunaxa Nation's traditional fishing activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information, waterbodies and watercourses continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation (KNC, 2016a). Fishing (i.e., access to wild meat) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Fish and fish habitat are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice fishing, the Ktunaxa Nation require access to healthy streams and rivers within their traditional territory (KNC, 2016a).

During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds sustaining healthy Westslope Cutthroat Trout populations, and providing Ktunaxa cultural opportunities that are relatively free from impacts of industrial coal mining (Appendix 23-A, Tables 23.A-1 and 23.A-2). No other information related to the critical importance of the West Alexander and Alexander Creek watersheds was available at this time. As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to fish and fishing opportunities in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in fish populations, reduced access to waterways, water quality concerns in the Elk Valley). The possible future use of these areas for fishing without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future fishing activities in the KNRI LSA and RSA) (KNC, 2021m).

Change to Use of Lands and Resources for Traditional Hunting and Trapping Purposes

Based on available information, hunting and trapping is understood to be a traditional activity undertaken by the Ktunaxa Nation within their Traditional Territory. The harvest of wildlife is a potential valuable source of country food and sustenance to the Ktunaxa Nation and may contribute to their cultural activities. Based on these HHRA and sensory receptor locations, information provided from publicly available sources authored by Ktunaxa Nation, preliminary consultation, and of the wildlife VC species identified as part of the EA regulatory process, grizzly bear, elk, moose, bighorn sheep, mountain goat, American badger, Canada lynx, American marten, waterfowl (ducks and geese), migratory birds and raptors have been identified as being species of interest to Ktunaxa Nation. This section covers all of the wildlife VCs listed here and subsections specific to grizzly bear, elk, and bighorn sheep follow to highlight these as particular species of interest to the Ktunaxa Nation. The wildlife and wildlife habitat residual effects assessment (Chapter 15) was used to support an understanding of Project-related effects that have the potential to change hunting and trapping by Ktunaxa Nation. Residual effects to wildlife VCs include:

- Habitat loss and degradation;
- Sensory disturbance;
- Disruption to movement; and
- Increased mortality risk.

The assessment of residual effects to land use and access (Chapter 19) was used to understand potential effects on the availability of lands used for hunting and trapping. In addition, changes to air quality (Chapter 6) and noise (Chapter 7) may result in indirect sensory disturbance to Indigenous land users and alter or deter their use of the lands for hunting and trapping. Changes to abundance, disturbance, occupancy, seasonal movements, movement corridors, and habitat requirements for wildlife species identified by Ktunaxa Nation and considered in the EIS are included in Chapter 15. For the assessment of these potential impacts on Ktunaxa Nation as a result of the changes to air quality, noise, abundance, disturbance, occupancy, seasonal movements, movement corridors, and habitat requirements for wildlife species identified by Ktunaxa Nation are addressed further in Section 23.11.2.1.2.

Potential effects on the opportunity to hunt and trap that may result from changes associated with the Project include:

- Potential change in accessibility to hunt and trap within the KNRI LSA during the Construction and Pre-Production, Operations, and Reclamation and Closure phases due to changes in land use as a result of Project development.
- Potential change in the value of place as a result of the change in accessibility to hunt and trap, or the actual or perceived change in quality of species hunted or trapped, within the KNRI LSA during the Construction and Pre-Production, Operations, and Reclamation and Closure phases.
- Potential change in the ability to know and teach the Ktunaxa Nation's cultural and social aspects hunting and trapping within the Project footprint and the KNRI LSA during the Construction and Pre-Production and Operations phases due to changes in access and wildlife quality.
- Potential change in the availability of wildlife species to hunt and trap due to changes in habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk during all phases of the Project.
- Potential change in hunting pressure due to change in access to areas surrounding the Project footprint through all phases of the Project.

Mitigation measures have been recommended to avoid, minimize, or otherwise address potential adverse effects to the wildlife VCs that are related to the Ktunaxa Nation's rights and interests. Specific mitigation for wildlife VCs related to the Ktunaxa Nation can be referenced in Chapter 15.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in this chapter in Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation presented in Section 23.10.2.2 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the wildlife VCs. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

The Project has the potential to result in residual adverse effects to wildlife species such as ungulate, carnivore, aquatic mammals, waterfowl and birds potentially used by Ktunaxa Nation for hunting and trapping. In particular, wildlife habitat will be removed, and wildlife species movement disrupted as a result of Project Construction and Pre-Production and Operations. These impacts have the potential to result in residual effects to Ktunaxa Nation due to the anticipated temporary decline in the wildlife species

available for use by Ktunaxa Nation in hunting and trapping practices as well as the temporary impact to the accessibility of areas that may be potentially used to hunt and trap in the Project footprint and the KNRI LSA. Though residual effects to wildlife VCs may occur as result of the Project, no significant adverse effects are anticipated. In the Reclamation and Closure phase approximately 785 ha of self-sustaining ecosystems will be reclaimed within the disturbance footprint to reclaim wildlife habitat impacted as a result of the Project and this is expected to renew the use of the Project footprint for hunting and trapping related activities.

Potential residual effects to the use of lands and resources by the Ktunaxa Nation for the traditional purpose of hunting and trapping is characterized as follows:

- Duration: *Long-term*, the potential for adverse effects to opportunities for hunting and trapping species of interest will be long-term as the effects related to habitat loss and degradation, sensory disturbance, and disruption to movement are expected to continue to the end of the Reclamation and Closure phase of the Project.
- Magnitude: *Low* to *Moderate*, the potential for negative effects to opportunities for hunting is low to moderate based the limited amount of expected loss of high-quality habitat, or the semi-permanent nature of infrastructure such as that of linear infrastructure that might impact species movements, and limited percentage of high-quality habitat that will be impacted by potential sensory disturbance.
- Geographic Extent: *Local*, potential effects to opportunities for hunting and trapping are restricted to the Project footprint and the KNRI LSA.
- Frequency: *Continuous*, the potential for adverse effects to species of interest are expected to occur continuously as the Project activities are completed, from Construction and Pre-Production to Reclamation and Closure.
- Reversibility: *Reversible Long-term*, changes in current use of lands and resources for traditional purposes resulting from the Project activities related to hunting and trapping are anticipated to be reversible as the site is reclaimed and ecosystems are re-established (Chapter 33, Section 33.4.1.3).
- Context: *Neutral*, the opportunity to conduct traditional hunting and trapping within the Project footprint and local study areas is important to Ktunaxa Nation citizens. The Project footprint is within Ktunaxa Nation Traditional Territory, once utilized and depended upon by Ktunaxa Nation ancestors and part of the rights and interests of Ktunaxa Nation citizens of today. Changes to Ktunaxa Nation's accessibility to opportunities for hunting and trapping is deemed neutral due to the importance of these traditional activities to Ktunaxa Nation cultural and traditional identity and the importance of available lands for traditional practices (as a result of the loss of available lands for resource use in general within British Columbia and Alberta due to multiple industry and development expansions), balanced with the anticipated renewed access and availability of these resources following the completion of the Project. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional hunting and trapping activities within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on the HHRA and sensory receptor locations provided by the Ktunaxa Nation, information from publicly available sources authored by Ktunaxa Nation, and preliminary consultation with the Ktunaxa

Nation, it is assumed that hunting and subsistence harvesting occurs within the Project footprint and the KNRI LSA. Information on what species in the Project Footprint and harvested and to what degree and frequency has not been shared. It is anticipated that currently Ktunaxa Nation has a moderate level of use in the Terrestrial LSA based on the above.

The anticipated moderate level of use by Ktunaxa coupled with the lack of significant adverse effects to wildlife VCs that potentially used for hunting and trapping purposes indicates the low-level residual effect on the change in lands and resources for traditional hunting and trapping. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to hunting and trapping within the Project footprint or VC study areas. As part of Project Reclamation and Closure, wildlife habitat will be reclaimed within the disturbance footprint, and result in a variety of wildlife habitat types for use by ungulate, carnivore, and bird species.

In consideration of the above regarding available information with respect to use by Ktunaxa Nation and the Project's design to reduce impacts to wildlife VCs, ecosystems, land use, air and noise, the residual effect of the Project on the historic and current use of lands and resources for traditional hunting and trapping is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Confidence considers the reliability of data and analytical methods used in the assessment of effects. Baseline conditions of relevant VCs within the Project footprint and VC study areas are well established, providing sufficient data to assess effects to changes in the opportunity for Ktunaxa Nation to hunt and trap. Though baseline data was sufficient to evaluate effects for Project VCs, not all species of interest to Ktunaxa Nation identified through publicly available information were evaluated to the depth of the VC baseline studies and effects assessment. As such, the confidence of the residual effects to the current use of lands and resources by Ktunaxa for hunting and trapping is considered to be low to moderate.

The subsections included below on grizzly bear, elk, and bighorn sheep highlight Ktunaxa Nation's identification of these species as being culturally significant based on feedback previously received (IAAC, 2015a; Appendix 23-A, Table 23.A-2). Additional information on carnivore and ungulate species can be found in Chapter 15.

Ktunaxa Nation's Species of Interest: Grizzly Bear

As noted above and in Section 23.5.4, during consultation and engagement activities, the Ktunaxa Nation provided feedback that detailed the cultural significance of grizzly bear to the Nation (Appendix 23-A, Table 23.A-2). As such, this section focuses on the assessment of the effects of the Project on the changes to the environment in relation to grizzly bear. Grizzly bear was assessed for potential Project-related effects on habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk. Mitigation measures as recommended in Chapter 15, Section 15.5.3.3 will contribute to effect minimization, but residual effects are still anticipated to remain to this species.

The Project footprint overlaps with high-quality grizzly bear habitat The grizzly bear model predicts that high-quality habitat in the Project footprint is present in spring, summer, and fall. The Project will result in a predicted loss of up to 228 ha (in fall) of high-quality grizzly bear habitat, representing a loss of up to

3.7% of the total amount of high-quality grizzly bear habitat available in the Terrestrial LSA (6,195 ha). High-quality habitat loss will be in various portions of the Project footprint including the rail loadout, the utility corridor, and upgrading of the lower portions of the access road and the mine site. On a proportional basis, the availability of high-quality grizzly bear habitat is lower within the Project footprint compared to the Terrestrial LSA as whole (0 to 18% for the Project footprint and 13 to 27% for the Terrestrial LSA, depending on the season), meaning high-quality habitat is more common outside the footprint than it is within.

Clearing will begin in Construction and Pre-Production with initial portions of the 1,283 ha footprint (including the buffer) prepared for the mine site facilities, a portion of the North Pit, the Interim Sediment Pond, roads, the conveyor, the powerline, and the rail loadout. During Operations, progressive clearing of the pits, Mine Rock Storage Facility, and Main Sediment Pond will continue through to Year 15. Habitat loss will have a continuous adverse effect until progressive reclamation begins in Year 10 of Operations. With progressive reclamation between Years 10 and 15 and continued reclamation in the Reclamation and Closure phase, the effect of habitat loss will begin to decline.

Post mine reclamation will reclaim a mosaic of coniferous forest, open alpine tundra, rock outcrops, shrub and graminoid dominated brushland, talus slopes, wetlands and riparian areas (described in Section 15.5.3.3.1 and in the Ecological Restoration Plan, Chapter 33, Section 33.4.1.3). Most of the reclaimed ecosystems will provide habitat for grizzly bear (i.e., food, security, or thermal protection) over time. Reclamation will begin in Year 10 of Operations for limited areas and then accelerating at the end of Operations. Within five years of closure, graminoids, forbs, and some shrubs will have become established and will begin to provide food for grizzly bear, though the quality will be variable and may be limited in many areas. While grizzly bears have been found to access reclaimed mines to forage on vegetation and prey on ungulates (Cristescu et al., 2011); mine reclamation areas have generally not been found to support high value forage used by grizzly bears (Teck Coal Limited, 2014b; Mowat et al., 2018). Food availability will progressively improve at 25- and 50-years post-closure. Forest will begin to become established at 50 years post-closure onward, especially at low elevations, and begin to provide security. The Project footprint is ultimately expected to be a landscape similar in structure and composition to the pre-Project landscape.

The east side of the Project footprint includes a contingency area that extends over the top of Crown Mountain and downslope for approximately 250 m. This area contains the start zones for avalanche chutes that continue downslope toward Alexander Creek. If the start zones are modified through excavation or stockpiling, the avalanche regime may change and may degrade or eliminate avalanche chute habitat downslope and outside the Project footprint. There are 45 ha of shrub avalanche chute outside the Project footprint that may be affected if their start zones are modified or lost. This therefore represents an additional 45 ha of additional high-quality habitat loss (1.1% of high-quality spring habitat in the Terrestrial LSA) beyond that already occurring within the Project footprint. Habitat degradation of areas outside the Project footprint can also occur from potential introduction and spread of invasive species, changes in vegetation vigour from dust deposition, and surface water runoff from the Project footprint that can contain suspended solids and affect vegetation. Mitigation for each of these effects was described in Chapter 13: Landscapes and Ecosystems Assessment and found to have no residual effects to each of the ecosystem VCs. The Project footprint includes a buffer area intended to account for uncertainty in precise boundaries of disturbance. Not all of the buffer area will be disturbed, and the calculations of habitat loss are therefore conservative and may be overestimated.

Grizzly bear habitat will be functionally lost or disturbed due to sensory disturbance. This is in addition to direct habitat loss from clearing. Sensory disturbance for grizzly bear includes behavioural responses to Project-related noise, vibration, light, dust, and human presence. Sensory disturbance from noise has the potential to extend furthest and is the focus of the residual effects assessment. Potential effects arising from vibration, light, dust, and human presence would be expected to be less than those arising from noise. Grizzly bears are sensitive to human activities and may be displaced within the noise zones of influence. Habitat is not lost, but grizzly bear may spend less time in areas affected by noise, effectively degrading the quality of habitat or eliminating availability completely. The zone of influence from noise is largest at the pit where the CHPP and most heavy equipment is located.

Grizzly bears make daily movements between habitats that provide food, security, and thermal protection, and seasonal movements that track food availability. The Project has the potential to block both daily and seasonal movements. Disruption to movement may be particularly high when Project activities and components are within restricted terrain features including narrow valleys or canyons. When the Project is at its largest extent and prior to any large areas of reclamation (around Year 10 of Operations), the mine site footprint will occupy a large portion of the West Alexander Creek valley and will be an impermeable barrier in the area that it occupies. The upper slopes of the west side of the valley will remain intact but will be degraded by sensory disturbance and use for connectivity between daily or seasonal habitats may be reduced.

Along the conveyor, underpasses will be created by elevating the conveyor and the use of the conveyor underpasses and habitats adjacent to the conveyor will be dependent on sensitivity to the physical presence of the conveyor and the noise that is generated. The conveyor is expected to represent a semi-permeable barrier to grizzly bear.

Pathways of increased risk of mortality (described in Sections 15.5.3.2.3) that are unlikely to be fully mitigated are collisions with Project-related traffic on access or mine roads, collisions with trains, and increased hunter access after closure. The Project will involve loading of 120 trains per year. Trains will not be travelling at high speeds within the rail loadout and train-wildlife collisions in this area are unlikely. There will be an incremental increase in rail traffic on the main rail lines as a result of the Project (one additional train every three days on average) where the risk of wildlife-train collisions is higher. The extent to which the Project will contribute to an incremental increase in grizzly bear mortalities from train collisions is unknown.

The upgraded Grave Creek Road will remain open post-closure and may provide increased access to hunters. Though there is no open hunting season for grizzly bear, there is the potential for poaching. The current condition of the road is rough, though is currently accessed by 4x4 vehicles, snowmobiles, and all-terrain vehicles. Access up from Grave Creek Road to the mine site will be open to the public. The road to the explosives factory will be decommissioned and reclaimed. The potential for increased poaching of grizzly bear as a result of increased access is difficult to predict but is assumed to be very low. Measures to mitigate the effects of increased traffic volume along Grave Creek Road on the frequency of crossing by wildlife will be implemented; there is uncertainty on their effectiveness. A program will be developed to monitor carnivore and other wildlife movement across Grave Creek Road at Grave Creek Canyon and in areas immediately adjacent (for comparison) using remote wildlife cameras, similar to the program for the overland conveyor. Other wildlife monitoring are outlined in the Wildlife Management and

Monitoring Plan (Chapter 33, Section 33.4.1.13) to support the verification of mitigation measures and effects predictions relating to carnivore VCs.

In the South Rockies Grizzly Bear Population Unit, there are an estimated 239 grizzly bears, and current population density estimates in southeast B.C. are considerably lower than during the 1980s. The grizzly bear population north of Highway 3 within the Elk, Bull, and White River valleys declined by 40% between 2006 and 2013 while a preliminary analysis of very recent data suggests that there has been a very recent population increase in the Elk Valley since 2012 (Mowat et al., 2018). Direct habitat loss as a result of the Project is of low magnitude and is partly reversible, though the quality of reclaimed areas to grizzly bear will be variable. The indirect habitat loss and degradation from potential impact to the avalanche chutes on the east side of Crown Mountain (if it occurs) may be much more important to grizzly bear, as avalanche chutes rank among the most important habitats for grizzly bear. Sensory disturbance will further degrade habitat in the West Alexander Creek valley. The West Alexander Creek valley will be partially blocked to grizzly bear movements (by the pits and Mine Rock Storage Facility before they are reclaimed); other portions of the Project footprint will represent a semi-permeable barrier.

Direct habitat loss as a result of the Project is of low magnitude and is partly reversible, though the quality of reclaimed areas to grizzly bear will be variable. The indirect habitat loss and degradation from potential impact to the avalanche chutes on the east side of Crown Mountain (if it occurs) may be much more important to grizzly bear, as avalanche chutes rank among the most important habitats for grizzly bear. Sensory disturbance will further degrade habitat in the West Alexander Creek valley. The West Alexander Creek valley will be partially blocked to grizzly bear movements (by the pits and Mine Rock Storage Facility before they are reclaimed); other portions of the Project footprint will represent a semi-permeable barrier.

Based on the characterization of the residual effects and recent trends in local grizzly bear population levels, the Project is unlikely to contribute to limiting the ability of grizzly bear to recover from past declines and maintain a stable population in the Terrestrial LSA. The combined residual effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk on grizzly bear are therefore considered not significant.

Considering the above, while the Project has no significant residual effects to grizzly bear, there may be potential residual adverse effects to the Ktunaxa Nation's rights in relation to the species in the Project footprint and the KNRI LSA. As noted earlier, in relation to grizzly bear, the potential to result in residual effects to Ktunaxa Nation may occur due to the potential change in land use, value of place as a result of the change in accessibility to access or the actual or perceived change in the availability of grizzly bear, change in the ability to know and teach the Ktunaxa Nation's cultural and social aspects of the species, and potential increase in accessibility pressure because of increased access surrounding the Project area through all phases of the Project.

The potential residual effects to the Ktunaxa Nation with respect to grizzly bear in relation to the Ktunaxa Nation's traditional activities are characterized as follows:

- Duration: *Long-term*, the potential for adverse effects to grizzly bear will be long-term as the residual effects related to habitat loss and degradation, sensory disturbance, disruption to

movement, and increased mortality are expected to continue to the end of the Reclamation and Closure phase of the Project.

- Magnitude: *Low to Moderate*, the potential for negative effects to grizzly bear is low to moderate based the limited amount of expected loss of high-quality habitat (up to 3.7% in the Terrestrial LSA), or the semi-permanent nature of infrastructure such as that of linear infrastructure that might impact species movements, the limited percentage of high-quality habitat that will be impacted by potential sensory disturbance (up to 8.9% will be affected by noise, depending on the season), and the mortalities as a result of the Project that are expected to be uncommon.
- Geographic Extent: *Local*, potential effects to grizzly bear are restricted to the Project footprint and the KNRI LSA.
- Frequency: *Continuous*, the potential for adverse effects to grizzly bear are expected to occur continuously as the Project activities are completed, from Construction and Pre-Production to Reclamation and Closure. The effect of habitat loss and degradation and disruption to movement is expected to be continuous until lost habitat is restored, varying for sensory disturbance until the end of Operations, peaking at Year 10 of Operations with noise from blasting being intermittent and mortalities at sporadic intervals (if any) during any phase of the Project.
- Reversibility: *Reversible Long-term*, changes in current use of lands and resources for traditional purposes resulting from the Project activities related to grizzly bear are anticipated to be reversible as the site is reclaimed and ecosystems are re-established (Chapter 33). The effect of noise will decline substantially at the end of Operations and continue at lower levels during Reclamation and Closure and increased mortality risk will end after Reclamation and Closure.
- Context: *Low*, as grizzly bear has low resilience to disruption in the receiving environment and will not easily adapt to effects and the grizzly bear population is very sensitive to change in mortality. The Project footprint is within Ktunaxa Nation's Traditional Territory, once utilized and depended upon by Ktunaxa ancestors and part of the rights and interests of Ktunaxa Nation citizens of today. Changes to Ktunaxa Nation's accessibility to grizzly bear is deemed low due to the importance of these traditional activities to Ktunaxa cultural and traditional identity and the importance of available lands for traditional practices (as a result of the loss of available lands for resource use in general within British Columbia and Alberta due to multiple industry and development expansions), balanced with the anticipated renewed access and availability of these resources following the completion of the Project. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to access grizzly bears within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on the characterization of the residual effects and recent trends in local grizzly bear population levels, the Project is unlikely to contribute to limiting the ability of grizzly bear to recover from past declines and maintain a stable population in the Terrestrial LSA. At the time of this submission, the Ktunaxa Nation have not made available information regarding their use of the Project footprint for access to grizzly bear and it is anticipated that currently the Ktunaxa Nation have a moderate level of use in the Terrestrial LSA used to evaluate effects to VCs due to previously noted disturbances. The anticipated moderate level of use by the Ktunaxa Nation coupled with the lack of significant adverse effects to grizzly bear that are potentially hunted indicates that there would be low-level residual effects on the change in

lands and resources for traditional activities. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to grizzly bear within the Project footprint or the grizzly bear VC study areas (i.e., the Grizzly Bear RSA). As part of the Project Reclamation and Closure phase, wildlife habitat will be reclaimed within the disturbance footprint, and result in a variety of wildlife habitat types for use by grizzly bear. Therefore, in consideration of the above and the Project's design to reduce impacts to grizzly bear, the residual effect of the Project on the Ktunaxa Nation's use of lands and resources related to grizzly bear is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. There is a good understanding of grizzly bear ecology, their habitat availability and distribution, known occurrences, and abundance in the Terrestrial LSA. There is uncertainty in the grizzly bear population trend in the Elk Valley and the factors that may most contribute to grizzly bear population stability. Furthermore, the loss of additional avalanche chutes on the east site of Crown Mountain is uncertain. The confidence in the significance determination of residual effects to grizzly bear is therefore moderate. Confidence considers the reliability of data and analytical methods used in the assessment of effects. Baseline conditions of grizzly bear within the Project footprint and the grizzly bear VC study areas are well established, providing sufficient data to assess effects to changes in the opportunity for the Ktunaxa Nation to hunt grizzly bear. Though baseline data was sufficient to evaluate effects for Project VCs, not all species of interest to the Ktunaxa Nation identified through publicly available information were evaluated to the depth of the grizzly bear VC baseline studies and effects assessment. As such, the confidence of the residual effects to the use of lands and resources by the Ktunaxa Nation is considered to be low to moderate.

Ktunaxa Nation's Species of Interest: Elk

As noted above and in Section 23.5.4, during consultation and engagement activities, the Ktunaxa Nation provided feedback that detailed the cultural significance of elk to the Nation (Appendix 23-A, Table 23.A-2). As such, this section focuses on the assessment of the effects of the Project on the changes to the environment in relation to elk. Elk were assessed for potential Project-related effects on habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk. Mitigation measures as recommended in Chapter 15, Section 15.4.3.3 will contribute to effect minimization, but residual adverse effects are still anticipated to remain for the species.

The Project footprint overlaps with high-quality elk habitat and will result in a predicted loss of 191 ha of high-quality fall-winter habitat, representing 7.1% of the total amount of high-quality fall-winter elk habitat available in the Terrestrial LSA (2,671 ha). Loss will be in various portions of the Project footprint, including the rail loadout, the utility corridor, the Mine Rock Storage Facility, and pits. On a proportional basis, the availability of high-quality fall-winter elk habitat is higher within the Project footprint compared to the Terrestrial LSA as whole (15% for Project footprint and 11% for the Terrestrial LSA), meaning high-quality habitat is more common within the footprint than it is outside. The Project will result in a predicted loss of 23 ha of high-quality spring-summer habitat, representing 2.7% of the total amount of high-quality spring-summer elk available in the Terrestrial LSA (863 ha). On a proportional basis, the availability of high-quality elk habitat in spring-summer is lower within the Project footprint compared to the Terrestrial LSA as whole (2% for Project footprint and 4% for the Terrestrial LSA), meaning high-quality habitat is more common outside the Project footprint than it is within.

Clearing will begin in Construction and Pre-Production with initial portions of the 1,283 ha Project footprint (including the buffer) prepared for the mine site facilities, a portion of the North Pit, the Interim Sediment Pond, roads, the conveyor, the powerline, and the rail loadout. During Operations, progressive clearing of the pits, Mine Rock Storage Facility, and Main Sediment Pond will continue through to Year 15. Elk habitat loss will have a continuous adverse effect until progressive reclamation begins in Year 10 of Operations. With progressive reclamation between Years 10 and 15 and continued reclamation in the Reclamation and Closure phase, the effect of habitat loss will begin to decline. The service corridor with the 138 kV powerline will be cleared during Construction and Pre-Production. The area beneath the powerlines and between power poles will naturally revegetate over time and will be accessible to elk. Areas that were previously forest will no longer provide security and thermal protection but will provide forage. After decommissioning, trees will eventually return, though not established as a forest for several decades following Reclamation and Closure. A 100 m wide corridor has been allocated for construction of the 2.7 km long overland coal conveyor. Not all portions of the corridor will require clearing and temporary construction areas will rapidly revegetate and provide forage for elk in spring-summer.

Post mine reclamation will restore a mosaic of coniferous forest, open alpine tundra, rock outcrops, shrub and graminoid dominated brushland, talus slopes, wetlands and riparian areas (described in Chapter 15, and in the Ecological Restoration Plan, Chapter 33, Section 33.4.1.3). Most of the restored ecosystems (all aside from sparsely vegetated talus) will provide habitat for elk (i.e., food, security or thermal protection) over time. Reclamation will begin in Year 10 of Operations for limited areas and then accelerating at the end of Operations. Within five years of closure, graminoids, forbs, and some shrubs will have become established and will begin to provide food for elk, though the quality will be variable and may be limited in many areas. Food availability will progressively improve at 25- and 50-years post-closure. Forest will begin to become established at 50 years post-closure onward, especially at low elevations, and begin to provide security and thermal protection.

The Project footprint is ultimately expected to be a landscape similar in structure and composition to the pre-Project landscape. Reclaimed mining areas tend to be heavily used by elk in the Terrestrial RSA and habitat availability has likely increased. Elk show strong selection for grassland habitats on reclaimed mine sites in the Elk Valley, and several herds remain on mining habitats year-round (Gibson and Sheets, 1997). It is likely that elk are selecting for reclaimed mining areas partially due to the vegetation conditions, in addition to the inferred protection from predators. The Project footprint includes a buffer area intended to account for uncertainty in precise boundaries of disturbance. Not all of the buffer area will be disturbed, and the calculations of habitat loss are therefore conservative and may be overestimated.

Habitat degradation of ungulate habitat can occur from potential introduction and spread of invasive species, changes in vegetation vigour from dust deposition, and surface water runoff from the Project footprint that can contain suspended solids and affect vegetation. Mitigation for each of these effects was described in Chapter 13 and found to have no residual effects to each of the ecosystem VCs. Effects of habitat degradation on ungulates was therefore considered to be nil or so small in magnitude relative to direct habitat loss that it was not quantified further.

Elk habitat may be functionally lost or disturbed due to sensory disturbance. This is in addition to direct habitat loss from clearing. Sensory disturbance for elk includes behavioural responses to Project-related noise, vibration, light, dust, and human presence. Sensory disturbance from noise and vibration has the potential to extend further than light, dust, and human presence and is thus the focus of the residual

effects assessment, for conservatism. Continuous Project-related noise at ≥ 45 dBA (nighttime threshold) will affect up to 1,118 ha outside the Project footprint. This overlaps with up to 66 ha of high-quality fall-winter habitat and 22 ha of high-quality spring-summer habitat when Project-related noise is at its peak in Year 10 of Operations. This represents 2.5% and 2.6% of fall-winter and spring-summer high-quality habitat in the Terrestrial LSA, respectively. A much smaller amount of high-quality habitat may be affected in daytime using the ≥ 55 dBA daytime threshold. Peak noise from blasting could affect 74 ha of high-quality fall-winter habitat and 67 ha of high-quality spring-summer habitat. This represents 2.8% and 7.8% of fall-winter and spring-summer high-quality habitat in the Terrestrial LSA, respectively.

Elk may be displaced within the noise zones of influence. Habitat is not lost, but elk may spend less time in areas affected by noise, effectively degrading the quality of habitat or eliminating availability completely. Elk frequently habituate to human disturbance and are often associated with built-up areas and roadways and in close proximity to active mine sites if winter forage availability is high. The effect of sensory disturbance may therefore be less relative to other ungulates. Once the Operations phase is complete, noise will substantially decrease and noise from blasting will cease. Noise during Reclamation and Closure will be from decommissioning and removal of infrastructure and reclamation activities.

Elk make daily movements between habitats that provide food, security, and thermal protection and seasonal movement between mid and high elevation subalpine area in spring-summer and lower elevation valley areas in fall-winter. The Project has the potential to block both daily and seasonal movements and the disruption cannot be fully mitigated. Known elk movement corridors in the Terrestrial LSA include:

- A north-south corridor that connects the Erickson Ridge to Sheep Mountain (Grave Creek Canyon);
- Corridors of forested habitat along the Elk River's tributaries;
- A north-south corridor along Natal Ridge;
- Corridor from Natal Ridge to Alexander Creek drainage;
- Corridor from Natal Ridge to Harmer Valley via Erickson Valley; and
- A north-south corridor that connects Alexander Creek and Michel Creek.

The north-south corridor that connects Erickson Ridge to Sheep Mountain (through Grave Creek Canyon) intersects with the access road. The access road will be upgraded and will have higher levels of daily traffic relative to existing conditions. Elk can still be attracted to roads for suitable forage and salt from application of de-icing materials. Elk were recorded along Grave Creek Road in both summer and winter. In general, roads represent a semi-permeable barrier to elk, provided that no physical barriers are created during road upgrade or unbroken snowbanks created from snow clearing. The predicted traffic level of 140 vehicles per day is unlikely to affect crossing success, especially with speed reductions in areas known to have frequent wildlife (e.g., Grave Creek Canyon) and provided that wildlife have the right-of-way. No new access roads will be created (aside from those in the pits and dump areas).

When the Project is at its largest extent and prior to any large areas of reclamation (around Year 10 of Operations), the mine site footprint will occupy a large portion of West Alexander Creek valley and will be a nearly impermeable barrier. The upper slopes of the west side of the valley will remain intact but may be degraded by sensory disturbance and use for connectivity between daily or seasonal habitats may be reduced. Along the conveyor, underpasses will be created by elevating the conveyor to at least 2.4 m

above ground (or higher where terrain can be used to create more clearance) at intervals of two per 1,000 m. Use of the conveyor underpasses and habitats adjacent to the conveyor will be dependent on their sensitivity to the physical presence of the conveyor and the noise that is generated. The conveyor is expected to represent a semi-permeable barrier to elk. The utility corridor is primarily composed of the powerline and the buried gas line. Suitable habitat will be present beneath the powerline after construction. The powerline may not be a barrier to movement on its own, but since it parallels the road, it may be avoided due to proximity and function as a semi-permeable barrier in combination with the road.

Pathways of increased risk of mortality for elk that are unlikely to be fully mitigated are collisions with Project-related traffic on access or mine roads and increased hunter access after closure. Even with the traffic control mitigation measures described in Chapter 15, vehicle collisions with elk may still occur. The number is expected to be small. Wildlife sightings and wildlife-vehicle collisions will be recorded and monitored. Measures to mitigate the effects of increased traffic volume along Grave Creek Road on the frequency of crossing by wildlife will be implemented; there is uncertainty on their effectiveness. A program will be developed to monitor ungulate and other wildlife movement across Grave Creek Road at Grave Creek Canyon and in areas immediately adjacent (for comparison) using remote wildlife cameras, similar to the program for the overland conveyor. Further mitigation measures will be implemented to further minimize the risk of collision, if required. Other wildlife monitoring activities are outlined in the Wildlife Management and Monitoring Plan (Chapter 33, Section 33.4.1.13) to support the verification of mitigation measures and effects predictions relating to ungulates VCs.

The Project will involve loading of 120 trains per year. Trains will not be travelling at high speeds within the rail loadout and train-wildlife collisions in this area are unlikely. There will be an incremental increase in rail traffic on the main rail lines as a result of the Project (one additional train every three days on average) where the risk of wildlife-train collisions is higher. The extent to which the Project will contribute to an incremental increase in elk mortalities from train collisions is unknown. The upgraded Grave Creek Road will remain open post-closure and may provide increased access to hunters. The current condition of the road is rough, though is currently accessed by 4x4 vehicles, snowmobiles, and all-terrain vehicles. Access up from Grave Creek Road to the mine site will be open to the public. The road to the explosives factory will be decommissioned and reclaimed. A change in access by hunters and leading to increased hunting of elk is difficult to predict, but an incremental increase is assumed.

The elk population trend in the East Kootenay region is stable (<20% change over the last 3 years). While elk population estimates in the Rocky Mountain Trench indicate a 53% decline over the past decade, the population decline is poorly understood, but attributed to legal harvest of cows that was implemented in an effort to reduce conflicts on agricultural lands during 2010 to 2012, followed by poor calf recruitment during 2013 to 2017. The Project will result in loss of only a small amount of high-quality winter habitat when elk habitat availability is most limited. Sensory disturbance has the potential to further displace elk; given that elk frequently habituate to human disturbance and are known to occur in close proximity to active mine sites, the effect of sensory disturbance is likely to be small. The reclaimed mine landscape will provide high-quality elk habitat.

Based on the characterization of the residual effects and local and regional elk population levels, the Project would not limit the ability of elk to persist and maintain self-sustaining populations in the Terrestrial LSA. The residual effects of habitat loss and degradation, sensory disturbance, disruption to

movement, and increased mortality risk on elk arising from the Project during all phases are therefore considered not significant. The Project has the potential to result in residual adverse effects to elk potentially used by Ktunaxa Nation for hunting purposes. In particular, elk movement will be potentially blocked both daily and seasonally as a result of Project Construction and Pre-Production and Operations through to Reclamation and Closure. These impacts have the potential to result in residual effects to Ktunaxa Nation due to the temporary decline in elk available for use by Ktunaxa Nation in hunting practices as well as the temporary impact to the accessibility of areas used to hunt in the Project footprint and the ATRI LSA. Though residual effects to elk may occur as result of the Project, no significant adverse effects are anticipated. In the Reclamation and Closure phase approximately 785 ha of self-sustaining ecosystems will be reclaimed within the disturbance footprint to reclaim wildlife habitat impacted as a result of the Project.

Considering the above, while the Project has no significant residual effects to elk, there may be potential residual adverse effects to the Ktunaxa Nation's use of the species in the Project footprint and the KNRI LSA. As noted earlier, in relation to elk, the potential to result in residual effects to Ktunaxa Nation may occur due to the potential change in land use, value of place as a result of the change in accessibility to hunt or the actual or perceived change in the quality of elk, change in the ability to know and teach the Ktunaxa Nation's cultural and social aspects of hunting and trapping, and potential increase in hunting pressure because of increased access surrounding the Project area through all phases of the Project.

The potential residual effects to the Ktunaxa Nation with respect to elk in relation to the Ktunaxa Nation's traditional hunting activities are characterized as follows:

- Duration: *Long-term*, the potential for adverse effects to opportunities for hunting elk will be long-term as the residual effects related to habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk are expected to continue to the end of the Reclamation and Closure phase of the Project.
- Magnitude: *Moderate*, the potential for negative effects to opportunities for hunting elk is moderate based on the limited amount of expected loss of high-quality habitat (2.7% loss in spring-summer and 7.1% loss in fall-winter in the Terrestrial LSA), or the semi-permanent nature of infrastructure such as that of linear infrastructure that might impact species movements, the limited percentage of high-quality habitat that will be impacted by potential sensory disturbance (up to 2.6% for continuous project-related noise and 7.8% for peak noise from blasting will be affected in the Terrestrial LSA), and the mortalities as a result of the Project that are expected to be uncommon.
- Geographic Extent: *Local*, potential effects to opportunities for hunting elk are restricted to the Project footprint and the ATRI LSA.
- Frequency: *Continuous*, the potential for adverse effects to elk are expected to occur continuously as the Project activities are completed, from Construction and Pre-Production to Reclamation and Closure. The effect of habitat loss and degradation and disruption to movement is expected to be continuous until lost habitat is restored, varying for sensory disturbance until the end of Operations, peaking at Year 10 of Operations with noise from blasting being intermittent and mortalities at sporadic intervals (if any) during any phase of the Project.
- Reversibility: *Reversible Long-term*, changes in current use of lands and resources for traditional purposes resulting from the Project activities related to hunting bighorn sheep are anticipated to be reversible as the site is reclaimed and ecosystems are re-established (Chapter 33). The effect

of noise will decline substantially at the end of Operations and continue at lower levels during Reclamation and Closure and increased mortality risk will end after Reclamation and Closure.

- Context: *Neutral*, as elk have low sensitivity and high resilience to human activities and may be able to adapt to certain levels of noise generated by the Project. The Project footprint is within Ktunaxa Nation's Traditional Territory, once utilized and depended upon by Ktunaxa ancestors and part of the rights and interests of Ktunaxa Nation citizens of today. Changes to Ktunaxa accessibility to opportunities for hunting elk is deemed neutral due to the high resilience of elk, the anticipated renewed access and availability of the species following the completion of the Project, and the continued availability of elk outside of the Project footprint in the KNRI LSA, balanced with the importance of these traditional activities to importance of these traditional activities to Ktunaxa cultural and traditional identity and the importance of available lands for traditional practices (as a result of the loss of available lands for resource use in general within British Columbia and Alberta due to multiple industry and development expansions). The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to access and use elk within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on the characterization of the residual effects and local and regional elk population levels, the Project would not limit the ability of elk to persist and maintain self-sustaining populations in the Terrestrial LSA. At the time of this submission, the Ktunaxa Nation have not currently made available information regarding their use of the Project footprint for hunting of elk. It is assumed that currently the Ktunaxa Nation have a moderate level of use in the Terrestrial LSA. The anticipated moderate level of use by the Ktunaxa Nation coupled with the lack of significant adverse effects to elk that are potentially hunted indicates that there would be low-level residual effects on the change in lands and resources for traditional hunting. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to hunting elk within the Project footprint or the elk VC study areas (i.e., the Terrestrial LSA). As part of Project Reclamation and Closure phase, wildlife habitat will be reclaimed within the disturbance footprint, and result in a variety of wildlife habitat types for use by elk. Therefore, in consideration of the above and the Project's design to reduce impacts to elk, the residual effect of the Project on the Ktunaxa Nation's use of lands and resources for traditional hunting elk is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. There is a good understanding of elk ecology, their habitat availability and distribution, known occurrences, and abundance in the Terrestrial LSA. The confidence in the determination of the significance of residual effects to elk is high. Confidence considers the reliability of data and analytical methods used in the assessment of effects. Baseline conditions of elk within the Project footprint and the elk VC study areas are well established, providing sufficient data to assess effects to changes in the opportunity for Ktunaxa Nation to hunt elk. Though baseline data was sufficient to evaluate effects for Project VCs, not all species of interest to Ktunaxa Nation identified through publicly available information were evaluated to the depth of the elk VC baseline studies and effects assessment. As such, the confidence of the residual effects

to the use of lands and resources by the Ktunaxa Nation for traditional hunting activities is considered to be low to moderate.

Ktunaxa Nation's Species of Interest: Bighorn Sheep

As noted above and in Section 23.5.4, during consultation and engagement activities, the Ktunaxa Nation provided feedback that detailed the cultural significance of bighorn sheep to the Nation (Appendix 23-A, Table 23.A-2). As such, this section focuses on the assessment of the effects of the Project on the changes to the environment in relation to bighorn sheep. Bighorn sheep was assessed for potential Project-related effects on habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk. Mitigation measures as recommended in Chapter 15, Section 15.4.3.3 will contribute to effect minimization, but residual adverse effects are still anticipated to remain to this species.

The Project footprint overlaps with high-quality bighorn sheep habitat and the Project will result in a predicted loss of 202 ha of high-quality habitat, representing 3.3% of the total amount of high-quality bighorn sheep habitat available in the Terrestrial LSA (6,192 ha). Loss will be at the mine site, primarily along the ridge on the east side of the valley, though some in avalanche chutes on the west side of the Mine Rock Storage Facility. There will be no loss of bighorn sheep habitat along Erickson Ridge where winter range is known to occur. On a proportional basis, the availability of high-quality bighorn sheep habitat is lower within the Project footprint compared to the Terrestrial LSA as whole (16% for Project footprint and 26% for the Terrestrial LSA), meaning high-quality habitat is more common outside the Project footprint than it is within.

Clearing will begin in Construction and Pre-Production with initial portions of the 1,283 ha Project footprint (including the buffer) prepared for the mine site facilities, a portion of the North Pit, the Interim Sediment Pond, roads, the conveyor, the powerline and the rail loadout. During Operations, progressive clearing of the pits, Mine Rock Storage Facility, and Main Sediment Pond will continue through to Year 15. Bighorn sheep habitat loss will have a continuous adverse effect until progressive reclamation begins in Year 10 of Operations. With progressive reclamation between Years 10 and 15 and continued reclamation in the Reclamation and Closure phase, the effect of habitat loss will begin to decline.

Post mine reclamation will reclaim a mosaic of coniferous forest, open alpine tundra, rock outcrops, shrub and graminoid dominated brushland, talus slopes, wetlands, and riparian areas (described in Chapter 15, and in the Ecological Restoration Plan, Chapter 33, Section 33.4.1.3). Most of the high elevation ecosystems will provide habitat for bighorn sheep and mountain goat over time. Reclamation will begin in Year 10 of Operations for limited areas and then accelerating at the end of Operations. Within 5 years of closure, graminoids, forbs, and some shrubs will have become established and will begin to provide food, though the quality will be variable and may be limited in many areas. Food availability will progressively improve at 25- and 50-years post-closure. Highwalls are to be left in their post-mine configuration with the intention of creating escape terrain habitat features for bighorn sheep and mountain goats (if the highwall slopes are steep enough). The Project footprint is ultimately expected to be a landscape similar in structure and composition to the pre-Project landscape.

Habitat degradation of ungulate habitat can occur from potential introduction and spread of invasive species, changes in vegetation vigour from dust deposition, and surface water runoff from the Project footprint that can contain suspended solids and affect vegetation. Mitigation for each of these effects is

described in Chapter 13: Landscapes and Ecosystems Assessment and found to have no residual effects to each of the ecosystem VCs. Effects of habitat degradation on ungulates was therefore considered to be nil, or so small in magnitude relative to direct habitat loss that it was not quantified further. The Project footprint includes a buffer area intended to account for uncertainty in precise boundaries of disturbance. Not all of the buffer area will be disturbed, and the calculations of habitat loss are therefore conservative and may be overestimated.

Bighorn sheep habitat may be functionally lost or disturbed due to sensory disturbance. This is in addition to direct habitat loss from clearing. Sensory disturbance includes behavioural responses to Project-related noise, vibration, light, dust, and human presence. Sensory disturbance from noise and vibration has the potential to extend further than light, dust, and human presence and is the focus of the residual effects assessment, for conservatism. Potential effects arising from vibration, light, dust, and human presence would be expected to be less than those arising from noise. Continuous Project-related noise at ≥ 45 dBA (nighttime threshold) will affect up to 1,118 ha outside the Project footprint. This overlaps with up to 338 ha of high-quality bighorn habitat when Project-related noise is at its peak in Year 10 of Operations. This represents 5.5% of high-quality habitat for bighorn sheep, in the Terrestrial LSA. A much smaller amount of high-quality habitat may be affected in daytime using the ≥ 55 dBA daytime threshold. Peak noise from blasting could affect 266 ha of high-quality bighorn sheep habitat. This represents 4.3% of high-quality habitat for bighorn sheep in the Terrestrial LSA.

Bighorn sheep may be displaced within the noise zones of influence. Habitat is not lost, but animals may spend less time in areas affected by noise, effectively degrading the quality of habitat, or eliminating availability completely. Bighorn sheep can habituate to human disturbance and are known to occur in close proximity to active mine sites if forage availability is high. The effect of sensory disturbance on bighorn sheep may therefore be less relative to other ungulates.

Blasting will be intermittent. The 1,500 m zone of influence peak from blasting (peak noise ≥ 108 dB) does not overlap with the Erickson Ridge top where the availability of high-quality habitat for bighorn sheep is greatest. Once the Operations phase is complete, noise will substantially decrease and noise from blasting will cease. Noise during Reclamation and Closure will be from decommissioning and removal of infrastructure and reclamation activities.

Movements of both bighorn sheep in the Elk Valley generally follow north-south high elevation mountain ranges and ridges but also include low elevation crossings. The main movement corridor in the Terrestrial LSA is the corridor that connects Erickson Ridge to Sheep Mountain (through Grave Creek Canyon). This corridor intersects with the access road. The access road will be upgraded and will have higher levels of daily traffic relative to existing conditions. Bighorn sheep were recorded along Grave Creek Road in both summer and winter. In general, roads represent a semi-permeable barrier, provided that no physical barriers are created during road upgrade or unbroken snowbanks created from snow clearing. The predicted traffic level of 140 vehicles per day is unlikely to affect crossing success, especially with speed reductions in areas known to have frequent wildlife (e.g., Grave Creek Canyon) and that wildlife have the right-of-way.

When the Project is at its largest extent and prior to any large areas of reclamation (around Year 10 of Operations), the mine site footprint will occupy a large portion of West Alexander Creek valley and will be a nearly impermeable barrier. The upper slopes of the west side of the valley will remain intact, but may

be degraded by sensory disturbance and use for connectivity between daily or seasonal habitats may be reduced. Along the conveyor, underpasses will be created by elevating the conveyor to at least 2.4 m above ground (or higher where terrain can be used to create more clearance) at intervals of two per 1,000 m. Bighorn sheep are unlikely to be present in the conveyor area, given the habitats available. The utility corridor is primarily composed of the powerline and the buried gas line. Suitable habitat will be present beneath the powerline after construction. The powerline may not be a barrier to movement on its own but since it parallels the road, it may be avoided due to proximity and function as a semi-permeable barrier in combination with the road.

Pathways of increased risk of mortality for bighorn sheep that are unlikely to be fully mitigated are collisions with Project-related traffic on access or mine roads and increased hunter access post-closure. Even with the traffic control mitigation measures described in Chapter 15, and the Indigenous Impact Management Plan (Section 23.10), vehicle collisions with bighorn sheep may still occur. The number is expected to be small. Wildlife sightings and wildlife-vehicle collisions will be recorded and monitored. Further mitigation measures will be implemented to further minimize the risk of collision, if required.

The Project will involve loading of 120 trains per year. Trains will not be travelling at high speeds within the rail loadout, and train-wildlife collisions in this area are unlikely. There will be an incremental increase in rail traffic on the main rail lines as a result of the Project (one additional train every three days on average) where the risk of wildlife-train collisions is higher. The extent to which the Project will contribute to an incremental increase in bighorn sheep mortalities from train collisions is unknown.

The upgraded Grave Creek Road will remain open post-closure and may provide increased access to hunters. The current condition of the road is rough, though is currently accessed by 4x4 vehicles, snowmobiles, and all-terrain vehicles. Access up from Grave Creek Road to the mine site will be open to the public. The road to the explosives factory will be decommissioned and reclaimed. A change in access by hunters and leading to increased hunting of bighorn sheep is difficult to predict, but an incremental increase is assumed. Measures to mitigate the effects of increased traffic volume along Grave Creek Road on the frequency of crossing by wildlife will be implemented; there is uncertainty on their effectiveness. A program will be developed to monitor ungulate and other wildlife movement across Grave Creek Road at Grave Creek Canyon and in areas immediately adjacent (for comparison) using remote wildlife cameras, similar to the program for the overland conveyor. Other wildlife monitoring activities are outlined in the Wildlife Management and Monitoring Plan (Chapter 33, Section 33.4.1.13) to support the verification of mitigation measures and effects predictions relating to ungulates VCs.

The latest population estimate for the Elk Valley East Population Management Unit (PMU) is 515 to 770 bighorn sheep and the Sheep Mountain and Erickson Ridge subpopulation (which extends outside the Terrestrial LSA) has a relatively stable population trend. The Project will result in loss of a relatively small amount of year-round high-quality habitat, though none of which has been mapped as bighorn sheep winter range (Poole et al., 2018). Sensory disturbance has the potential to displace bighorn sheep in high-quality annual habitat, though it does not overlap with mapped winter range. Post-closure, the reclaimed mine landscape will provide abundant forage for bighorn sheep.

Based on the characterization of the residual effects and local and regional bighorn sheep population levels, the Project would not limit the ability of bighorn sheep to persist and maintain self-sustaining populations in the Terrestrial LSA. The residual effects of habitat loss and degradation, sensory

disturbance, disruption to movement, and increased mortality on bighorn sheep arising from the Project during all phases are therefore considered not significant. The Project has the potential to result in residual adverse effects to bighorn sheep potentially used by Ktunaxa Nation for hunting purposes. In particular, bighorn sheep movement will be directly lost as a result of Project Construction and Pre-Production and Operations. These impacts have the potential to result in residual effects to Ktunaxa Nation due to the temporary decline in the bighorn sheep available for use by Ktunaxa Nation in hunting practices as well as the temporary impact to the accessibility of areas used to hunt in the Project footprint and the ATRI LSA. Though residual effects to bighorn sheep may occur as result of the Project, no significant adverse effects are anticipated. In the Reclamation and Closure phase approximately 785 ha of self-sustaining ecosystems will be reclaimed within the disturbance footprint to reclaim wildlife habitat impacted as a result of the Project.

Considering the above, while the Project has no significant residual effects to bighorn sheep, there may be potential residual adverse effects to the Ktunaxa Nation's use of the species in the Project footprint and the KNRI LSA. As noted earlier, in relation to bighorn sheep the potential to result in residual effects to Ktunaxa Nation may occur due to the potential change in land use, value of place as a result of the change in accessibility to hunt or the actual or perceived change in quality of bighorn sheep, change in the ability to know and teach Ktunaxa's cultural and social aspects of hunting and trapping, and potential increase in hunting pressure because of increased access surrounding the Project area through all phases of the Project.

The potential residual effects to the Ktunaxa Nation with respect to bighorn sheep in relation to the Ktunaxa Nation's traditional hunting activities are characterized as follows:

- Duration: *Long-term*, the potential for adverse effects to opportunities for hunting bighorn sheep will be long-term as the residual effects related to habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk are expected to continue to the end of the Reclamation and Closure phase of the Project.
- Magnitude: *Low to Moderate*, the potential for negative effects to opportunities for hunting bighorn sheep is low to moderate based on the limited amount of expected loss of high-quality habitat (3.3% in the Terrestrial LSA), limited percentage of high-quality habitat that will be impacted by potential sensory disturbance (up to 5.5% by continuous Project-related noise and 4.3% for peak noise from blasting in the Terrestrial LSA), the semi-permanent nature of infrastructure such as that of linear infrastructure that might impact species movements, and the mortalities as a result of the Project that are expected to be uncommon.
- Geographic Extent: *Local*, potential effects to opportunities for hunting bighorn sheep are restricted to the Project footprint and the ATRI LSA.
- Frequency: *Continuous*, the potential for adverse effects to bighorn sheep are expected to occur continuously as the Project activities are completed, from Construction and Pre-Production to Reclamation and Closure. The effect of habitat loss and degradation and disruption to movement is expected to be continuous until lost habitat is restored, varying for sensory disturbance until the end of Operations, peaking at Year 10 of Operations with noise from blasting being intermittent and mortalities at sporadic intervals (if any) during any phase of the Project.
- Reversibility: *Reversible Long-term*, changes in current use of lands and resources for traditional purposes resulting from the Project activities related to hunting bighorn sheep are anticipated to be reversible as the site is reclaimed and ecosystems are re-established (Chapter 33). The effect

of noise will decline substantially at the end of Operations and continue at lower levels during Reclamation and Closure and increased mortality risk will end after Reclamation and Closure.

- Context: *Neutral*, as habitat for bighorn sheep is highly specific yet they have relatively low sensitivity to noise and high resilience to human activities and may be able to adapt to certain levels of noise generated by the Project. The Project footprint is within Ktunaxa Nation Traditional Territory, once utilized and depended upon by Ktunaxa ancestors and part of the rights and interests of Ktunaxa Nation citizens of today. Changes to Ktunaxa accessibility to opportunities for hunting bighorn sheep is deemed neutral due to the high resilience of bighorn sheep, the anticipated renewed access and availability of the species following the completion of the Project, and the continued availability of bighorn sheep outside of the Project footprint in the KNRI LSA, balanced with the importance of these traditional activities to Ktunaxa cultural and traditional identity and the importance of available lands for traditional practices (as a result of the loss of available lands for resource use in general within British Columbia and Alberta due to multiple industry and development expansions). The context is also deemed neutral due to the lack of information available from the Ktunaxa Nation regarding their opportunity to access and use bighorn sheep within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on the characterization of the residual effects and local and regional bighorn sheep population levels, the Project would not limit the ability of bighorn sheep to persist and maintain self-sustaining populations in the Terrestrial LSA. At the time of this submission, the Ktunaxa Nation have not currently made available information regarding their use of the Project footprint for hunting of bighorn sheep, it is assumed that currently the Ktunaxa Nation have a moderate level of use in the Terrestrial LSA used to evaluate effects to VCs due to previously noted disturbances. The anticipated moderate level of use by the Ktunaxa Nation coupled with the lack of significant adverse effects to bighorn sheep that are potentially hunted indicates that there would be low-level residual effects on the change in lands and resources for traditional hunting. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to hunting bighorn sheep within the Project footprint or the bighorn sheep VC study areas (i.e., the Terrestrial LSA). As part of Project Reclamation and Closure phase, wildlife habitat will be reclaimed within the disturbance footprint, and result in a variety of wildlife habitat types for use by bighorn sheep. Therefore, in consideration of the above and the Project's design to reduce impacts to bighorn sheep, the residual effect of the Project on the Ktunaxa Nation's use of lands and resources for traditional hunting bighorn sheep is rated as not significant.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. There is a good understanding of bighorn sheep ecology, their habitat availability and distribution, known occurrences, and abundance in the Terrestrial LSA. The confidence in the determination of the significance determination for residual effects to bighorn sheep is high. Confidence considers the reliability of data and analytical methods used in the assessment of effects. Baseline conditions of bighorn sheep within the Project footprint and the bighorn sheep VC study areas are well established, providing sufficient data to assess effects to changes in the opportunity for Ktunaxa Nation to hunt bighorn sheep. As such, the

confidence of the residual effects to the use of lands and resources by the Ktunaxa Nation for traditional hunting activities is considered to be low to moderate.

The residual effects to opportunities for hunting and trapping will be further discussed through continued consultation with the Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Thus, the continued consultation and follow-up program to be implemented is expected to improve the low to moderate level of confidence.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation did not provide specific information included in Section 23.10.2.2 that addressed their concerns regarding wildlife VC species (including grizzly bear, elk, and bighorn sheep) related to the Ktunaxa Nation's traditional hunting and trapping activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.2 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, Project-related disturbances may impair habitat for species the Ktunaxa rely on for the exercise of spiritual, cultural, and harvesting practices, including grizzly bear, elk, bighorn sheep, mountain goat, and moose, and reduce Ktunaxa access to the area for the exercise of Ktunaxa hunting and trapping rights. The Ktunaxa have previously shared perspectives (e.g., other development project EA/IA applications) on concerns about the potential negative health impacts to grizzly bears, elk, and bighorn sheep from consuming contaminated vegetation, drinking contaminated water, and/or consuming contaminated animals. Monitoring contaminants levels on plants for possible impacts to grizzly bears, elk, bighorn sheep, and other wildlife is suggested to understand more about this pathway (KNC et al., 2015). Ktunaxa's shared perspective also include concerns that activities in the Elk Valley will further reduce the habitat available to support future reintroduction of bison, a species that the Ktunaxa are working to restore to its historic range in Qukin ʔamakʔis (KNC, 2020a).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round of their land-use activities include the seasonality of sheep and elk harvest, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Tables 23.A-1 and 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to hunting and trapping in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in wildlife populations, reduced access to areas for traditional activities), the potential future use of these areas for hunting and trapping without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future hunting and trapping activities in the KNRI LSA and RSA) (KNC, 2021m).

Change to Use of Lands and Resources for Traditional Harvesting and Gathering Purposes

Based on available information, plant harvesting is understood to be a traditional activity undertaken by the Ktunaxa Nation within their Traditional Territory. Plants may be harvested as a food source, for their medicinal value and/or for cultural activities. The proposed Project has the potential to affect Ktunaxa

Nation culturally significant plants and ecosystems through reduction of ecosystem/community abundance and distribution, as well as alteration of ecosystem composition and structure (i.e., species abundance and distribution). Reduction of the abundance of potential culturally significant plants and ecosystems has the potential to occur during the Construction and Pre-Production and Operations phases through logging, clearing, and grubbing.

The total area of potential culturally significant ecosystems to be removed as a direct overlap with components of the Project footprint is 1,193 ha, comprising, 11% of potential culturally significant ecosystems that may contain cultural plants within the Landscapes and Ecosystems LSA. Though complete mapping of ecosystems within the KNRI LSA (as provided under the Project terrestrial ecosystem map; Chapter 13) is not presently available, if a similar proportion of the KNRI LSA is considered to provide habitat for potential culturally significant plants and ecosystems (i.e., 93% of 88,500 ha), then the area affected as a result of the Project would be approximately 1% (i.e., 1,193 ha out of 82,305 ha) of the potential culturally significant ecosystems within the KNRI LSA.

Based on the assessment of effects to whitebark pine, a receptor VC for the Project, a potential residual effect to whitebark pine that remains after the implementation of mitigation measures (Chapter 14, Section 14.5.5.3) is the mortality and/or loss of whitebark pine habitat. Through site clearing and grubbing, and associated vegetation clearing, in Construction and Pre-Production whitebark pine within the Project footprint will be removed. As well, stripping and salvage of the soil and surface materials will potentially remove whitebark pine seed caches distributed in or near the Project footprint and will remove appropriate substrates and landforms upon which existing whitebark pine are situated. Whitebark pine is predicted to occur in up to 591 ha of the Project footprint, which represents approximately 43% of the Project footprint. Though not considered a Project VC, lodgepole pine has the potential to also be affected by the direct loss of lodgepole pine trees and the loss of potential habitat due to site development.

Over the course of the Project, the operation of vehicles and equipment has potential to result in the introduction or spread of non-native and invasive plant species. Further, operation of vehicles and equipment within the Project footprint, as well as the hauling and use of hazardous materials has the potential for release of deleterious substances to surface water (see Chapter 21 for accidents and malfunctions). In addition, the erosion and suspension of exposed soils and construction material (e.g., road fill) can result in sedimentation of, or deposition of, dust in culturally significant ecosystems downstream/downwind from the Project footprint. These sources of deposited sediments/dust have potential to disrupt plant physiological processes (e.g., evapotranspiration and nutrient uptake) causing reduced vigour of existing vegetation. Non-native or invasive plant species typically exert a competitive advantage over native vegetation and may even release chemicals to further restrict the growth of desirable native vegetation (e.g., knapweeds [*Centaurea* spp.]). Impacts of invasive plants and sedimentation on vegetation can reduce the food quality of traditionally used species either by accumulating deleterious substances in, or reduced uptake and storage of nutrients (e.g., minerals, sugars) in edible tissues.

The alteration of the composition and structure of specific culturally significant ecosystems have the potential to also occur as a result of (addressed in greater detail in Chapter 13):

- Reduction of surface water quantity in riparian habitats (i.e., MSdw/Ff, Fl, Fl01, Fm02) downstream from the Project footprint, resulting in a shift in community composition to resemble adjacent upland ecosystems; and
- Alteration of the severity and frequency of avalanche activity in avalanche chute ecosystems (i.e., ESSFdk1 and ESSFdkw Vhd, Vhm, Vs, Vt) adjacent to the Project footprint, resulting in a shift of community composition depending on the nature of the change in avalanche activity.

Through the potential mechanisms of reducing the abundance and distribution and the composition and structure (through reduction of culturally significant plant vigor, water quantity, and avalanche activity) of culturally significant ecosystems, the Project may result in potential effects on harvesting and gathering for traditional use, including:

- Potential change in access to harvest plant species or harvesting/gathering sites of interest through ecosystem and vegetation loss within the Project footprint during Construction and Pre-Production and Operations;
- Potential change in distribution of plant species and plant harvesting sites and activities as a result of changes to the abundance and distribution of ecosystems within the Project footprint as a result of Construction and Pre-Production;
- Potential change in the value of place as a result of the change in accessibility of plant species of interest within the Project footprint and the KNRI LSA throughout the Construction and Pre-Production, Operations, and Reclamation and Closure phases; and
- Potential change in the ability to know and teach the cultural and social aspects of plant and medicine gathering within the Project footprint and the KNRI LSA throughout the Construction and Pre-Production and Operations phases due to changes in vegetation quality and access to harvesting and gathering areas.

Clearing, grubbing, logging and the related vegetation removal during the Construction and Pre-Production and Operations phases of the Project will reduce the abundance and distribution of potential culturally significant ecosystems in the KNRI LSA. Given the relatively frequent and common distribution of potential culturally significant plants, the proportional loss of such ecosystems providing habitat for these species within the Project footprint is relatively high (i.e., 93%). This extent of loss within the Project footprint comprises a small proportion (i.e., approximately 1%) of the overall extent of the estimated area of culturally significant ecosystems in the KNRI LSA.

Potential culturally significant plants located within the Landscapes and Ecosystems LSA adjacent to the final constructed Project footprint (e.g., roads, conveyor) may experience reduced vigor or reduced nutritional value from the effects of deposition of dust and sedimentation, competition with weeds and invasive, non-native plant species. Further, the abundance and distribution of potential culturally significant plants may be affected by the alteration of the quantity of water in riparian habitats as well as the frequency and severity of regular disturbance in avalanche chute ecosystems. Mitigation measures recommended to reduce the extent and severity of potential effects to landscape and ecosystem (i.e., avalanche chutes, grasslands, riparian habitat, old growth and mature forests, and wetland ecosystems) will act to reduce and mitigate the extent and severity of potential effects to culturally significant plants and ecosystems (see Chapter 13 for specific mitigation measures).

The residual effect of the loss of whitebark pine and lodgepole pine habitat and availability of individual tree species may remove trees and areas currently or of potentially use to Ktunaxa Nation to access trees for harvesting and gathering. As part of Project Reclamation and Closure activities, the Project footprint will be reclaimed to similar ecosystem types to the local area, and which previously existed before disturbance (Chapter 33). Approximately 148 ha of whitebark pine habitat and 484 ha of forested areas will be reclaimed through site reclamation activities leading to a total of 785 ha being reclaimed through site reclamation activities. For whitebark pine, the total area is 148 ha.

Implementation of the Ecological Restoration Plan (Chapter 33, Section 33.4.1.3) will restore approximately 684 ha of potential habitat for potential culturally significant plants. Alteration of the landscape within the Project footprint will result in the permanent of some ecosystems. Though site-specific input from the Ktunaxa Nation is not presently available, it is generally understood that traditional use of the land is dependent not only on the resources that may be present but may also depend on the history and tradition experienced in the context of a specific landscape (i.e., "sense of place"). Consequently, traditional use of lands for harvesting and gathering may be permanently affected as the sense of place inherent to the lands within the Project footprint and the Landscapes and Ecosystems LSA may not be reclaimed once permanently and physically altered.

Mitigation measures have been recommended to avoid, minimize, or otherwise address potential adverse effects to the vegetation VCs that are related to the Ktunaxa Nation's rights and interests. Specific mitigation for vegetation VCs related to the Ktunaxa Nation can be referenced in Chapter 14. Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in the Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation presented in Section 23.10.2.3 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the vegetation VCs. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

In consideration of these factors, potential residual effects to the use of lands and resources by the Ktunaxa Nation for the traditional purpose of harvesting and gathering is characterized as follows:

- Duration: *Long-term to Permanent*, as the loss of vegetation communities and plant species of interest within those communities, as well as access to vegetation communities, will be impacted over the long-term and potentially permanently as ecosystem recovery and restoration may take longer than 34 years to recreate areas used for harvesting and gathering.
- Magnitude: *Low to Moderate,* as while the proportional area of habitat for potential culturally significant plants and ecosystems is exceptionally low relative to extent of lands within which harvesting and gathering may be conducted by the Ktunaxa Nation citizens, there is an anticipated loss of broad ecosystem types within the Landscape and Ecosystems LSA and the KNRI LSA that have the potential to include plant species of interest, including a loss of avalanche ecosystems (12.34%), forested sites (10.72%), grassland/brushland ecosystems (9.56%), wetland ecosystems (3.40%), floodplains (0.04%), rock outcrops (4.81%), alpine ecosystems (11.18%) and whitebark pine habitat (43%) within the Project footprint.

- Geographic Extent: *Discrete*, as impacts to plants and vegetation communities potentially used by Ktunaxa for harvesting and gathering is restricted to the Project footprint.
- Frequency: *Intermittent*, as the effects to vegetated areas potentially used by Ktunaxa are likely to be impacted mainly during Construction and Pre-Production and Operations and the effects to forested sites containing lodgepole pine and whitebark pine will occur throughout the life of the mine as extraction expands.
- Reversibility: *Reversible Long-Term to Permanent*, as ecological restoration activities will restore impacted forested sites, whitebark pine habitat, and vegetation communities. Reclaimed areas, such as forested sites, will take many years to support mature forests that may support plant species of interest used for harvesting and gathering. If traditional harvesting and gathering of culturally significant plants is tied to the sense of place, there is potential that the residual effect may be result in long-term to permanent changes.
- Context: *Neutral*, as the opportunity to harvest and gather within the KNRI LSA is dependent on the location of ecosystems and plant species of interest as well as the access to these areas. The KNRI LSA overlaps with several Indigenous Communities' traditional territories, and as such, changes in the accessibility to harvest and gather may impact the ability to undertake cultural and traditional practices for community members and the importance of available lands for traditional practices. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional harvesting and gathering activities within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

Based on these HHRA and sensory receptor locations, information provided from publicly available sources authored by Ktunaxa Nation, and preliminary consultation, sites where harvesting and gathering may occur within the Project footprint and the KNRI LSA have been identified. It is expected that the Project footprint and the KNRI LSA is utilized for traditional purposes. The Project is anticipated to result in a reduction in the abundance and distribution of culturally significant plants and ecosystems, including the potential alteration of the respective composition and structure through a reduction in vigor and alteration of nutritional value. Potential effects to culturally significant plants and ecosystems affecting harvesting and gathering will be reduced through implementation of recommended mitigation measures and the Ecological Restoration Plan (Chapter 33, Section 33.4.1.3). Though impacts to access for the purposes of harvesting and gathering will not be permanent, the alteration of landscape may potentially coincide with an alteration or loss of the sense of place for the Ktunaxa Nation within the Project footprint. Consequently, the residual effect of the Project on the current use of lands and resources for harvesting and gathering is rated as not significant.

Likelihood and Confidence

The likelihood of a significant effect on the traditional use for harvesting and gathering culturally significant plants cannot be adequately predicted at this time, as an inherent sense of place tied to lands within the Project footprint and Landscape and Ecosystems LSA can only be identified by the Ktunaxa Nation. The determination of a potentially significant residual effect of the Project is based on a precautionary assumption that some sense of place tied to the landscape within and surrounding the Project footprint cannot be entirely reclaimed.

Confidence considers the reliability of data and analytical methods used in the assessment of effects. Though baseline conditions for culturally significant plants and ecosystems were established using historical documentation relative to the Ktunaxa Nation as a whole, or of other developments within the KNRI LSA, actual harvesting and gathering practices by the Ktunaxa Nation within the Project footprint and Landscapes and Ecosystems LSA is based on HHRA and sensory receptor locations that do not detail specific species related information. Further, it is not understood if specific ecosystems are identified as having cultural significance, regardless of whether or not they contain traditionally harvested or gathered plants, or even if other culturally significant plant species not previously identified have potential to be affected. Specific to whitebark pine, uncertainty exists in the confirmed extent of whitebark pine in the Landscapes and Ecosystems LSA and the Project footprint. As well, the background loss of whitebark pine due to white pine blister rust (among other sources of mortality) and the success of whitebark pine restoration programs is also currently unknown, and therefore lowers the confidence prediction. Consequently, the confidence of residual effects to the use of lands and resources by Ktunaxa Nation for harvesting and gathering is considered to be low to moderate.

Residual effects on the opportunities for harvesting and gathering will be further discussed through continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Continued consultation and a follow-up program collaboratively developed with the Ktunaxa Nation to be implemented is expected to improve the low to moderate level of confidence.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation did not provide specific information included in Section 23.10.2.3 that addressed their concerns regarding plant species (including whitebark pine) related to the Ktunaxa Nation's traditional harvesting and gathering activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.3 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, the Ktunaxa Nation has previously identified the importance of wetland, riparian and floodplains ecosystems, avalanche path ecosystems, karst ecosystems, old growth forests and mature forests, grassland and brushland ecosystems and all listed ecological communities as they relate to biodiversity in the KNRI LSA in general (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access culturally significant plants and the related harvesting and gathering activities may potentially be impacted by the alteration or loss of vegetation and increased potential dust loading (IAAC, 2015a). In previous Section C submissions for EIS/Applications in the Elk Valley, Ktunaxa knowledge holders have highlighted the importance of plants and vegetation for human use, and as habitat for other living things within qukin ʔamakʔis (KLR et al., 2011). Beyond use, all indigenous plant species are understood to have inherent value as part of biodiversity and as part of the unique ecosystems that sustain Ktunaxa people and rights. The knowledge of how to use certain plants may not currently be held, or may not be reported by Ktunaxa citizens, but may become known, or be reported, in the future.

Ktunaxa Traditional Knowledge shared in previous EIS/Applications indicates that the old growth forests were and continue to be heavily used for the collection of culturally important plants (KNC et al., 2015). Based on Ktunaxa Traditional Knowledge holders, certain culturally important plants are only found in wet or very wet sites (wetlands or wet forests) and high elevation grasslands (KNC et al., 2015). From a Ktunaxa perspective, natural geological and terrain features provide a connection to ongoing creation and are often associated with special meaning and cultural importance within the context of Ktunaxa knowledge and especially the Ktunaxa creation stories (KNC et al., 2015).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round include the seasonality of berry collection, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Table 23.A-2). There is also potential for Ktunaxa Nation to utilize the KNRI RSA for undertaking traditional and ceremonial activities (IAAC, 2015a). As shared by Ktunaxa Nation, it is also noted that the exercise of Ktunaxa Nation's rights and interests related to harvesting and gathering sites in the KNRI LSA and RSA has been impacted by past and ongoing development activity (e.g., reduced access to areas for traditional activities) and the potential future use of these areas for harvesting and gathering opportunities without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact potential future harvesting and gathering activities in the KNRI LSA and RSA) (KNC, 2021m).

23.8.2.2.3 Traditional Knowledge and Language Sector

Change to Ceremonial/Sacred Areas

The entirety of Ktunaxa Nation's traditional territory is of immense cultural and traditional importance, with special regard to Grave Prairie Cultural Landscape, Crowsnest Mountain, Crowsnest River, Crowsnest Pass, and Crowsnest Lake based on a review of publicly available information and through preliminary consultation with the Ktunaxa Nation. The potential Project effects to ceremonial and sacred places that may exist within the Project footprint include:

- Potential loss of ceremonial and sacred places that might exist within the Project footprint;
- Potential change in accessibility to ceremonial and sacred places that might exist through changes in access to the Project footprint throughout the Construction and Pre-Production and Operations phases;
- Potential change in the value of place as a result of the loss or changes to ceremonial or sacred areas that might exist within the Project footprint throughout all Project phases; and
- Potential change in the ability to know and teach the cultural and social aspects of culture and history as a result of the loss or changes to ceremonial or sacred areas that might exist within the Project footprint throughout all Project phases.

The potential residual effects to ceremonial/sacred areas are presented in Section 23.8.2.2.3 with the change to the physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance.

Ktunaxa Perspectives

As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement

of access to lands may impact the ability to carry out traditional use activities (IAAC, 2015a). Based on information provided by Ktunaxa Nation Council (KNC, 2022b) via correspondence to NWP, Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. The area of Grave Prairie has cultural significance to Ktunaxa and any additional infrastructure, is not compatible with this cultural landscape as stated by the KNC. The Ktunaxa Nation Council notes that the impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of their ancestors is not enough to justify any land alteration in the area (KNC, 2022b). It is also expected that the Ktunaxa Nation utilizes the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a).

KNC noted the unique cultural importance of Grave Prairie as a sacred cultural landscape and that industrial and related cumulative effects in the Elk Valley have already impacted other cultural and stewardship values (KNC, 2016b; 2018; 2021m; 2022b; Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to ceremonial practices and use of sacred areas in the KNRI LSA and RSA has been impacted by past and ongoing development activity (e.g., reduced access to cultural sites) and the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact ceremonial practices and use of sacred areas in the KNRI LSA and RSA) (KNC, 2021m).

Change to Access and Travel Routes

Ancient travel routes and landforms of cultural significance are summarized in Chapter 16. In general, travel routes have been historically known to be linked to the movement corridors of wildlife species of interest. Known or anticipated transboundary movement corridors for ungulate species of interest along the Continental Divide include the Crowsnest, Deadman, and Racehorse Passes in the eastern portion of the KNRI LSA. Movement corridors for grizzly bear include Alexander Creek, West Alexander Creek, and Grave Creek canyon. Some fishing access corridors may be impacted as a result of direct losses to watercourses that may be potentially used by Ktunaxa Nation (e.g., West Alexander Creek; Section 23.8.2.2.2: Change to Use of Lands and Resources for Traditional Fishing Purposes). Other connectivity habitats potentially used include the Michel-Alexander linkage at the southern portion of the KNRI LSA. Access to this area will not be impacted as a result of the Project. The potential residual effects to ceremonial/sacred areas are presented in Section 23.8.2.2.3 with the change to the physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance.

Ktunaxa Perspectives

Ktunaxa families maintained a seasonal round that included travel through the Crowsnest Pass and the use of the pass for cultural purposes continued following development of road and rail links (KNC, 2020a). Ktunaxa Nation continues to access the upper Elk and Fording Valleys for trails and transportation that are associated with resource harvesting, cultural practices, and camp sites (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. It is expected that the Ktunaxa Nation utilizes the KNRI LSA for maintaining their seasonal round (IAAC, 2015a). It is noted that Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past disturbance which has removed areas of particular Ktunaxa cultural value, including trails, habitation

areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

It is noted that the exercise of Ktunaxa Nation's rights and interests related to access and travel in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). This general trend of north-south oriented mining and potential related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges (KNC et al., 2015). As shared by Ktunaxa Nation, the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

Change to Physical and Cultural Heritage, and Potential Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance

As discussed above in Section 23.3.5.4, pre-contact archaeological artifacts are an immensely important connection between Indigenous Peoples, their ancestors, culture, history, and traditional knowledge (i.e., Physical and Cultural Heritage). As part of the Project planning process, and following preliminary findings of the Archaeological Baseline Program, the Project footprint was re-designed to minimize direct impacts to as many archaeological sites as possible. NWP has already mitigated this through the redesign of the Rail Loadout to avoid impacts to suspected ancestral burials that were identified during the Baseline Archaeological Program. Through consultation with the Project Archaeologist and Ktunaxa Nation Council, an area within continuous, rolling slope situated upslope to the east-southeast of Grave Prairie was identified as a suitable revised location for the Rail Loadout. Though several relatively small-sized archaeological sites were discovered within the revised location, none of the sites contained evidence of ancestral burials.

Following the most recent conclusions of the Archaeological Baseline Program, and the current Project footprint configuration, there are 15 pre-contact archaeological sites identified within the Project footprint anticipated to be directly impacted as a result of the Project. None of the sites contain suspected ancestral burial grounds (refer to Chapter 16). Eight of the 15 pre-contact archaeological sites were identified as having the potential for indirect impacts as a result of the Project. The potential residual effects to archaeological resources that might be of interest to Ktunaxa Nation are summarized in Chapter 16. It is noted that currently none of these archaeological resources of interest have been identified by the Ktunaxa Nation at this time.

There is also potential for change due to a significant historic area located near the Project's roads: Grave Lake, Grave Creek, and Grave Prairie. Based on information provided by Ktunaxa Nation Council (KNC, 2022b) via correspondence to NWP, Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. The area of Grave Prairie has cultural significance to Ktunaxa based on the direction from Ktunaxa Knowledge Holders, and the area currently known as the "Grave Prairie Cultural Landscape" contains a "Culturally Significant Area" and a "Culturally Sensitive Area" (KNC, 2022b).

Throughout background information research, Crowsnest Pass and Crowsnest Mountain, were identified as being important areas of physical and cultural heritage for the Ktunaxa Nation. These locations are not

carried forward in this assessment as no Project interactions or results of the environmental effects on these locations, are anticipated at this time due to Crowsnest Pass being located at the outer edge of the KNRI LSA (24 km away), and Crowsnest Mountain (13 km away) being located in the KNRI RSA. Both of these important areas are separated from the Project footprint by a major mountain ridge with relatively few passes and are reasonably located far from the Project. As previously noted, Ktunaxa Nation continues to access the upper Elk and Fording Valleys for trails and transportation that are associated with resource harvesting, cultural practices, and camp sites and while no specific trails have been identified, it is understood at this time that further information provided by Ktunaxa Nation during the assessment processes may refine the Project-related residual effects once that information is shared.

Based on the above, the Project may result in the following effects to physical and cultural heritage and to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance:

- Potential change in the value of place as a result of the permanent loss or changes to unknown pre-contact archaeological sites that might be relevant to the Ktunaxa Nation within the Project footprint; and
- Potential for change of physical and cultural heritage that might be relevant to the Ktunaxa Nation, and the ability to know and teach the cultural and social aspects as a result of the loss or changes to pre-contact archaeological sites within the Project footprint throughout all Project phases.

Mitigation measures proposed to reduce adverse effects to physical and cultural heritage are generally accepted, understood, and proven to effectively reduce adverse effects on physical and cultural heritage. Mitigation measures for direct and indirect impacts to archaeological resources have been identified to avoid, minimize, or otherwise address potential adverse effects to the archaeological resources that may be related to Ktunaxa Nation's rights and interests. Through the assessment of effects and continued consultation with Ktunaxa Nation, mitigation for physical and cultural heritage and to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to the Ktunaxa Nation may continue to be identified and implemented. Specific mitigation for archaeological resources related to the Ktunaxa Nation can be referenced in Chapter 16.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in this chapter in Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation presented in Section 23.10.3 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to physical and cultural heritage and to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to the Ktunaxa Nation. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

Known heritage resources (i.e., identified archaeological sites that might be relevant to the Ktunaxa Nation) that have the potential for environmental effects as a result of the Project are considered to be important due to rarity, undisturbed condition, and spiritual implications. Due to their potential for

cultural importance to the Ktunaxa Nation and based on their (currently undefined but) potential link to Ktunaxa Nation ancestry, the Project footprint may potentially impact Ktunaxa Nation's physical and cultural heritage. There are 15 pre-contact archaeological sites anticipated to be directly impacted by the Project (refer to Chapter 16), though none of these sites include ancestral burials. These resources are located in areas where adjustments to the Project footprint cannot be made. Therefore, additional mitigation in the form of salvaging these resources through a controlled, permitted, professional archaeological excavation will be required in consultation with appropriate Indigenous community representatives.

Based on information provided by Ktunaxa Nation Council (KNC, 2022b) via correspondence to NWP, Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. The KNC Lands Advisory Working Group have determined that the area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout, is not compatible with this cultural landscape. Based on the direction from Ktunaxa Knowledge Holders, the area currently known as the "Grave Prairie Cultural Landscape" contains two "zones"; a "Culturally Significant Area" where no new activities or infrastructure will be accepted and a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to Ktunaxa contemplating additional development. The impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility (KNC, 2022b).

There are no identified Project-related effects to the current use of travel routes by Ktunaxa Nation and therefore specific Project-related effects to access or travel routes are not carried forward in this assessment due to the limitation of information available on access and travel routes (none publicly available and no specific information shared by Ktunaxa Nation).

The residual effects to physical and cultural heritage and a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance due to the Project footprint are characterized as follows:

- Duration: *Permanent*, as loss of a heritage resource or site that might be relevant to the Ktunaxa Nation related to physical and cultural heritage during Construction and Pre-Production or Operations cannot be reversed once it occurs.
- Magnitude: *High*, the potential for adverse effects to heritage resources or sites related to physical and cultural heritage that might be relevant to the Ktunaxa Nation is high due to the amount of change relative to baseline conditions.
- Geographic Extent: *Discrete*, as only heritage resources that exist within the Project footprint will be directly impacted. These heritage resources may be of interest to the Ktunaxa Nation based on their potential linkage to Ktunaxa Nation ancestry. As the proposed Rail Loadout facility is within the Grave Prairie Cultural Landscape's Culturally Significant Area, it will be directly impacted.
- Frequency: *Once*, the direct loss of heritage resources related to physical and cultural heritage that may exist within the Project footprint occurs only within the Construction and Pre-Production or Operations phases of the Project.
- Reversibility: *Irreversible*, heritage resources that might be relevant to the Ktunaxa Nation related to physical and cultural heritage that are retrieved from the Project footprint cannot be

returned/reburied within the Project footprint in the same geographical context. Change of an archaeological site is irreversible.

- Context: *Low*, heritage resources of interest related to physical and cultural heritage are considered to be very important cultural resources to the Ktunaxa Nation that link Ktunaxa Nation citizens to their ancestors and cultural identities and have a low resilience to change as alterations to areas or sites of interest and significance may not adapt to effects that alter their presence or existence. The context is also deemed low as it is expected that the Ktunaxa Nation's ability to know and teach their way of living can continue outside of the Project footprint during all Project phases based on the information available from the Ktunaxa Nation regarding their opportunity to conduct traditional cultural activities within the Project footprint at this time.

Determination of Significance

A significant adverse residual environmental effect on Ktunaxa Nation physical and cultural heritage related to heritage resources is one that results in a permanent Project-related disturbance to, or destruction of, all or part of a pre-contact heritage resource considered to be of importance, to the spiritual or cultural identity of Ktunaxa Nation that cannot be mitigated or compensated. Currently, there are no identified linkages to pre-contact archaeological sites within the Project footprint with the Ktunaxa Nation. Based on information provided by Ktunaxa Nation Council (KNC, 2022b) via correspondence to NWP, Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint.

The implementation of mitigation is a key element of this significance criterion. Therefore, in consideration of the above discussion, the significance threshold, the mitigation that has been implemented to date (outlined in Chapter 16), and the mitigation that will be implemented as the Project moves forward, both under provincial regulation and authorization and through consultation with the Ktunaxa Nation, the environmental effects of the Project on physical and cultural heritage and on a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance for all phases of the Project are rated as significant.

It is also noted that Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past disturbance which has removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a) outside of the Project footprint. Continued consultation to mitigate these impacts where they have the potential to interact with Project-related activities will be undertaken through the Indigenous Impact Management Plan.

Likelihood and Confidence

The effect of direct physical and cultural heritage loss due to mine design and development has a high likelihood to occur. Confidence considers the reliability of data and analytical methods used in the assessment of effects. The confidence in the characterization of the residual effect to physical and cultural heritage from Project development is considered to be low. With the exception of Phase IV (Alexander Creek valley - Secondary Transportation Corridor), the Utility Corridor (west of Elk River); Phase I and II clearance limits (recently defined), which are identified as requiring assessment, baseline conditions of pre-contact heritage resources within the Project footprint are relatively well established, providing

sufficient data to assess the potential for direct impacts to heritage resources. The baseline information on the connection between these pre-contact heritage resources and the Ktunaxa Nation physical and cultural heritage has not been identified to date. Mitigation strategies proposed to avoid or offset impacts to pre-contact heritage resources are expected to be moderate to high in effectiveness. Consultation activities with Ktunaxa Nation could reduce confidence of mitigation success and effectiveness based on the connection to Ktunaxa Nation ancestry. Adaptive management measures will be developed and implemented to address corrective actions, as necessary, based on the results of consultation, and mitigation through archaeological monitoring.

As the Grave Prairie Cultural Landscape contains extremely important Ktunaxa Nation cultural values and is located within the Project footprint, Ktunaxa perspectives on mitigation measures will be utilized were proposed and applicable. As consultation on the siting of the Project's rail load-out facility are on-going, it is to be noted that continued consultation with Ktunaxa Nation to mitigate potential effects of Project-related activities will be undertaken through the Indigenous Impact Management Plan. As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the Ktunaxa Nation to address related concerns.

No residual effects on a change in heritage resources due to any Project activities other than those to be undertaken in the Construction and Pre-Production or Operations phases were predicted in consideration of planned mitigation. Monitoring during Construction and Pre-Production and Operations, and adaptive management, as necessary, will confirm these effects predictions and the effectiveness of mitigation, or provide information to implement adaptive corrective actions and strategies.

Ktunaxa Perspectives

Ktunaxa oral history and worldview recognizes the lands and waters of the Ktunaxa Territory as alive, evolving, and as the home of powerful sacred beings whose travels, battles and lives have left marks and remains across the Ktunaxa landscape, including the Elk Valley (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact unknown historical or archaeological sites. There is potential for Ktunaxa Nation utilizing the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a). It is noted that Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past disturbance which has removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

It is noted that the exercise of Ktunaxa Nation's rights and interests related to physical and cultural heritage in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). This general trend of north-south oriented mining and potential related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges (KNC et al., 2015). Ktunaxa perspectives include acknowledging that the potential future use of these areas without the Project is expected to be similar

to existing conditions (i.e., past and ongoing development activities that may impact ceremonial practices and use of sacred areas and access and travel through the KNRI LSA and RSA) (KNC, 2021m).

With respect to the Grave Prairie Cultural Landscape, it is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint (KNC, 2022b). The KNC Lands Advisory Working Group have determined that the area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout, is not compatible with this cultural landscape. Based on the direction from Ktunaxa Knowledge Holders, the area currently known as the "Grave Prairie Cultural Landscape" contains two "zones"; a "Culturally Significant Area" and a "Culturally Sensitive Area". The impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility as stated by Ktunaxa Nation (KNC, 2022b). During conformity review, KNC indicated that the cultural impacts to the Grave Prairie Cultural Landscape cannot be mitigated and that it is unique as a sacred cultural landscape within the larger Elk Valley in relation to the industrial and cumulative effects that have already seriously impacted other cultural and stewardship values. KNC suggested the evaluation for all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape including the adequate consideration to avoidance impact through alternative means that may include longer truck haul to a less sensitive load out location, extension of rail to the Alexander Valley side of the facility, and agreement with existing operators to share already existing rail load out infrastructure. NWP is committed to continuing disucssions and assessing alternatives for the siting of the rail loadout facility.

23.8.2.2.4 Social and Health Sector: Change to Social and Health Conditions

Based on the background information research and the consultation activities with Ktunaxa Nation to date, there are no anticipated interactions between the Project and Ktunaxa Nation housing, transportation, or social services and education, and therefore, no unmitigated Project effects on these aspects of social and health conditions are anticipated. The Ktunaxa Nation have not to date identified that community members live either full or part time in the general vicinity of the Project footprint. It is assumed that Ktunaxa Nation members live in local towns including Sparwood and Elkford.

There is potential for Project-related effects to health and well-being through the potential consumption of country foods (e.g., fish). The residual effects assessments resulting from the Project on air quality (Chapter 6), fish and fish habitat (Chapter 12), wildlife (Chapter 15), landscapes and ecosystems (Chapter 13), and information from the human health and ecological risk assessment (Chapter 22) were used to support an understanding of Project-related effects that have the potential to change Ktunaxa Nation's social and health conditions. To this end, the quantitative human health and ecological risk assessment (HHERA) focused on various Indigenous land use and tradition lifestyles to conservatively assess maximal potential impacts to the VC of human health. By inference, potential impacts to human health of other peoples (e.g., non-Indigenous, recreational) would have less potential for a health risk. Human health risk assessment (HHRA) and ecological risk assessment (ERA) define and quantify potential health risks, which in the present instance serve as surrogate measures of potential health impacts from the Project and are detailed in Chapter 22.

Potential effects on Ktunaxa Nation's social and health conditions because of the Project and related changes applicable VCs include:

- Potential change in the actual or perceived quality of fish resources for subsistence fishing/country foods within the KNRI LSA during Operations;
- Potential change in the actual or perceived quality of wildlife resources for hunting/country foods within the Project footprint and the KNRI LSA during Operations;
- Potential change in the actual or perceived quality of terrestrial plants and medicine resources for subsistence/country foods, within the Project footprint and the KNRI LSA during Operations; and
- Potential indirect disturbance, or health effects, to Indigenous land users because of changes in air quality or surface water quality (as collectively represented by Chapter 22) over the course of Construction and Pre-Production, Operations, and Reclamation and Closure.

It is important to recognize, that while the incidence of crime in the ATRI LSA is not anticipated to change substantially due to the Project, it is well documented that Indigenous women, girls, and Two-Spirited peoples already experience more violence than non-Indigenous women and girls in Canada (NWAC, 2020). As the Project will not have any temporary mining camps and there will not be a large influx of outsiders to the area though, sex work, and safety and security issues are less likely to substantially increase. Related to health effects are possible changes to public safety in the surrounding Project area communities. Overall, potential unmitigated effects related to a change in community health and well-being are expected to be minimal. Nevertheless, some mitigation measures recommended to help enhance Project benefits as well as minimize adverse Project effects, including disproportionate effects to or barriers that vulnerable sub-populations such as Indigenous Peoples and females could face in relation to mining are addressed in the Indigenous Impact Management Plan (Section 23.10). Through the assessment of effects and continued consultation with the Ktunaxa Nation, mitigation for Ktunaxa Nation community health and well-being may continue to be identified and implemented. Specific mitigation for change in community health and well-being can be referenced in Chapter 18, Section 18.5.4.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in Section 23.10 (Table 23.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation presented in Section 23.10.4 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the change in community health and well-being. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

Based on the Human Health and Ecological Risk Assessment (HHERA; Chapter 22), which encompasses changes in air quality, the overall Project-related risk to terrestrial and aquatic wildlife health is considered to be low, except for a few localized receptors within the Project footprint. As well, the overall Project-related risk to human health is also considered to be low, for both Indigenous and non-Indigenous persons. The HHERA (Chapter 22) identifies potential residual effects for identified contaminants of potential concern for wildlife and human health (e.g., arsenic, cadmium, cobalt, selenium, chromium), noting that majority of the identified contaminants of potential concern have been determined to pose a low risk to wildlife and human health. Though the risk is identified as low, there is potential for residual effects to wildlife and human health based on the actual or perceived quality of fish and wildlife resources consumed as country foods. The HHERA (Chapter 22) was conducted specifically using the air quality and surface water quality modelling predictions, as well as data on soils and vegetation quality, to simulate

the potential exposure of human and wildlife to contaminants of potential concern over the life of the mine and beyond, and in the case of cancer risks, over the lifetime of an individual.

The residual effects of a change to social and health conditions due to the Project are characterized as follows:

- Duration: *Long-Term*, the predicted residual effects to wildlife and human health and the potential change in country foods is only associated with the Project footprint or close to the haul road, areas which will be reclaimed during Reclamation and Closure.
- Magnitude: *Low*, as the proposed Project and associated activities are considered to present a low risk to wildlife and human health and therefore a low magnitude to quality of country foods.
- Geographic Extent: *Discrete to Local*, as the low estimated risk to wildlife and human health, and low risk to country foods, is limited to the Project footprint (e.g., on or adjacent to the haul road) and the KNRI LSA.
- Frequency: *Continuous*, as the potential risk to country foods is possible during the operational lifetime of the mine as represented by the Operations phase; similar but less exposure/risk is possible during other phases of the Project.
- Reversibility: *Reversible Long-Term*, as the low risk to wildlife and human health and associated country foods and consumption of country foods is diminished (mitigated) as the Project disturbance footprint is reclaimed in Reclamation and Closure as per the Ecological Restoration Plan (Chapter 33, Section 33.4.1.3).
- Context: *Neutral*, as aquatic and terrestrial wildlife species and humans have a neutral sensitivity and resilience to the low potential exposure/risk; the low exposure risk is unlikely to adversely affect individuals or local populations and therefore an unlikely disruption to country food quality. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to consume country foods within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance

The residual effects of the Project on aquatic and terrestrial wildlife health and human health during all Project phases are considered not significant (Chapter 22, Section 22.5.4.3). The wildlife and human health risk estimates and their magnitude inherently consider operational activities, emissions, and other contaminant releases intrinsic to the predictive modelling of water quality, air quality, and secondarily food via transport, fate and food chain modelling. Given the conservative nature of the exposure/risks and proposed mitigation in Reclamation and Closure, the Project is not anticipated to result in significance adverse effects to aquatic and terrestrial wildlife or Indigenous persons. As such, residual effects to social and health conditions due to the Project, in particular changes to the actual or perceived quality of country foods and indirect disturbance to Indigenous land users, are also considered not significant.

Likelihood and Confidence

Effects from Project activities that are determined to be not significant, as in the present case, do not warrant a characterization of likelihood. The confidence in the characterization of the residual effects to social and health conditions is considered to be moderate to high. The confidence derives from consideration of confidence in:

- Contaminant fate and transport modelling for releases to air and water which dictate exposure point concentration for exposure assessment;
- Substantive knowledge of ecological dietary/food chain relationships for exposure modelling; and
- Conservatism of assumptions that err towards overestimating rather than underestimating exposure and risk (e.g., assumptions of statistical upper-bound exposure concentrations in water, assumption of lifetime exposure scenarios).

Collectively, the above-listed practices provide moderate to high confidence that the risk estimates are not underestimated, and in the present case, an overall moderate level of confidence that the estimated health risk to aquatic and terrestrial wildlife and human health as a result of the Project is low and not significant.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation did not provide specific information included in Section 23.10.4 that addressed their concerns regarding social and health conditions related to the Ktunaxa Nation's traditional activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.4 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, waterbodies and watercourses within the Elk Valley continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation. As noted in Section 23.5.4, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. Access to wild meat (i.e., country foods) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Ktunaxa confidence in country foods is essential for the health and social well-being of the Ktunaxa Nation and its citizens. The access to – and strength of ties with – land and closely associated cultural practices have an important impact on health (KNC et al., 2015). Access to these waters and lands for species and resources are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice their rights, the Ktunaxa Nation require access to healthy habitats free from disturbances within their traditional territory (KNC, 2016a).

The rights and interests of current and future Ktunaxa citizens with respect to access to water and lands and resources used for subsistence harvesting and country foods include the perspectives that these resources will be in sufficient quantity and quality and in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage and access rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water and lands and resources according to the Ktunaxa law, ʔaknumuȼtiɬiɬ (KLR et al., 2011).

From Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaʍa'k q̓apiqapsin (all living things) (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on air and water quality, spatial disturbance, and

other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a). Ktunaxa citizens have already expressed elevated concern regarding industrial contaminants in the area, and psychosocial effects of contaminants consistent are being experienced. Based on available information, coal dust, selenium and metal loading are of particular concern to Ktunaxa citizens (KNC et al., 2015). Levels of contaminants, particularly selenium, are already at levels that may cause abnormalities in fish resulting in changes in reproduction of some species and ongoing impacts to the real or perceived quality and quantity of wild foods available for Ktunaxa harvest in preferred locations, including fish in the Elk River and Michel Creek, and Lake Koocanusa, are anticipated by the KNC (KNC et al., 2015). As per Ktunaxa Nation, this Project in combination with other past, present, and reasonably foreseeable projects and activities will potentially exacerbate these effects on country food access and quality (at least in the short term), suggesting that existing impacts to Ktunaxa rights and interests related to country foods in the Elk Valley will get worse before they get better (KNC et al., 2015).

During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to social and health conditions in the KNRI LSA and RSA has been impacted by past and ongoing development activity (e.g., reduction in fish and wildlife populations, reduced access to waterways and areas for traditional activities, water quality concerns in the Elk Valley), the possible future use of these areas for access to and usage of country foods without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future traditional activities in the KNRI LSA and RSA) (KNC, 2021m).

23.8.2.2.5 Economic Investment Sector: Change to Economic Conditions

Based on the publicly available information, and the consultation activities conducted with the Ktunaxa Nation to date, there are no anticipated unmitigated negative Project effects related to the Ktunaxa Nation's economic ventures such as commercial operations, forestry, or logging, and commercial fishing. Some impacts to hunting (and trapping, where applicable) may occur, and are discussed in Section 23.11.2.1.2.

There may be a modest positive effect to economic conditions through training and as part of the Construction and Pre-Production and Operations phases. There is also the opportunity for Ktunaxa Nation citizens to take part in the Reclamation and Closure and Post-Closure phases with respect to follow-up and monitoring programs. The Project can be expected to result in positive economic outcomes for employment, income, the regional and local economies, and government finances within the KNRI RSA (Chapter 17). These positive outcomes will be enhanced through training programs to maximize the hiring of local workers and from Ktunaxa Nation. Positive economic effects are expected to occur during all Project phases, with the primary economic benefits occurring during Construction and Pre-production and Operations which together are expected to occur over an 18-year period. In this light, specific Project-related effects to economic conditions are not carried forward in this assessment.

Using a GBA+ lens, Indigenous Peoples[23] who may want and also be targeted for Project employment by NWP could face barriers related to housing availability, the cost of living, lack of childcare, and access to adequate community services. Potential Indigenous employees from communities within Ktunaxa Nation that are not within daily commuting distance of the Project (more than 100 km away), may require housing close to the Project location. Further, given that many potential Indigenous employees may be more eligible for entry level positions in mining with resulting lower wages, in addition to transportation limitations related to commuting time, barriers such as the high cost of living and lack of local affordable housing could be even more of an issue or challenge to their participation in the Project.

NWP has committed to defining targets for a high level of Indigenous employment and prioritizing Indigenous women where applicable, reducing barriers to housing and childcare are likely critical in being able to achieve certain Indigenous employment targets. Some mitigation measures are recommended to help enhance Project benefits with Indigenous Communities as well as minimize adverse Project effects, including disproportionate effects to or barriers that vulnerable sub-populations such as Indigenous peoples and females could face in relation to Project development. These include recommendations related to hiring and training to increase the proportion of Indigenous workers and addressing affordable housing, childcare needs, shiftwork, and safety issues as outlined in this chapter and described in Chapter 18. Specific mitigation for change in economic conditions can be referenced in Chapter 17, Section 17.5.5.

Further, mitigation measures related to the effects of the Project on the Ktunaxa Nation are outlined in Section 23.10 (Table 22.10-1) which presents the Indigenous Impact Management Plan that was developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The mitigation presented in Section 23.10.4 may be revised or updated as a result of specific input provided by the Ktunaxa Nation where applicable. No other technically and economically feasible mitigation measures were identified to address potential impacts to the Ktunaxa Nation's rights and interests related to the change in economic conditions. At this time, NWP is not aware of potential future technology innovations that may help to further mitigate effects.

As noted earlier, while mitigation measures related to the effect of the Project on the Ktunaxa Nation are presented in the Indigenous Impact Management Plan (Section 23.10), at this time, the Ktunaxa Nation did not provide specific information included in Section 23.10.4 that addressed their concerns regarding economic conditions related to the Ktunaxa Nation's traditional activities.

Ktunaxa Perspectives

As noted in Section 23.7.1.5 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, the KNC determined that the priorities of a desired future social economy in relation to traditional lands required a balanced approach. This "balanced" vision of development and the understanding that, for the majority of Ktunaxa citizens, both protection and growth are important, but that when the two principles are in conflict, stewardship (land protection) should be

[23] It is recognized that the housing barrier also applies to non-Indigenous peoples but given that Indigenous peoples are a vulnerable sub-population who experience severe socio-economic inequities as a collective due to historical and ongoing colonialism, as well as NWP's objective to target Indigenous peoples for employment in mining, their situation with respect to housing access and affordability warrants special consideration from a GBA+ lens.

treated as a priority over economic growth (KNC et al., 2015). From Ktunaxa perspective, a set of priorities for their preferred economic future as it relates to economic investment including sustainability, impact equity, economic self-sufficiency and development of business acumen, avoidance whenever possible of "futures foregone", diversification, economic growth in Ktunaxa ?amak?is, and social support have been identified (KNC et al., 2015). With respect to social support, the economy strengthens and reinforces culture, the rights-based economy, and engagement in cultural practices and identity. These principles for a preferred Ktunaxa future economy form key elements against which future development, including the proposed Project, can be evaluated (KNC et al., 2015).

From Ktunaxa perspective, resource extraction in the Ktunaxa ?amak?is without agreement by the Ktunaxa exacerbates the colonial legacy of exclusion and non-recognition of Ktunaxa rights. As noted by KNC, the Project has the potential to have an impact on the rights-based economy through the pathways of impacts on the land (e.g., the removal of a valuable resource from the Ktunaxa ?amak?is without adequate recognition of and compensation for Ktunaxa rights undermines the current and future economic value). Additionally, the Project footprint and temporal expansion of the mine operation removes land from access and increases access by non-Ktunaxa recreational and hunting users, deterring Ktunaxa citizens from access and reducing harvests (i.e., less economic and food security for citizens who rely on that harvested food and potentially less income from any furs that would have been sold) in (KNC et al., 2015; Appendix 23.A-1, Tables 23.A-1 and 23.A-2). From Ktunaxa perspective, avoidance whenever possible of "futures foregone" – economic activities that constrain the ability to practice others in the same area now or in the future (e.g., visibly scarring mining practices may reduce the value of lands for guiding, trapping, hunting or tourism) (KNC et al., 2015).

As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities. As shared by Ktunaxa Nation, it is noted that the exercise of Ktunaxa Nation's rights and interests related to access to areas of traditional activities (e.g., country foods to support the rights-based economy) in the KNRI LSA and RSA has been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users), and the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact access and travel through the KNRI LSA and RSA) (KNC, 2021m).

23.8.2.2.6 Limitations of the Assessment of Social, Health, and Economic Conditions

While the Ktunaxa Nation has expressed interest in participating in the tourism economy through guiding activities such as sports fishing-based tourism and guided outfitters (Firelight Group et al., 2014), no information was provided by Ktunaxa Nation or was made publicly available on the description of socio-economic conditions in the KNRI LSA/RSA in relation, but not limited to:

- the use of navigable waters;
- Ktunaxa Nation forestry and logging operations;
- Ktunaxa Nation commercial fishing, hunting, trapping, and gathering activities;
- Ktunaxa Nation commercial outfitters; and
- Ktunaxa Nation recreational use including wildlife viewing.

Therefore, the changes to the environment caused by the Project that may potentially affect the above listed socio-economic conditions and their potential unmitigated effects were not carried forward into the effects assessment process and no potential impacts to Ktunaxa Nation's rights and interests have been identified. Where related information may be available regarding the socio-economic conditions identified in this section, the assessment of potential impacts on the Ktunaxa Nation's rights and interests related to these socio-economic conditions will be address where applicable in Section 23.11.

23.8.2.3 Summary of Residual Effects Characterization

The residual effects to Ktunaxa Nation are summarized below in Table 23.8-6 and are reflective of the current use of lands and resources for traditional purposes by Ktunaxa Nation as well as potential future use.

23.8.3 Cumulative Effects Assessment of the Changes to the Environment on Ktunaxa Nation

Cumulative environmental effects are the result of the residual environmental effects of the Project interacting with the effects of other past, present, and reasonably foreseeable future projects or activities to produce a combined/overlapping effect. These cumulative effects include the changes to the environment due to the Project combined with the existence of other past, present, and reasonably foreseeable physical activities. The objective of the cumulative effects assessment is to consider overlapping effects for all residual adverse effects, not only those predicted to be significant (EAO, 2013). Additional guidance used for cumulative effects assessment in general is provided in Chapter 5, Section 5.3.5. As previously noted, all information compiled and presented in Section 23.8.3 has been authored by NWP and the information presented in relation to potential Project effects is not intended to supersede traditional knowledge or specific information of the citizens and Elders of the Ktunaxa Nation (IAAC, 2015a).

The approach for determining cumulative effects requires the following for a potential cumulative effect to occur:

- The Project results in a residual adverse effect on a component of the environment that is understood to be of interest to the Ktunaxa Nation;
- The residual Project effect interacts cumulatively with effects from other projects or activities (i.e., the effects of the Project overlap spatially and temporally with those of other projects or activities) that have been or will be carried out;
- The other projects or activities have been or will be carried out (i.e., this does not include hypothetical information, but known future projects); and
- The cumulative effect is likely to occur.

The Elk Valley has been impacted by historic and current coal operations and other pressures such as forestry operations, wildfire, residential development, recreational activities, and transportation. The Ktunaxa Nation Council held a multi-stakeholder workshop to address broader cumulative landscape and land use pressures in the Elk Valley. As an outcome of this workshop, the Elk Valley Cumulative Effects Management Framework (EV-CEMF) was launched. The EV-CEMF was led by Teck Coal Ltd. and KNC until January 2015, after which leadership was transitioned to the B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) to jointly manage with the KNC. As part of the

Table 23.8-6: Summary of Potential Residual Effects Assessment on Ktunaxa Nation

Residual Effect	Project Phases	Mitigation Measures	Summary of Residual Effects Characterization	Significance (Significant, Not Significant)	Confidence (High, Moderate, Low)
Water Sector: Change to Use of Water for Traditional Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Short-term to Long-term Magnitude: Low to Moderate Geographic Extent: Local Frequency: Continuous Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Moderate
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Fishing Purposes	• Construction and Pre-Production • Reclamation and Closure	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Short-term to Long-term Magnitude: Low to Moderate Geographic Extent: Local Frequency: Continuous Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Low to Moderate
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Hunting and Trapping Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Long-Term Magnitude: Low to Moderate Geographic Extent: Local Frequency: Continuous Reversibility: Reversible Long-Term Context: Neutral	Not Significant	Low to Moderate

Residual Effect	Project Phases	Mitigation Measures	Summary of Residual Effects Characterization	Significance (Significant, Not Significant)	Confidence (High, Moderate, Low)
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Harvesting and Gathering Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Long-term to Permanent Magnitude: Low to Moderate Geographic Extent: Discrete Frequency: Once Reversibility: Reversible Long-Term Context: Neutral	Not Significant	Low
Traditional Knowledge and Language Sector: Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	• Construction and Pre-Production • Operations	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Permanent Magnitude: High Geographic Extent: Discrete Frequency: Once Reversibility: Irreversible Context: Low	Significant	Low
Social and Health and Economic Investment Sectors: Change to Social, Health, and Economic Conditions	• Operations	See Section 23.10 and specific mitigation tables for receptor or intermediate VCs.	Duration: Long-Term Magnitude: Low Geographic Extent: Discrete to Local Frequency: Continuous Reversibility: Reversible Long-Term Context: Neutral	Not Significant	Moderate to High

Provincial Cumulative Effects Framework, the Elk Valley Cumulative Effects Management Framework (EV-CEMF) aims to assess the historic, current, and potential future conditions of selected valued components and to support natural resource management decisions within the region. A diverse Working Group consisting of the KNC, industry, community organizations, and provincial government ministries provide guidance and oversight on EV-CEMF activities (EV-CEMF, 2018).

In December 2018, with input from a broad group of stakeholders, the Working Group released a comprehensive report titled *Elk Valley Cumulative Effects Assessment and Management Report* that integrates the assessment results for five Valued Components (VCs) to serve as indicators of environmental condition and trends. These five VCs (Old and Mature Forests, Riparian Habitat, Westslope Cutthroat Trout, Grizzly Bear, and Bighorn Sheep) each carry significant social, economic, cultural, or environmental values. Four technical reports[24] and the comprehensive Cumulative Effects Assessment and Management (CEAM) report have been endorsed by the Elk Valley Working Group and will be submitted to the Ministry of FLNRORD Regional Executive Director and KNC for final approval. This initial list of VCs is not considered to be comprehensive or represent the full suite of values and range of drivers on the landscape and prioritizes key management actions in the Elk Valley. An Implementation Plan will be developed to help identify priority actions and spatial locations for management and mitigation of cumulative effects in Elk Valley. The EV-CEMF Working Group members will have a shared responsibility to help implement management and mitigation actions to address cumulative effects in the Elk Valley (EV-CEMF, 2018).

23.8.3.1 Cumulative Effects Assessment Methods

For the purposes of the cumulative effects assessment on Ktunaxa Nation, the potential for cumulative effects on Ktunaxa Nation in relation to the Project followed the approach outlined in Chapter 5 and is included in Section 23.3. As noted in the assessment methods outlined in Section 23.8.2, to understand potential cumulative effects for example on a community's opportunity to fish in the regional area, the findings of the fish and fish habitat Valued Component cumulative effects assessment were used to determine the changes to the environment on the Ktunaxa Nation. Where applicable, HHRA and sensory receptor locations related to the current and rights-based use of lands and resources for traditional purposes by the Ktunaxa and publicly-available information specific to the Ktunaxa Nation has been presented and incorporated into the assessment of potential cumulative effects. The *Elk Valley Cumulative Effects Assessment and Management Report* (EV-CEMF, 2018) that integrates the assessment results for five Valued Components (VCs) to serve as indicators of environmental condition and trends, and the *Cumulative Effects Assessment for Kainai First Nation* (IEG and ALCES Group, 2018) report which undertakes an assessment that includes culturally important species of interest to the Ktunaxa Nation (i.e., ungulates) have also been utilized in the assessment of potential cumulative effects. The cumulative effects assessment was undertaken using the cumulative effects assessments completed for receptor and intermediate VCs that relate to Ktunaxa Nation in relation to the Project and, where available, for other projects or activities in the Ktunaxa Nation Rights and Interests Regional Study Area (KNRI RSA).

It is important to note that the assessment of effects on Ktunaxa Nation presented in this section is preliminary. Ktunaxa Nation have provided HHRA and sensory receptor locations related to current and rights-based use within the Project footprint, the KNRI LSA, and the KNRI RSA that have been utilized in this assessment based on their relation to traditional uses by the Ktunaxa Nation and information

[24] Riparian Habitat and Westslope Cutthroat Trout reports have been later integrated to form Aquatic Ecosystems VC.

provided from publicly available sources authored by Ktunaxa Nation (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). No traditional ecological knowledge or traditional land and resource use studies had been completed specifically for the Project by Ktunaxa Nation, nor for the region as a whole (to NWP's knowledge), though consultation with Ktunaxa Nation has informed the assessment. As such, the information provided below is based on the HHRA and sensory receptor locations related to current and rights-based use, the generally available knowledge of Ktunaxa Nation's use of land and resources and culture, and professional judgment. This information has been supplemented by literature sources and secondary information from past reports and EAs in the region. In this light, this chapter does not presume or replace information that may become available through further engagement of Ktunaxa Nation or in any traditional knowledge/traditional land use study that might be conducted and/or provided. Future information that is received will be used to continue to refine the Project design and proposed mitigation, as appropriate.

As detailed in the Project residual effects assessment (Section 23.8.2), the Project is not anticipated to result in significant residual effects on the use of water for traditional purposes and use of water and lands and resources for traditional purposes (i.e., fishing, hunting and trapping, and harvesting and gathering), physical and cultural heritage, structures or sites of historical, archaeological, paleontological, or architectural significance, or social, health, and economic conditions. While not considered to be significant, given that there is potential for residual effects of the Project on Ktunaxa Nation, an assessment of the cumulative effects is required because the residual effects of the Project may act cumulatively with the residual effects of other past, present, and reasonably foreseeable (i.e., announced) future projects and/or activities. Generally, the effects of past and present projects or activities are encompassed in the existing (baseline) conditions relating to Indigenous rights and interests. Information regarding the overall cumulative effects assessment methodology for all Valued Components assessed in this Application/EIS is provided in Chapter 5, Section 5.3.4.6.

For the purposes of the cumulative effects assessment on Ktunaxa Nation, residual Project effects considered in the assessment include the following, which are based largely on those enumerated in Section 5(1)(c) of CEA Act, 2012 and based on Ktunaxa Nation's rights and interests as identified in Sectors described in Section 23.5.4. The Sectors correspond as follows:

- Water Sector: Change to use of water for traditional purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional purposes: Fishing;
- Lands and Resources Sector: Change to use of lands and resources for traditional purposes: Hunting and trapping;
- Lands and Resources Sector: Change to use of lands and resources for traditional purposes: Harvesting and gathering;
- Traditional Knowledge and Language Sector: Change to physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; and
- Social and Health and Economic Investment Sectors: Change to social, health, and economic conditions.

The assessment of potential cumulative effects on Ktunaxa Nation is a qualitative assessment of potential cumulative interactions between the Project's residual effects and the residual effects that may arise from

other projects or activities within the KNRI RSA. A conservative approach has been used in the assessment of cumulative effects on Ktunaxa Nation that assumes that the current and potential use of the lands and resources occurs throughout the KNRI RSA. The conservative approach was used due to NWP's desire for continued consultation with the Ktunaxa Nation, and additional information related to the past and current use of lands for various traditional activities that would be discussed and confirmed.

Though no spatial or temporal overlap is anticipated to occur in conjunction with the Project's effects to archaeological resources and other reasonably foreseeable future projects and activities (because effects on archaeological resources are limited to the area of physical disturbance of a particular project, and there is no such spatial overlap between project footprints in the present case), a potential cumulative effect on physical and cultural heritage and potential changes to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance is nonetheless carried forward in the cumulative effects assessment on Ktunaxa Nation. While Archaeological Impact Assessments were conducted for the Archaeological Resources LSA, additional sites of significance within the KNRI RSA could be identified in the future that are currently unknown or undocumented and could have the potential to be impacted as a result of projects and activities, and therefore may impact Ktunaxa Nation.

The assessment of potential residual Project effects to the socio-community VC, based on publicly available information, indicated that no residual effects are anticipated, and as such, no cumulative effects to the socio-community as it relates to the potential residual cumulative effects on Ktunaxa Nation is presented. Similarly, the assessment of potential residual Project effects to the economic conditions VC indicated that no residual effects are anticipated, and as such, no cumulative effects to the socio-economic conditions as it relates to potential residual cumulative effects on Ktunaxa Nation is presented. It is noted that there is potential for some positive economic conditions effects through: increase in employment opportunities and income, contribution to regional and local economies, and increased payment to government through taxes and royalty payments.

Valued Components (VCs) that have linkages to Ktunaxa Nation and were used in the assessment of potential cumulative effects include:

- Surface water quality;
- Fish and fish habitat;
- Ungulates;
- Carnivores;
- Bird community;
- Terrestrial ecosystems;
- Vegetation;
- Land use and access;
- Heritage resources; and
- Human and wildlife health.

23.8.3.1.1 Cumulative Effects Assessment Boundaries

The assessment of cumulative effects if the changes to the environment on Ktunaxa Nation was conducted at a regional scale using receptor and intermediate VC information, as available, within KNRI RSA. The KNRI RSA is approximately 3,193,000 ha and encompasses the VCs and VC groups in which the Ktunaxa

Nation may have constitutionally protected rights to practice traditional activities, such as for fishing and hunting and gathering.

The VC study areas relevant to the assessment of cumulative effects to Ktunaxa Nation include the following, which are encompassed within the KNRI RSA:

- Aquatic RSA;
- Terrestrial RSA;
- Landscapes and Ecosystems RSA;
- Grizzly Bear RSA;
- Birds, Bats, and Amphibians RSA;
- Socio-Community RSA;
- Economic Conditions RSA;
- Land Use and Access RSA;
- Archaeological Resources RSA; and
- Human Health and Ecological Risk Assessment (HHERA) RSA.

Temporal, administrative, and technical boundaries used in the assessment of receptor and intermediate VCs were considered in the assessment of cumulative effects on Ktunaxa Nation and are summarized in the relevant VC assessment chapters. These were further supported by available historical baseline conditions for cumulative effects assessment based on pre-industrial or range of natural variation conditions and reasonably foreseeable projects and/or activities in combination with the Project.

The spatial boundary of the Elk Valley Cumulative Effects Management Framework (EV-CEMF) falls within what is known to the Ktunaxa as Qukin ʔamakʔis, or Raven's Land and Ɂaʕnna ʔamakʔis, or the land of woodtick, extending from the headwaters of the Elk River downstream to Elko, covering an area of approximately 3,568 square kilometers. This region is diverse, with an array of different ecosystems. Ktunaxa knowledge holders recognize the importance of plants and vegetation for human use, and as habitat for other living things with Qukin ʔamakʔis. The ecological, cultural, and societal values associated with the diverse ecosystems in the Elk Valley form the foundation for assessing cumulative effects within this landscape (EV-CEMF, 2018).

23.8.3.2 Identifying Past, Present, and Reasonably Foreseeable Projects and/or Activities

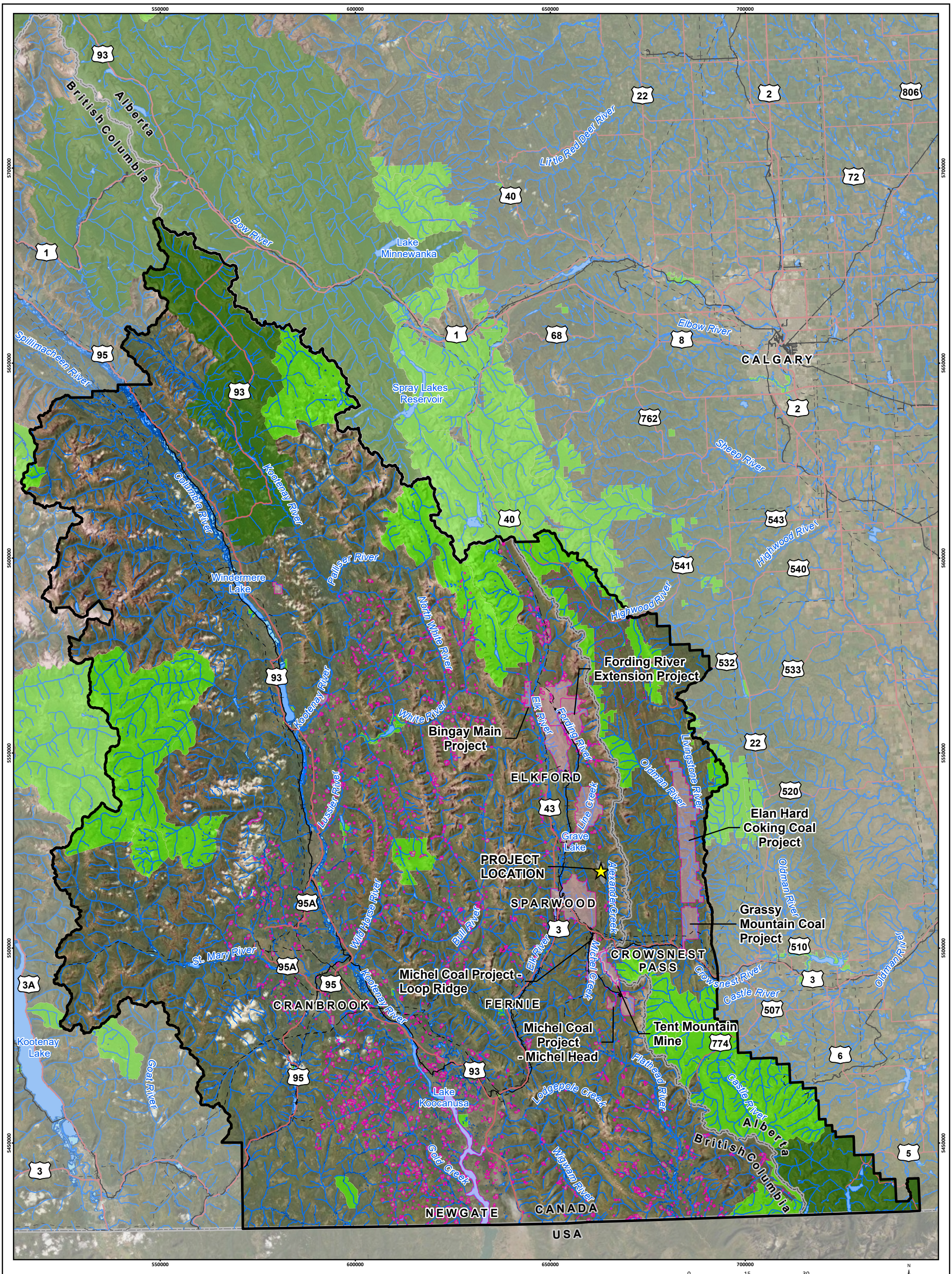
Ktunaxa land users do not experience distinct Project specific effects in isolation from those of the past. Current changes, including effects from environmental change and industrial projects, are experienced on top of ongoing legacies from past impacts on Ktunaxa lands and waters – the full history of industrial and developmental change, combined with environmental change, conditions the current practice of Ktunaxa rights. From a Ktunaxa perspective, consideration of cumulative effects in relation to the Project requires consideration of a pre-development (c. 1880) baseline, and of the significance of already existing effects on Ktunaxa rights, as well as the additional effects of the Project in combination with reasonably foreseeable future projects and activities, and effects from changes in the environment.

Past, present, and reasonably foreseeable future projects and activities have the potential to act cumulatively with the Project residual effects within the KNRI RSA and result in a potential cumulative effect on Ktunaxa Nation. Descriptions of the past, present, and reasonably foreseeable projects and/or activities for consideration in the cumulative effects assessment are provided in Chapter 5, Section 5.3.4.6

and Table 5.3-12. A map showing the location of reasonably foreseeable future projects and activities relative to the KNRI RSA is presented in Figure 23.8-4.

The following projects were considered as past, present projects and/or activities in the cumulative effects assessment and were included in the determination of baseline conditions:

- Natural Resource Extraction (Mining) – Past mining operations that are no longer operational include Hosmer Wheeler, Natal Ridge, Michel Creek, Sparwood Ridge, Balmer, and J-Area (Sparwood Operations), McGillivray, and Tent Mountain.
- Coal Mountain Operations – Present.
- Elkview Operations – Present.
- Line Creek Operations – Present.
- Fording River Operations – Present.
- Greenhills Operations – Present.
- Kootenay West Mine – Present.
- Elkhorn Quarry West (Windermere Mining Operations) – Present.
- Energy (Elko Dam) – Present.
- Koocanusa Reservoir – Present.
- Marten Phosphate Project – Present.
- Forestry – Forestry occurs on both private and Crown land in the Elk Valley. Timber has been harvested on private lands by several proponents, including but not limited to Tembec, Jemi Fibre Corp, and Canwel Building Materials Group (Canwel). Currently, Canwel harvests timber on privately held lands across the Elk Valley. B.C. Crown Land timber harvests occur throughout the Elk Valley and have been active since the late 1800s. The total allowable cut in the Cranbrook Timber Supply Area is approximately 900,000 cubic meters per year, before taking into account harvesting on private lands (EVCEMWG, 2018).
- Natural processes or events include geophysical events (i.e., avalanches, seismic events, and landslides) and forest fires that have occurred in the past and are occurring in the present.
- Energy (Pipelines) – FortisBC and TransCanada Energy (TC Energy) operate natural gas pipelines in the region.
- Energy (Electrical Transmission) – Several overhead transmission lines occur in the Elk Valley generally running along highways, the transmission lines intersect towns and other linear features in the area (e.g., rail, local roads, and gas pipelines).
- Transportation – Linear transportation features across the Elk Valley includes rail, roads (e.g., forestry, exploration, private, and local roads), and highways. Rail runs along major highways in the Elk Valley, servicing existing coal mines.
- Recreation and Tourism – Recreation and tourism take place in front-country and backcountry areas across the Elk Valley.
- Commercial, Residential, and Industrial Use – Lands of nearby communities used for commercial, residential, and industrial use. Includes commercial and industrial development that facilitates commerce and employment as well as areas of residential use.
- Parks and Protected Areas – Parks and protected areas occur throughout the Elk Valley and include Provincial Parks, recreation areas, and community and local parks.
- Agriculture – Agricultural lands in the Elk Valley are mainly used for farming and grazing purposes, with equine and beef livestock the most common livestock activities.



Crown Mountain Coking Coal Project

Figure 23.8-4
Reasonably Foreseeable Future Projects and Activities in the KNRI RSA

LEGEND

- Reasonably Foreseeable Projects and Activities
- Ktunaxa Nation Rights and Interests Regional Study Area
- Crown Mountain Coking Coal Project
- Highway
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- Provincial Park/Protected Area
- National Park
- British Columbia/Alberta Border

0 15 30
Kilometres

Scale 1:900,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada. Imagery Provided By ESRI.

Map Created By: RB
Map Checked By: HS
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: FINAL
Date: 2021-10-15

Document Path: G:\GIS\2012 and Prior\126231 Crown Mountain\EA_Report\CumulativeEffects\IndigenousInterest\126231_CE_II_RFFProjectActivitiesKNRIRSA.mxd

The future projects and activities identified as having a potential to interact cumulatively with the anticipated residual Project effects on Ktunaxa Nation primarily include the currently ongoing future projects and activities that have the potential to occur in the KNRI RSA. For the purposes of the cumulative effects assessment of rights and interests, only reasonably foreseeable future projects and activities are considered. It is assumed that past and present projects and activities are included in the baseline information that includes historic and current use of lands and resources for traditional purposes.

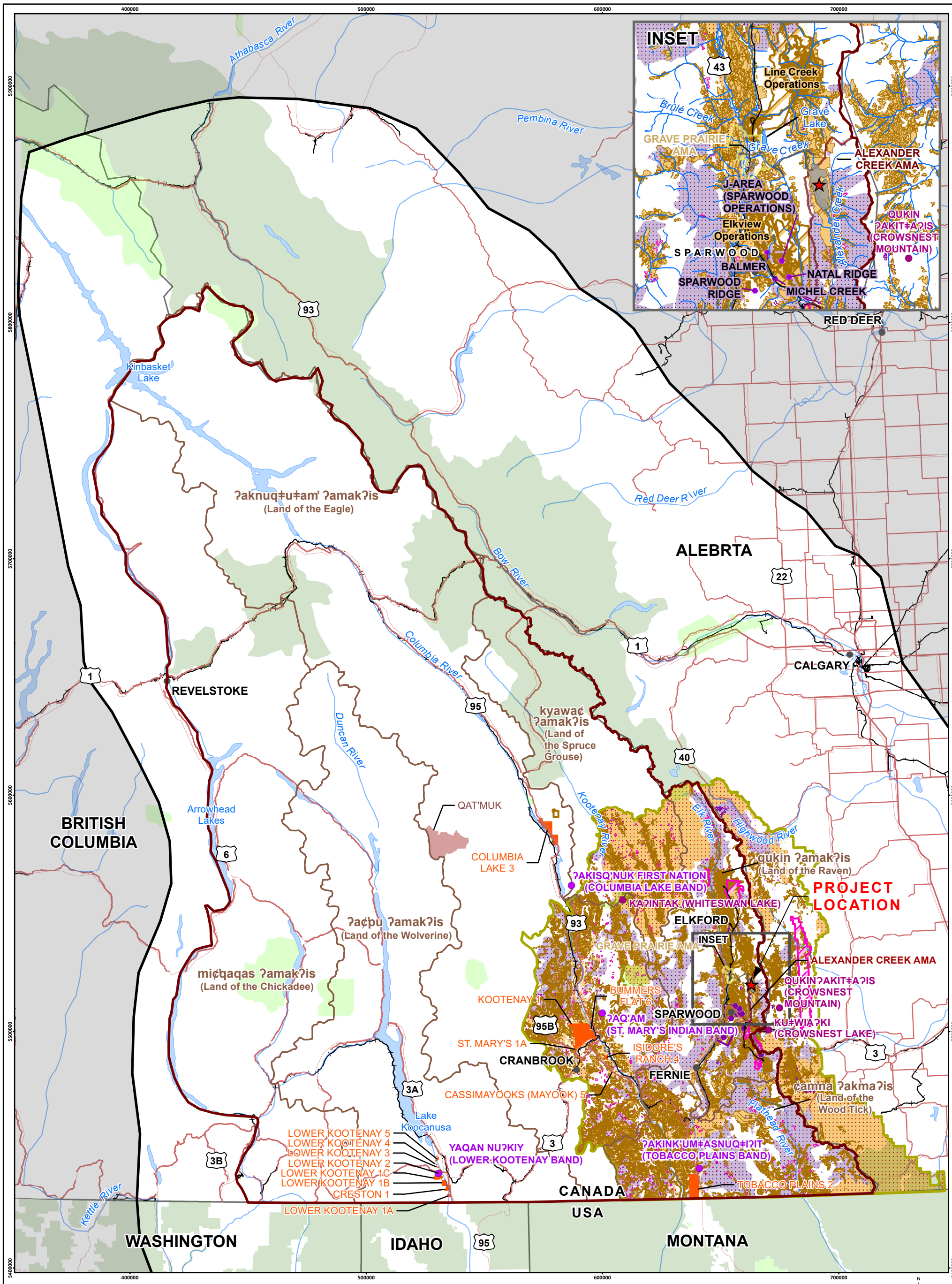
Figure 23.8-5 presents a map depicting certain past, present, and reasonably foreseeable future projects and/or activities within the KNRI RSA together to showcase the extent of the cumulative effects within the KNRI RSA with the applicable information. Reasonably foreseeable projects and activities that have the potential to act cumulatively with the Project residual effects within the KNRI RSA, and with potential Ktunaxa Nation Title and Rights and related interests include:

- Tent Mountain Mine;
- Fording River Extension Project;
- Bingay Main Project;
- Grassy Mountain Project;
- Michel Coal Project;
- Elan Hard Coking Coal Project;
- Future forestry, including use of future cutblocks;
- Climate change, including changes in extreme weather events related to precipitation, temperature, wind events, and hydrological events; and
- Natural processes or events, including geophysical events (i.e., avalanches, seismic events, and landslides) and forest fires that have occurred in the past, are occurring, or that have the potential to occur in the future.

The following projects were considered as past, present, or reasonably foreseeable future projects and/or activities but were not included in the cumulative effects assessment:

- Coal Mountain Phase 2 as the environmental assessment was placed on hold by Teck in 2016;
- Mount Brussilof (Baymag Mine) by Baymag due to no temporal overlap (TBD);
- Barns Lake Phosphate Exploration Project by Fertoz International Inc. given that the project is in exploration phase and no project has been proposed; and
- Cabin Ridge Coal by Warburton Group is in exploration and no project has been proposed.

A cumulative effects assessment was completed for each VC that corresponds to Ktunaxa Nation's rights and interests as outlined in Section 23.5.4, including fish and fish habitat (Chapter 12), wildlife and wildlife habitat (Chapter 15; i.e., ungulates, carnivores, and birds), terrestrial ecosystems (Chapter 13), vegetation (Chapter 14), land use and access (Chapter 19), heritage resources (Chapter 16), and human and wildlife health (Chapter 22). Section 23.8.3.3 identifies the effects of past and present projects or activities that have been carried out and generally reflects those in the existing baseline environment; in other words, the contributions of past and present projects and activities are normally encompassed in the baseline conditions established for the Project. Therefore, in most cases, it was more appropriate and logical to consider the overlap of the effects of the Project and those of past and present projects and/or activities in the Project-related effects assessment for each VC (with the Project effects contributing to a change in those baseline conditions), and to focus the cumulative effects assessment on the effects of reasonably foreseeable projects or activities.



Crown Mountain Coking Coal Project

Figure 23.8-5
Certain Past, Present, and Reasonably Foreseeable Future Projects and Activities in the ATRI RSA

LEGEND

- Past Project
- Past Projects and Activities
- Present Projects and Activities
- Reasonably Foreseeable Future Projects and Activities
- Retired Cutblocks
- Present Forest Activities
- Reasonably Foreseeable Future Forestry Activities
- Present Activities
- Past Wildfire Extents (1919-2021)
- Extent of Cumulative Effects Data
- Qat'muk
- Grave Prairie AMA
- Alexander Creek AMA
- Ktunaxa Nation Traditional Territory
- Ktunaxa Nation Area of Intent
- Ktunaxa Nation Traditional District
- Ktunaxa Nation Reserve Lands
- Ktunaxa Communities
- Ktunaxa Sites
- Project Footprint
- City/Town
- Highway
- Railway
- Watercourse
- Waterbody
- Provincial/State/Local Park
- National Park
- Province/State Boundary

0 25 50
Kilometres

Scale 1:1,500,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada, ESRI Basedata, Ktunaxa Nation.

Map Created By: RB/LMM
Map Checked By: MN
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

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Document Path: \\42dillon\CAD\GIS\2012 and Prior\126231 Crown Mountain\EA_Report\CumulativeEffects\IndigenousInterest\126231_CE_II_CertainPPRFFProjectActivitiesintheATRIStudyAreaKNC.mxd

The assessment and evaluation of the cumulative effects of the Project in combination with past, present, and reasonably foreseeable future projects and/or activities considered the nature and degree of change from baseline conditions due to both the Project and the other projects and/or activities.

23.8.3.2.1 Historical Baseline Conditions Considered for Cumulative Effects

Based on a review of publicly available information, Table 23.8-7 provides an initial characterization of a Ktunaxa based pre-development (c. 1880) baseline, and subsequent trends and changes to present conditions. While not complete, and largely qualitative, the baseline is organized generally by the five interrelated themes used for the assessment in this section (KLR et al., 2011; KNC et al., 2014; KNC et al., 2015). Future changes caused by the Project will be experienced within a wide range of existing ecological and industrial impacts in the Elk Valley.

The Ktunaxa Nation's territories have undergone significant land-use changes since colonial contact. Much of this is due to natural resource developments. These changes and the associated assessment/regulatory processes have in part led to the Ktunaxa Nation's expression of concerns in regard to (Nishima- Miller, 2022):

- The amount and scale of resource development within their territories;
- The physical footprint of project developments;
- An increased presence of industry related contaminants in waterways within the Elk River watershed;
- Lack of Indigenous participation in provincial/federal EIA processes; and
- An inadequate consideration of cumulative impacts when making decisions to approve such developments.

Through a series of regional and provincial agreements with the BC provincial government and proponents, the Ktunaxa Nation has worked to address some of the challenges associated with the history of resource development within their territories (Nishima- Miller, 2022). As noted by Ktunaxa Nation Council in correspondence to the Ministers of BC EAO and IAAC, dated August 13, 2021 (KNC, 2021m):

> *"Current impacts to Ktunaxa title, rights and cultural practices from existing mining operations have exceeded acceptable levels and existing regulatory regimes and measures to mitigate and reduce those impacts have proved to be largely ineffective in their implementation…We are deeply concerned that the current understanding of impacts related to legacy impacts and existing operations are uncertain, and that the capacity of Qukin ʔamakʔis to continue to support the meaningful exercise of Ktunaxa title, rights and cultural practices may be irrevocably compromised. The health of ʔamakʔis Ktunaxa is directly related to the health of our Nation and our citizens who rely on the ʔamak ɛ wuʔu (land and water) to sustain themselves culturally, socially and economically"* (KNC, 2021m).

Within Qukin ʔamakʔis (Raven's Land), as noted by Ktunaxa Nation (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a) valley bottoms and higher altitude valleys and slopes provide critical habitat for culturally important food species and culturally important plants that are a critical part of Ktunaxa diet. These ecosystems are impacted in many areas by forestry, mining, recreational development, and associated road networks, with a general trend of north-south oriented mining and related disturbance along valley bottoms and some ridges that limit

Table 23.8-7: Historical Baseline of Cumulative Effects on Ktunaxa Title and Rights/Interests Sectors

Water Sector	Traditional Knowledge and Language Sector	Lands and Resources Sector	Social and Health Sector	Economic Investment and Employment and Education Sectors
Pre-1881				
Waters and streams in Ktunaxa ʔamakʔis were unconstrained by industrial effects including dams, withdrawals, and contaminants. Early mining efforts around the Wild Horse River in the 1860s and agricultural efforts around Fort Steele had begun to affect streams and water, but most Ktunaxa rivers and streams, including the Elk River, were unaffected. Ktunaxa citizens cared for water as a sacred thing and were able to rely on area streams and rivers with confidence for drinking, fishing, plant collection, and ceremonial purposes. Rivers and streams also provided important travel corridors.	Prior to 1881, the Ktunaxa language dominated Ktunaxa ʔamakʔis. Horses arrived in the territory sometime in the late 18th century and became an important influence and source of wealth. Christianity became an important part of Ktunaxa cultural practice after the arrival of Father de Smet in the 1840s. Despite the Wild Horse Creek gold rush in 1863, by 1881 only a handful of non-Ktunaxa lived in the eastern portion of Ktunaxa ʔamakʔis, mostly near Galbraith's Ferry and Wild Horse Creek. An important seasonal village at ƙaqawakanmituk, near Michel Prairie, provided a basis for a vibrant trade economy in fur and other resources, and the annual subsistence round. The Elk Valley continued to be an important area for harvesting game, including elk and sheep. Its	Despite decimation of the qakawakanmi‡uqnik by disease in the late 1700s, Ktunaxa governance and authority in the Elk Valley was maintained under Chief Michel through the 1880s. Coal mining in the Elk Valley had not begun, and while an international boundary between lands claimed by the US and Britain was established in1846, no effective Canadian government presence, beyond land surveying, existed on Ktunaxa lands until the late 1880s. Ktunaxa kept valley bottoms and horse pasture open through annual burning and relied largely on the seasonal harvest of wild foods, including fish, ungulates, and plant foods. Salmon and bison were both commonly relied upon. Minimal constraints existed for ecological systems and animal populations in the Elk Valley. Annual Ktunaxa buffalo hunts continued on the east side of the Rockies until the early 1890s.	While estimates vary, the population of Ktunaxa communities likely declined by as much as 80 to 90 percent between 1780 and 1880 due largely to introduced diseases. Prior to 1881, and despite declines in buffalo east of the Rockies, Ktunaxa citizens in the Elk Valley continued to practice an ancestral way of life and economy, including annual bison hunts, largely free of forced interference.	Discovery of gold at Wild Horse Creek in 1863, and of other minerals in the west Kootenays, led to early mining and a short-lived influx of non-Ktunaxa (largely American) peoples, but did not extend significantly into the Elk Valley. Ktunaxa maintain commercial trading ties with other Indigenous nations, as well as fur-traders (HBC and independent) in the region. Horses came to the Ktunaxa in the late 1700s. They were highly valued and a sign of wealth. Ktunaxa communities kept large herds of horses and cattle through the late 19th century. Prior to 1880, employment for wages was rare, but not unknown.

Water Sector	Traditional Knowledge and Language Sector	Lands and Resources Sector	Social and Health Sector	Economic Investment and Employment and Education Sectors
	importance for subsistence in the 1880s was likely heightened by declines in bison east of the Rockies. Ktunaxa trails provided primary transport routes and corridors of communication between Ktunaxa and other nations.			
1881 – 1930				
Impacts from early logging and coal development in the Elk Valley began to impact the Elk and Michel River. Surrounding drainages remained relatively unaffected. Salmon harvest in the upper Columbia, an important part of the Ktunaxa seasonal round, was reduced due to overharvesting in the lower Columbia. Ktunaxa citizens continued to care for water as a sacred thing and relied on Elk Valley streams for drinking, fishing, plant collection, and ceremonial purposes.	Ktunaxa was still the dominant language in Ktunaxa communities, but English became the dominant language outside them. Pre-emption and Crown land grants privatized Ktunaxa lands. Under pressure from government, game wardens, and other agents, Chief Michel and Ktunaxa citizens resident in the Elk Valley moved onto reserves at Tobacco Plains or akink'umłasnuqłi?it, Columbia Lakes, and elsewhere, but portions of the Elk Valley, including areas around Sparwood, were still actively used by members of the Michel family.	Ktunaxa reserves were set aside by the Canadian government with objections from Ktunaxa leaders. No reserve was established in the Elk Valley, despite the presence of Chief Michel and the community at gakawakamitu. Conflicts between Ktunaxa citizens and non-Indigenous newcomers seeking land and resources became more intense. Implementation of reserves and the *Indian Act* restrictions impinged on traditional Ktunaxa governance, and increased pressure from non-Ktunaxa led to armed conflict. One of the areas of dispute was Joseph's Prairie, the location of modern Cranbrook. In 1888, Superintendent Sam Steele and a contingent of NWMP officers	Christianity became a stronger influence in Ktunaxa communities, reinforced by the development of government-supported residential schools, and the Indian Act legislation restricting the sun dance and other important Ktunaxa ceremonial practices. Illness, including Tuberculosis and flu, remained at high levels. The Ktunaxa population continued to drop, and reached its low point in the early 1900s. Issues of racism and wealth disparity intensified as the non-Ktunaxa population	In the Elk Valley, early coal exploration began in the 1880s. The first underground mine opened in 1898 and the Canadian Pacific Railway arrived in 1899. Forestry developed alongside mining, and the non-Ktunaxa population grew rapidly around Fernie and through the Crowsnest pass. Ktunaxa involvement in mining was minimal, though the St. Eugene Church and Mission was built in 1893 and 1910, largely through revenues from mining claims held in the area of Moyie. The Moyie claims were operated by a

Water Sector	Traditional Knowledge and Language Sector	Lands and Resources Sector	Social and Health Sector	Economic Investment and Employment and Education Sectors
	Underground coal mining started and grew, and government representatives actively discouraged Ktunaxa citizens from practicing hunting and trapping rights in the upper Elk Valley.	came in temporarily to settle a dispute between Ktunaxa and the vastly outnumbered settlers at Galbraith's Ferry, soon to be named Fort Steele. Ktunaxa oral histories recorded some of the first promises made by a Crown authority to Ktunaxa leadership. Ecological effects of early mining practices (coal mining began circa 1897), forest harvesting (including clearing related to rail development and operation), fencing of pre-empted or privatized lands, and declining air and water quality, began to be felt in the Elk Valley. Railway and road networks increased accessibility and pressure on the Elk Valley. Ktunaxa opposition to Canadian and B.C. interference was maintained.	increased and systemic inequalities compounded. Ktunaxa citizens found themselves largely shut out of the dominant economy. Social problems, including poverty and alcohol, became increasing problems for Ktunaxa families.	predecessor company of Teck. Ktunaxa citizens found themselves increasingly excluded from the new wage economy. Mining increased the wealth of non- Ktunaxa residents and economic disparities increased between Ktunaxa and non-Ktunaxa. Ranching and fur trapping remained important parts of the Ktunaxa economy and way of life, in addition to subsistence economy activities.
1931 – 1980				
Salmon were extirpated from the upper Columbia around 1940 by construction of the Grand Coulee Dam in the United States. This removed the ability of Ktunaxa peoples to harvest	Ktunaxa language was spoken less frequently in everyday settings and was actively discouraged in the residential schools. English became the dominant language in Ktunaxa communities, though Ktunaxa	By the late 1960s, in response to increasing challenges to Ktunaxa governance, Ktunaxa rights-based organization resulted in vocal calls for recognition of Ktunaxa rights on both sides of the international border.	Overall health of Ktunaxa citizens improved as a result of increased access to health services, but social challenges increased under pressure from ongoing *Indian Act* policies. Changes	Coal mining continued in the upper Elk Valley with a gradual shift towards open pit mining. Involvement of Ktunaxa citizens in mining remained

Water Sector	Traditional Knowledge and Language Sector	Lands and Resources Sector	Social and Health Sector	Economic Investment and Employment and Education Sectors
salmon. Libby Dam was built in 1975 to dam the Kootenay River and flood the Koocanusa reservoir and the confluence of the Elk and the Kootenay. Important fishing areas were lost. Impacts to water quality in the Elk Valley as a result of industrial open pit coal mining became apparent.	was still spoken fluently in many homes. Due to industrial impacts and pressure from game wardens and other government officials, Ktunaxa use of the Elk Valley was diminished, but continued as a pattern of temporary hunting camps, or resource harvesting areas often used while in the area working for forestry or other companies. Regular use of the Valley continued. Long distance trails and passes were used less frequently by Ktunaxa following the development of the railway and road networks.	In the Elk Valley, Balmer Mine began open pit mining at near Sparwood. Impacts including coal dust, access, and water and air quality issues accumulated in the Michel and Elk valley, leading to Ktunaxa avoidance and loss of use, especially in relation to fish and berry collection. Open pit mining resulted in large expansions of the total disturbance area. The Line Creek road construction destroyed several archaeological sites, rock shelter/camp areas and trails and harvesting areas. Early environmental reclamation efforts by coal companies began.	to the Indian Act made it impossible to push land issues in the courts and to practice some aspects of Ktunaxa culture until the late 1950s. The towns of Michel and Natal amalgamated and moved to the new town site of Sparwood in the 1960s, largely because of excessive contamination from coal dust at Michel and Natal.	minimal. Economic disparities between Ktunaxa and non-Ktunaxa increased. Some Ktunaxa participated in the upper Elk mining industry as drivers and other labour.
1981 – 2021				
Water quality effects in the Elk Valley increased from mining, having effects on aquatic health, Westslope Cutthroat Trout, and other fish populations in the Elk River. Industrial effects in the Elk Valley, including coal dust and impacts to water,	While the number of fluent Ktunaxa speakers continued to decline, Ktunaxa Nation efforts to support language retention increased; these included teaching resources, Ktunaxa children's books, and online resources. English remained the dominant language in Ktunaxa communities.	The Canadian *Constitution Act* recognized Indigenous rights, and a series of B.C. and Canadian legal decisions confirmed the ongoing existence of both Aboriginal rights and title in B.C., along with Crown duties to honourably address them. Treaty negotiations with the provincial and federal Crowns were established. Through the Ktunaxa Nation Council and	Overall health of Ktunaxa citizens improved as a result of increased access to health services, but lagged well behind non-Ktunaxa in the region. The Ktunaxa Nation began to take a leading role in the delivery of social services to its members.	Open pit coal mining expanded in the upper Elk Valley, with five major mines in operation. Ktunaxa participation in the mining industry remained minimal despite intense labour demands and high Ktunaxa unemployment.

Water Sector	Traditional Knowledge and Language Sector	Lands and Resources Sector	Social and Health Sector	Economic Investment and Employment and Education Sectors
accumulated to the point where some Ktunaxa users were discouraged from practicing rights in the Elk Valley, especially given other constraints and obstacles. The Ktunaxa Nation took a stronger role in the formal management of impacts to water as increasing concerns regarding habitat destruction became more prominent as a result of mining.	New technologies both supported and challenged the Ktunaxa language. Ktunaxa use and occasional occupancy continued in the upper Elk valley, but was less frequent due to the absence of a permanent Ktunaxa community in the area. Accessing trails and hunting areas became increasingly difficult because of the large disturbance areas created by open pit mining. Concerns regarding contamination of fish in the Elk River led to avoidance of these areas by at least some Ktunaxa users. Ongoing exclusion of Ktunaxa peoples from the Elk Valley, combined with other impacts, was leading to loss of oral histories and place-specific knowledge for the area.	earlier organization (Ktunaxa Nation Society), Ktunaxa citizens took an increasing role in the governance of Ktunaxa ʔamakʔis and the KNC government building was established at the centre of Cranbrook, the original site of disputes regarding Joseph's Prairie in the late 1800s. Disturbance footprint in the upper Elk Valley expands to more of the valley bottom. Reclamation of mined lands progressed in some places, though slowly. The KNC began to play a major role in environmental decisions in the Elk Valley.	Ktunaxa population was growing rapidly, with an increasing percentage of Ktunaxa citizens living off reserve and in urban areas.	Ktunaxa business development efforts in the 1990s and 2000s began to show results. After major supreme court decisions in the mid-2000s, the Ktunaxa Nation began negotiating increased benefits from development and resource extraction within Ktunaxa lands. This included negotiation of a Strategic Engagement Agreement and an Economic and Community Development Agreement (revenue sharing) with B.C.

Source: KLR et al., 2011; KNC et al., 2014; KNC et al., 2015.

the east-west connectivity between alpine ranges. The rivers and streams of the KNRI RSA also provide culturally important sources of fish, with multiple reaches having experienced industrial effects and contaminant loading. The Elk River system has been affected by sport fishing, transportation infrastructure, mining related impacts, and forestry activities (KNC & the Firelight Group, 2015). Significant physical anthropogenic impacts to terrestrial and aquatic habitats have occurred in Qukin ʔamakʔis, and the loss of species and habitat has had a lasting impact on Ktunaxa rights and title (KNC, 2021m).

The Elk River Valley has also seen substantial residential development and associated municipal water use and waste effluent deposition. Outside the Elk Valley, hydro-electric, agricultural, and industrial development, as well as environmental changes, have resulted in the loss of two culturally significant species from Ktunaxa ʔamakʔis: bison and anadromous salmon. Other culturally significant species, including grizzly bear, are at risk (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; 2021a; 2022c; 2023). As noted in Section 23.7.1.1.2, groundwater is the primary drinking water source for residents in the Elk Valley and possible influences from mining on the municipal groundwater wells at Sparwood have been a subject of concern in the past (EVWQ, 2023). Surface water is not used as a source for municipal or private residential drinking water in the Elk Valley and the risk of exposure to mine-related substances from drinking surface water is being assessed in case it becomes a dedicated drinking water source in the future (EVWQ, 2023).

From a Ktunaxa perspective, KNC has expressed high levels of concern about the cumulative effects of past, current, and proposed developments (KNC et al., 2014; KNC, 2022c; 2023). Ktunaxa has communicated that alteration of the land and ecosystems directly affects Ktunaxa culture in a manner that cannot often be fully reclaimed through reclamation activities (KNC et al., 2014).

As noted earlier, Ktunaxa land users do not experience distinct Project-specific effects in isolation from those of the past (KNC & the Firelight Group, 2015). Current changes, including effects from environmental change and industrial projects, are experienced on top of ongoing legacies from past impacts on Ktunaxa lands and waters. The full history of industrial and developmental change, combined with environmental change, conditions the current practice of Ktunaxa rights (KNC & the Firelight Group, 2015). From a Ktunaxa perspective, consideration of cumulative effects in relation to the Project requires consideration of a pre-development baseline, and of the significance of already existing effects on Ktunaxa Nation's rights and interests, as well as the additional effects of the Project in combination with reasonably foreseeable developments, and effects from changes in the environment including forest fires and climate change (KNC & the Firelight Group, 2015).

Within Qukin ʔamakʔis, valley bottoms, traditionally maintained through fire cycles as open forests and grasslands, are now fenced in many places and threatened by fire suppression, forest harvesting, housing, energy transmission, hydro-electric reservoirs, agriculture, and transportation developments (KNC & the Firelight Group, 2015). From a Ktunaxa perspective, considering the overall disturbance of lands and waters within the Elk Valley over time, and considering both quantitative percent disturbance, and more qualitative factors, a threshold of adverse, long term, high magnitude effect on the exercise of Ktunaxa rights and interests in the Elk Valley is understood to have already been surpassed (KNC & the Firelight Group, 2015).

Based on past work in the Elk Valley, Ktunaxa Nation has determined that cumulative effects on Ktunaxa Nation's rights and interests stemming from impacts to lands and waters within the Elk Valley drainage

have already exceeded a threshold of significance, and that without substantial mitigations and other measures, adverse impacts from other projects in the region will act cumulatively to increase the magnitude and duration of significant effects (KNC, 2020a).

Based on available Ktunaxa information, existing impacts on Ktunaxa practice of rights in the Crowsnest Pass area have also been significant and Ktunaxa use, rights, and interests within the KNRI LSA are also adverse and are likely to extend the duration, magnitude and extent of existing significant impacts in the region, including impacts on cultural landscapes, water, bison, and other resources that are fundamental to Ktunaxa practice in the area. Based on existing information, and uncertainties related to mitigation and the EVWQP, the KNC anticipates that these cumulative effects will exacerbate already significant effects in the Elk Valley, and on Ktunaxa Nation's rights and interests, for the foreseeable future (KNC & the Firelight Group, 2015).

23.8.3.3 Identification of Potential Cumulative Effects of Changes to the Environment on Ktunaxa Nation

The potential effects of the Project have the potential to act cumulatively with reasonably foreseeable future projects and/or activities (see Section 23.3.7.2) and as such, may result in cumulative effects on VCs that relate to Ktunaxa Nation, including fish and fish habitat (Chapter 12), wildlife and wildlife habitat (Chapter 15; i.e., ungulates, carnivores, and birds), terrestrial ecosystems (Chapter 13), vegetation (Chapter 14), land use and access (Chapter 19), heritage resources (Chapter 16), and human and wildlife health (Chapter 22). Based on the significance determination undertaken for each VC related to Ktunaxa Nation and identified in their relevant chapters in the Application/EIS, no significant adverse cumulative effects were anticipated for VCs or VC groups.

It is noted that IAAC indicated that the duty to consult with the Ktunaxa Nation was at the high end of the consultation spectrum, and as such, the Project effects assessment and cumulative effects assessment on the rights and interests of the Ktunaxa Nation has been presented in this section (IAAC, 2015a). In addition, while the Ktunaxa Nation has not provided specific information on their use of land and waterways in the KNRI RSA, given the information that is available at this time, it is anticipated that the KNRI RSA does have potential for use by Ktunaxa Nation for various traditional activities. Further, their possible current use of the area may be impacted by past and present activities and other projects. In the absence of specific information on use of land being provided by the Ktunaxa Nation, much of the description of possible cumulative residual effects on the change to use of water and lands and resources for traditional purposes in Section 23.8.3.4 is speculative. As noted earlier, a conservative approach has been taken to account for the lack of information provided by Ktunaxa Nation with respect to the cumulative impact on their rights and interests.

The assessment of potential residual cumulative effects for VCs or VC groups related to Ktunaxa Nation are summarized as follows:

- Water: The Project has the potential to result in several impacts to the use of water including changes in water quantity, changes in water quality, changes in streambed structure, and riparian disturbance in the Alexander Creek. The Project will not contribute to significant residual effects related to changes in water quantity, changes in streambed structure, or riparian disturbance in the KNRI RSA, as a result of mitigation to be implemented during the Operations phase and through reclamation efforts. Further, changes in water quality as a result of the Project will be

mitigated through Project design and Project-specific effects are not anticipated to extend beyond the KNRI LSA and no potential KNRI RSA-scale effects are anticipated to occur. The potential residual cumulative effects to water resulting from the Project in combination with other reasonably foreseeable future projects and activities were considered to be not significant. The potential residual cumulative effects to the use of water for traditional purposes resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.1.

- Fish and Fish Habitat: The Project has the potential to result in impact to fish and fish habitat from instream habitat loss as a result of mine development, habitat loss due to changes in water quantity, changes in water quality, changes in streambed structure, and riparian disturbance. The Project will not contribute to significant residual effects due to incremental loss of fish habitat through mine development, changes in water quantity, changes in streambed structure, or riparian disturbance in the KNRI RSA, since all habitat losses anticipated to occur as a result of the Project will be compensated for through measures to enhance, restore, and create fish habitat in the Elk Valley, resulting in no residual effect. Changes in water quality as a result of the Project will be mitigated through Project design and Project- effects and are not anticipated to extend beyond the Fish and Fish Habitat LSA. Changes in water quality as a result of the Project were found to be a localized effect; therefore, no potential KNRI RSA-scale interaction with fish and fish habitat is anticipated to occur. The Project in combination with other reasonably foreseeable future projects and activities is not anticipated to cause the "death of fish by means other than fishing" or the "harmful alteration, disruption, or destruction" (HADD) of fish habitat, as direct habitat losses will be compensated for through offsetting in the Aquatic RSA. The residual cumulative effects to fish and fish habitat were considered to be not significant. The potential residual cumulative effects to the change to current use of lands and resources for traditional fishing purposes resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.2.
- Wildlife and Wildlife Habitat: The Project has the potential to result in impacts to wildlife and wildlife habitats. The wildlife cumulative effects assessments for ungulates, carnivores, aquatic mammals, waterfowl, and birds identified the potential cumulative effects from habitat loss and alteration, sensory disturbance, disruption to movements (for ungulates and carnivores) and increased mortality risk (for ungulates and carnivores). The Project is likely to contribute to incremental loss of habitat for some species in the KNRI RSA, though the amount contributed by the Project is small and the total amount in combination with other reasonably foreseeable future projects and activities is considered to be low (Chapter 15). Similarly, the Project may contribute to further loss of habitat due to avoidance for species that are sensitive to noise, though the amount contributed by the Project is not significant and the total amount in combination with other reasonably foreseeable future projects and activities is anticipated to be low. The Project and other reasonably foreseeable future projects and activities may block ungulate and carnivore movements to varying degrees. Ungulate and carnivore movements are geographically separated from the Project such that additive barriers with the Project are unlikely. Increased density of roads can result in increased risk of mortality due to hunter access and collisions with vehicles. Road density is predicted to decline in the regional area and increased mortality risk is not expected. The Project, in combination with other reasonably foreseeable future projects and activities, would not limit the ability of ungulates, carnivores, and birds to persist and maintain self-sustaining populations in the VC-specific regional study areas (i.e., Terrestrial RSA, Grizzly

Bear RSA) (Chapter 15). The residual cumulative effects to these species were therefore considered to be not significant. The potential residual cumulative effects to the change to current use of lands and resources for traditional hunting and trapping purposes resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.2.

- Landscapes and Ecosystems/Vegetation: The Project as the potential to result in impacts to landscapes, ecosystems, and vegetation. The landscapes and ecosystems cumulative effects assessment considered potential residual effects of the Project interacting with reasonably foreseeable future projects and activities to affect the abundance and distribution as well as composition and structure for avalanche chutes, riparian habitat, grasslands, old and mature forest, and wetland ecosystems as well as vegetation. Generally, the potential effects of dust, spills/releases, weeds, and other related sources of impact affecting the composition and structure of ecosystems were all found to be mitigated through the implementation of standard industry practices such that associated residual effects were not anticipated to occur. The potential Project residual effects, combined with reasonably foreseeable future projects and activities, anticipated change in abundance and distribution of each landscapes and ecosystems VCs. The potential residual cumulative changes in abundance and distribution of the landscapes and ecosystem VCs were characterized to be of moderate magnitude for some VCs in the Landscapes and Ecosystems RSA; none were assessed to be significant. The Project was not found to have a disproportionately high contribution to the anticipated cumulative effects on VCs of landscapes and ecosystems. Similar to that identified for landscapes and ecosystems, potential residual cumulative effects to whitebark pine were anticipated to occur through mortality and loss of habitat, and were assessed to be significant overall, particularly in consideration of the contribution of white pine blister rust to regional rates of mortality. The Project and other reasonably foreseeable future projects or activities directly overlap with approximately 14% of potential whitebark pine critical habitat in the Landscapes and Ecosystems RSA, but the Project contribution to that loss is approximately 2%, proportional to its contribution to the overall footprint of other reasonably foreseeable future projects or activities (i.e., less than 3%), and therefore was considered to be not significant. The potential residual cumulative effects to the change to current use of lands and resources for traditional harvesting and gathering purposes resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.2.
- Heritage Resources: At this time, no spatial or temporal overlap of the Project's effects in combination with the effects of other past, present, or reasonably foreseeable future projects or activities is known to occur within the KNRI RSA. There is potential for physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance to be located with the KNRI RSA and overlap with the other future projects and activities. The locations of these resources and sites are unknown at this time at a regional scale. It is anticipated that planned mitigation for current and future projects and activities includes identification of heritage resources prior to the development of projects and activities, as well as the commitment to implement mitigation in consultation with potentially impacted Indigenous Communities. Archaeological resources and sites are protected by the *Heritage Conservation Act* through designation as "provincial heritage sites", or through automatic protection by virtue of being of particular historic or archaeological value (FLNRORD, 2021). Protected archaeological sites may not be altered (i.e., changed in any manner) without a

permit issued by the Minister or designate. The residual cumulative effects on heritage resources were therefore considered to be not significant. The potential residual cumulative effects to the change to physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.3.

- Human and Ecological Health: The assessment of potential cumulative effects to terrestrial and aquatic wildlife health concluded that there are no significant residual cumulative effects and that the cumulative exposure is largely reflective of the exposures documented for the Project scenarios. The wildlife and human health risk estimates and their magnitude inherently consider operational activities, emissions, and other contaminant releases intrinsic to the predictive modelling of water quality, air quality, and secondarily food via transport, fate and food chain modelling. Terrestrial wildlife health risk is negligible, low (and likely to be negligible due to conservatism of the assessment), or in isolated instances (e.g., masked shrew), moderate to high but not ecologically significant due to geographic locations of the exposure scenario within the mine footprint or adjacent to the mine haul road. With regard to aquatic health, the health risk was considered in most cases either negligible, low (and likely to be negligible due to conservatism of the assessment), or in isolated instances, moderate and geographically isolated to short reaches of immediate receiving waters at the mine footprint. The overall cumulative effects related to human health risk, including conservative risk estimates conducted specifically for a hypothetical First Nations receptor[25], were considered to be low to negligible. The results of the cumulative effects assessment indicated that there were no significant residual cumulative effects to ecological or human health anticipated because of the Project in combination with other past, present, and reasonably foreseeable future projects or activities. The potential residual cumulative effects to the change to social, health, and economic conditions resulting from the Project in combination with other reasonably foreseeable future projects and activities are described in Section 23.8.3.4.4.

23.8.3.4 Potential Residual Cumulative Effects of the Changes to the Environment on Ktunaxa Nation

Within the KNRI RSA, lands have experienced and are experiencing past disturbances as a result of mining, forestry, agricultural/commercial/residential development, and natural disturbances (e.g., avalanches, forest fires). Based on the results of the relevant VC potential residual cumulative effects assessments and in consideration of potential regional mitigation measures as well as the requirements of Section 5(1)(c) of the CEA Act, 2012 potential residual cumulative effects on Ktunaxa Nation are anticipated to occur as they relate to:

- Water Sector: The use of water for traditional purposes;
- Land and Resources Sector: The use of lands and resources for traditional purposes (i.e., fishing, hunting and trapping, harvesting and gathering);
- Traditional Knowledge and Language Sector: Physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological, or architectural significance; and
- Social and Health and Economic Investment Sectors: Social, health, and economic conditions.

[25] The First Nations receptor was modelled as being present at each of the receptor locations for 100% of their lifetime and exposed to Project effects throughout all Project phases using conservative high percentage of country foods and water sourced directly from the LSA throughout that lifetime.

Though potential residual cumulative effects to VC or VC groups that may be of interest to Ktunaxa Nation Title and Rights and related interests are assessed as not significant, a conservative approach to the assessment of residual cumulative effects on Ktunaxa Nation indicates residual cumulative effects may occur. Residual cumulative effects assessments for potential cumulative effects on Ktunaxa Nation are presented in Section 23.8.3.4.1 to 23.8.3.4.4.

23.8.3.4.1 Water Sector: Change to Use of Water for Traditional Purposes

Within the KNRI RSA, potential residual cumulative effects to surface water quality that may be of interest to the Ktunaxa Nation for traditional purposes, may occur as a result of the construction and operations of present and reasonably foreseeable future projects and activities. Potential residual cumulative effects on water within the KNRI RSA could include potentially change to access to and use of watercourses and waterbodies as a result of future developments and changes in water quantity, changes in water quality, changes in streambed structure, and riparian disturbance in the Alexander Creek.

Specific to the Project, a quantitative assessment of cumulative effects on surface water quantity and quality was undertaken through the preparation of a water balance and loading model for the Project case and a site-wide surface water quality model. As demonstrated in Chapter 10, significant residual Project effects for surface water quantity are not predicted to occur beyond limited areas within the KNRI LSA and as demonstrated in Chapter 11, significant residual effects to surface water quality in Grave Creek, West Alexander Creek, Alexander Creek, and the Elk River and Lake Koocanusa were not anticipated to occur as a result of the Project. The site-wide water quality model considered all three cumulative effects: the disposal of mine rock and coal rejects, potential surface water - groundwater interactions, and sediment pond discharge. Assuming that other reasonably foreseeable future projects and activities are similarly offset as the Project, no significant residual cumulative effects to water are anticipated.

Climatic changes in the regional area may result in hydrologic changes and changes in channel morphology. Given the potential for cumulative effects on access to and use of watercourses and waterbodies potentially used by the Ktunaxa Nation for traditional purposes within the KNRI RSA (based on the identification of HHRA and sensory receptor locations related to current or rights-based use and those expected to occur based on publicly available information) as a result of past, present, and reasonably foreseeable future projects and activities, the potential residual cumulative effects to water within the KNRI RSA were evaluated.

The potential residual cumulative effects of a change to use of water for traditional purposes arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities are characterized as follows:

- Duration: *Long-Term*, as the opportunity for access to and use of water within the KNRI RSA may be affected by surface water quality, which will be reclaimed within the KNRI RSA through offsetting and reclamation and post-closure activities of reasonably foreseeable future projects and activities.
- Magnitude: *Low*, as the changes in access to and use of watercourses and waterbodies are not expected to result in changes in the opportunity by the Ktunaxa Nation to undertake traditional activities within the KNRI RSA.
- Geographic Extent: *Regional*, while the potential adverse cumulative change in surface water quality occurs within the Aquatic RSA (in Michel Creek downstream of the confluence with

Erickson Creek), the cumulative effects are not detectable in the Elk River at Sparwood or further downstream in the Elk River or Lake Koocanusa.

- Frequency: *Continuous,* as the potential for adverse cumulative effects to surface water quality will be ongoing because the Project and current mine operations in the Elk Valley are anticipated to discharge to the Elk River and/or its tributaries continuously resulting in changes to the opportunity to access and use watercourses and waterbodies over the course of reasonably foreseeable future projects and activities until reclamation occurs.
- Reversibility: *Reversible Long-Term to Irreversible*, the cumulative change in the opportunity to access and use the watercourses and waterbodies is anticipated to be potentially reversible as the surface water quality resulting from sediment pond discharge and present and future mining activities in the Elk Valley are anticipated to be potentially reversible over long temporal scales. The assimilative capacity of the affected watercourses may provide some natural resilience to the mine-exposed water, resulting in the potential return to baseline conditions once the sediment pond has been decommissioned after water quality objectives have been met and once mining operations are reclaimed. Changes in water quality and quantity resulting from the Project and present and future mining activities are anticipated to be potentially irreversible until after the Post-Closure phase.
- Context: *Neutral*, as many of these watercourses in the KNRI RSA have been previously disturbed by human activities (e.g., Elk River and mining activities), the receiving environments of Alexander Creek, Michel Creek, Lake Koocanusa, and the Elk River are dynamic systems that naturally experience a wide range of flow and water chemistry conditions. The assimilative capacity of these watercourses may provide some natural resilience to the sediment pond discharge in combination with the effects from other past and present projects or activities in the Aquatic RSA and therefore have the potential to return to base case conditions once the sediment pond has been decommissioned after water quality objectives have been met and once the mining operations are reclaimed. The KNRI RSA overlaps with several Indigenous Communities' traditional territories and as such, changes in the accessibility to access and use water may impact the ability to undertake cultural and traditional practices for community members and the importance of available lands for traditional practices. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional activities related to water use within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance of Residual Cumulative Effects

As discussed in Chapters 10 and 11, measurable residual Project effects for surface water quantity and quality are not anticipated to occur beyond limited areas within the KNRI LSA. Furthermore, the residual effects of the Project on surface water quantity and quality were found to vary with respect to magnitude and were generally limited to the upper reaches of the receiving watercourses. Accordingly, no measurable residual effects for surface water quantity and quality are predicted beyond the KNRI LSA boundary, within the remainder of the Aquatic RSA and cumulative effects are not detectable in the Elk River at Sparwood or further downstream in the Elk River or Lake Koocanusa. The residual effects of the Project on the use of water for traditional purposes during all phases of the Project were therefore considered not significant. As noted in Table 23.7-8, according to Ktunaxa Nation, impacts to water quality in the Elk Valley as a result of industrial open pit coal mining became apparent in the time period from

1931 and 1980. Industrial effects in the Elk Valley, including coal dust and impacts to water, accumulated to the point where some Ktunaxa users were discouraged from practicing rights in the Elk Valley, especially given other constraints and obstacles starting in 1981. As such, the Ktunaxa Nation took a stronger role in the formal management of impacts to water as increasing concerns regarding habitat destruction became more prominent as a result of mining. Due to the lack of specific information available on the Ktunaxa Nation's traditional use of the Project footprint and the KNRI LSA for water, the Project's contribution to residual cumulative effects on changes to surface water quality and quantity are not anticipated to reduce the ability and opportunity of the Ktunaxa Nation to practice their rights and interests related to water use within the KNRI RSA.

In light of the above and in consideration of the planned mitigation and best practices that will occur as part of the development of reasonably foreseeable future projects and activities, and information currently available on the current and potential access to and use of water within the KNRI RSA for traditional purposes, the potential residual cumulative effects of change to use of water for traditional purposes arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be not significant. The Project's contribution to residual cumulative effects on changes to use of water for traditional purposes is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their Title and Rights and related interests within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's rights and interests of the residual cumulative effect on traditional activities in relation to water use are discussed further in Section 23.11.2.1.1.

Likelihood and Confidence

A characterization of likelihood is not required for residual cumulative effects from Project activities that are determined to be not significant. Confidence considers the availability and reliability of data and analytical methods used in the assessment of effects. The long-term water balance and loading (GoldSim) model results are considered to provide a reasonable prediction of the magnitude, timing, and extent of surface water quantity effects related to past and present projects and activities in the Aquatic RSA. The regional water quality model results are considered to provide a reasonable prediction of the magnitude, timing, and extent of surface water quality effects related to past and present projects and activities in the Aquatic RSA. The availability of information related to reasonably foreseeable future projects and activities in the Aquatic RSA is limited, particularly for Michel Creek, and, thus, a quantitative assessment of cumulative impacts on surface water quantity and quality was not possible. Therefore, the significance determination for the Project was assigned a moderate level of confidence.

In addition, not all aquatic systems that may be of interest to the Ktunaxa Nation were evaluated at the scale of the KNRI RSA. At this time, the full extent of aquatic systems that are of interest and accessed by Ktunaxa Nation for traditional purposes or that could be used in the future are based on HHRA and sensory receptor locations related to the current or rights-based use by the Ktunaxa Nation within the KNRI RSA and those expected to occur based on publicly available information. As no TLU study was provided by the Ktunaxa Nation, the understanding of the traditional uses of water within the KNRI RSA will continue to be refined as NWP continues engagement with Ktunaxa Nation on this Project. Uncertainty also exists regarding the implications of regional climatic changes that may impact water quality. As such, the confidence of residual cumulative effects on a change to use of water for traditional purposes is considered to be moderate.

NWP is committed to further discussions with Ktunaxa Nation to understand the use of water within the KNRI RSA for traditional purposes, in order to improve the level of confidence in this prediction.

Ktunaxa Perspectives

As noted in Section 23.7.1.1 and 23.8.3.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access water in sufficient quantity and quality, in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water according to the Ktunaxa law, ʔaknumu¢tɨtɨt. From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaʕa'k ɖapiqapsin (all living things). Over time this may lead to significant impacts on Ktunaxa stewardship responsibilities (ʔaknumu¢tɨtɨt) and compromises the transmission of knowledge and practices related to those water systems for future Ktunaxa generations (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on water quality, spatial disturbance, and other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a).

23.8.3.4.2 Lands and Resources Sector

Change to Use of Lands and Resources for Traditional Fishing Purposes

Within the KNRI RSA, potential residual cumulative effects to fish and fish habitat, in particular to species such as Westslope Cutthroat Trout Kokanee, Burbot, Mountain Whitefish, and Bull Trout that may be of interest to the Ktunaxa Nation for fishing, may occur as a result of the construction and operations of present and reasonably foreseeable future projects and activities. Potential residual cumulative effects on fish and their habitat within the KNRI RSA could include instream habitat loss as a result of future developments and changes in water quantity, changes in water quality, changes in streambed structure, and riparian disturbance. Specific to the Project, direct habitat losses will be compensated for through offsetting in the Aquatic RSA and assuming that other reasonably foreseeable future projects and activities are similarly offset, no significant residual cumulative effects to fish VCs are anticipated. Climatic changes in the regional area could change the habitat available to species fished within the KNRI RSA, for example through increased water temperatures limiting geographic distribution. As well, climatic changes may result in hydrologic changes, changes in channel morphology, and increased spread of invasive species. Given the potential for cumulative effects on fish habitat and disturbance to fish species potentially used by Ktunaxa Nation for fishing as a result of past, present, and reasonably foreseeable future projects and activities, the potential residual cumulative effects to fishing within the KNRI RSA were evaluated.

The potential residual cumulative effects of a change to use of lands and resources for the traditional purpose of fishing arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities are characterized as follows:

- Duration: *Long-Term*, as the opportunity to fish within the KNRI RSA may be affected by fish habitat loss, which will be reclaimed within the KNRI RSA through offsetting and reclamation and post-closure activities of reasonably foreseeable future projects and activities.

- Magnitude: *Moderate*, as the changes in fish and fish habitat are not expected to result in changes in the opportunity by the Ktunaxa Nation to fish within the KNRI RSA.
- Geographic Extent: *Regional*, as potential effects to the opportunity to fish will be limited to the respective footprints of the Project and those of other reasonably foreseeable future projects and activities within the KNRI RSA.
- Frequency: *Continuous,* as the effects to fish and fish habitat have the potential to occur until habitat is reclaimed or offset, resulting in changes to the opportunity to fish over the course of reasonably foreseeable future projects and activities until reclamation occurs.
- Reversibility: *Reversible Long-Term to Irreversible*, changes in the opportunity to fish are anticipated to be reversible as the respective footprints of the Project and those of other reasonably foreseeable future projects and activities are reclaimed and off-site aquatic compensation is achieved. The cumulative loss of riparian habitat within the Landscape and Ecosystems LSA is permanent and potentially irreversible.
- Context: *Neutral*, as opportunities to fish are present within several watercourses in the KNRI RSA, and many of these watercourses have been previously disturbed by human activities (e.g., Elk River and mining activities). The KNRI RSA overlaps with several Indigenous Communities' traditional territories and as such, changes in the accessibility to fish may impact the ability to undertake cultural and traditional practices for community members and the importance of available lands for traditional practices. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional fishing within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance of Residual Cumulative Effects

As previously noted in Chapter 12, Section 12.6.1, instream habitat loss due to mine design and development and changes in streambed structure have the potential to interact with other reasonably foreseeable future projects and activities in the Aquatic RSA. Habitat losses in tributaries of the Elk River are expected to occur as other coal mining projects are developed. These losses could include both direct habitat loss due to mine design and development, and indirect losses due to changes in flows. Habitat losses from other reasonably foreseeable future projects are anticipated to be compensated following DFO's strategy for offsetting instream habitat losses that result from HADD. As such, while there may be a measurable change in fish habitat availability locally in some tributaries that will be in addition to the habitat losses expected from the Project in West Alexander Creek, a net loss of fish habitat in the Aquatic RSA is not expected, provided that compensation habitat is developed as required by regulatory habitat loss restrictions under the *Fisheries Act*. Due to the lack of specific information available on the Ktunaxa Nation's use of the Project footprint and the KNRI LSA for traditional fishing, the Project's contribution to residual cumulative effects on changes to fish and fish habitat are not anticipated to reduce the ability and opportunity of the Ktunaxa Nation to practice their rights and interests related to fishing within the KNRI RSA.

A net loss of habitat is not expected in the Aquatic RSA due to reasonably foreseeable future projects and activities. The Project, in combination with other reasonably foreseeable future projects and activities, is not anticipated to result in the harmful alteration, disruption, or destruction of fish habitat or the death of fish, since direct habitat losses and direct mortality will be compensated by habitat offsetting measures

in the Aquatic RSA such that no residual effect remains. In consideration of this and the mitigation and offsetting activities that may occur as part of the development of reasonably foreseeable future projects and activities, and information currently available on the use of lands and resources within the KNRI RSA for fishing, the potential residual cumulative effects of a change to fishing arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be not significant. The Project's contribution to residual cumulative effects on changes to fish and fish habitat is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their Title and Rights related to fishing within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's rights and interests of the residual cumulative effect on traditional fishing use are discussed further in Section 23.11.2.1.2.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Fish and fish habitat conditions of relevant fish species of interests (e.g., Westslope Cutthroat Trout), including their ecology, habitat availability and distribution, and occurrence and abundance, are well understood at the scale of the Aquatic RSA. Some uncertainty does exist for fish population trends. In addition, not all aquatic systems and fish species that may be of interest to Ktunaxa Nation were evaluated at the scale of the KNRI RSA. At this time, the full extent of aquatic systems that are used by fish species of interest and accessed by Ktunaxa Nation for fishing historically and currently or that could be used in the future are not well understood within the KNRI RSA and will continue to be refined as NWP continues engagement with Ktunaxa Nation on this Project. Uncertainty also exists regarding the implications of regional climatic changes that may impact fish habitat availability. As such, the confidence of residual cumulative effects on a change to use of lands and resources for the traditional purpose of fishing is considered to be low.

NWP is committed to further discussions with Ktunaxa Nation to understand the use of lands within the KNRI RSA for fishing, in order to improve the level of confidence in this prediction.

Ktunaxa Perspectives

As noted in Sections 23.7.1.2.1 and 23.8.3.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, waterbodies and watercourses continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation (KNC, 2016a). Fishing (i.e., access to wild meat) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Fish and fish habitat are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice fishing, the Ktunaxa Nation require access to healthy streams and rivers within their traditional territory (KNC, 2016a).

During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds sustaining healthy Westslope Cutthroat Trout populations, and providing Ktunaxa cultural opportunities that are relatively free from impacts of industrial coal mining (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to fish and fishing opportunities in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in fish populations, reduced access to

waterways, water quality concerns in the Elk Valley), the possible future use of these areas for fishing without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future fishing activities in the KNRI LSA and RSA) (KNC, 2021m).

Change to Use of Lands and Resources for Traditional Hunting and Trapping Purposes

Within the KNRI RSA, potential residual cumulative effects to wildlife and wildlife habitat, in particular ungulates, carnivores, and birds that may be of interest to Ktunaxa Nation for hunting and trapping, may occur as a result of the construction and operations of present and reasonably foreseeable future projects and activities. Potential residual cumulative effects on wildlife and their habitat within the KNRI RSA could include habitat loss and alteration, sensory disturbance, disruption to movements (for ungulates and carnivores), and increased mortality risk (for ungulates and carnivores). The Project in combination with other reasonably foreseeable future projects and activities would not limit the ability of ungulates, carnivores, and birds to persist and maintain self-sustaining populations, and no significant residual cumulative effects to these VC groups are anticipated. Climatic changes in the regional area could change the habitat available to species hunted and trapped within the KNRI RSA. Given the potential for cumulative effects on wildlife habitat and disturbance to species used by Ktunaxa Nation for hunting and trapping as a result of past, present, and reasonably foreseeable future projects and activities, potential residual cumulative effects to hunting and trapping within the KNRI RSA were evaluated.

Potential residual cumulative effects of a change to use of lands and resources for the traditional purpose of hunting and trapping arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities are characterized as follows:

- Duration: *Long-term to Permanent*, as the opportunity to hunt and trap within the KNRI RSA may be affected by wildlife habitat loss which will be reclaimed within the KNRI RSA through reclamation and post-closure activities on future projects and activities. Reclaimed areas like forests may not be fully reclaimed until after post-closure periods for the reasonably foreseeable future projects and activities. Sensory disturbance to wildlife species of interest and Ktunaxa Nation who may hunt and trap in a specific area of the KNRI RSA near future projects and activities may experience changes in sensory conditions as a result of future projects and activities over the course of operational activities. Increased mortality is anticipated to occur to the end of reclamation and closure phases for reasonably foreseeable future projects and activities.
- Magnitude: *Low*, as the changes in wildlife habitat and the movement of species is not expected to result in changes in the opportunity to hunt and trap within the KNRI RSA, and the sustainability of wildlife populations is not expected to be affected.
- Geographic Extent: *Regional*, as potential effects to the opportunity to hunt and trap will be limited to the respective footprints of the Project and those of other reasonably foreseeable future developments within the KNRI RSA.
- Frequency: *Continuous,* as the effects to wildlife and wildlife habitat have the potential to occur until habitat is reclaimed as part of reclamation activities, resulting in changes to the opportunity to hunt and trap over the course of future projects and activities until reclamation of the landscape occurs.
- Reversibility: *Reversible Long-term to Irreversible*, as ecological restoration activities anticipated to occur through reclamation strategies associated with the Project and past, present, and reasonably foreseeable future projects and activities will result in reclaimed wildlife habitat and areas potentially accessed for hunting and trapping. If areas used for hunting and trapping can no

longer be accessed due to developments, there is a potential for the change in access to be irreversible.

- Context: *Neutral*, as the opportunity to hunt and trap within the KNRI RSA is dependent on access to self-sustaining wildlife populations and appropriate wildlife habitat. The KNRI RSA overlaps with several Indigenous Communities' traditional territories, and as such, changes in the accessibility to hunt and trap may impact the ability to undertake cultural and traditional practices for community members and the importance of available lands for traditional practices. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional hunting and trapping activities within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance of Residual Cumulative Effects

The Project, in combination with other reasonably foreseeable future projects and activities, is not anticipated to limit the ability of ungulates, carnivores, and birds to persist and maintain self-sustaining populations in the VC-specific regional study areas (i.e., Terrestrial RSA, Grizzly Bear RSA). In consideration of this and mitigation and reclamation activities that may occur as part of the development of reasonably foreseeable future projects and activities, and the information currently available on the current and potential use of lands and resources within the KNRI RSA for hunting and trapping, the potential residual cumulative effects of a change to use of land and resources for the traditional purpose of hunting and trapping arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be not significant.

The Project's contribution to residual cumulative effects on changes to wildlife and wildlife habitat is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their rights and interests related to hunting and trapping within the KNRI RSA. Due to the lack of specific information available on the Ktunaxa Nation's use of the Project footprint and the KNRI LSA for hunting and trapping, the Project's contribution to residual cumulative effects on changes to wildlife and wildlife habitat is not anticipated to reduce the ability and opportunity of the Ktunaxa Nation to practice their rights and interests related to hunting and trapping within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's rights and interests of the residual cumulative effect on traditional hunting and trapping activities are discussed further in Section 23.11.2.1.2.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Wildlife and wildlife habitat conditions within the regional study areas of relevant wildlife species of interests (e.g., grizzly bear, elk, bighorn sheep), including their ecology, habitat availability and distribution, and occurrence and abundance, are well understood at the scale of the VC regional study areas (e.g., Grizzly Bear RSA, Terrestrial RSA); some uncertainty does exist for wildlife species population trends. In addition, not all wildlife species that may be of interest were evaluated at the scale of the KNRI RSA. At this time, the full extent of lands that are used by wildlife species of interest and lands accessed by Ktunaxa Nation for hunting and trapping historically and currently or that could be used in the future is not well understood within the KNRI RSA and will continue to be refined as NWP continues engagement with Ktunaxa Nation on this Project. Uncertainty also exists regarding the implications of regional climatic changes that may impact wildlife habitat availability. As such, the confidence of residual cumulative

effects of a change to use of lands and resources for the traditional purpose of hunting and trapping is considered to be low.

NWP is committed to further discussions with Ktunaxa Nation to understand the use of lands within the KNRI RSA for hunting and trapping, in order to improve the level of confidence in this prediction.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.2 and 23.8.3.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, Project-related disturbances may also impair habitat for species the Ktunaxa rely on for the exercise of spiritual, cultural, and harvesting practices, including grizzly bear, elk, bighorn sheep, mountain goat, and moose, and reduce Ktunaxa access to the area for the exercise of Ktunaxa hunting and trapping rights. The Ktunaxa have previously shared perspectives on concerns about the potential negative health impacts to grizzly bears, elk, and bighorn sheep from consuming contaminated vegetation, drinking contaminated water, and/or consuming contaminated animals. Monitoring contaminants levels on plants for possible impacts to grizzly bears, elk, bighorn sheep, and other wildlife is suggested to understand more about this pathway (KNC et al., 2015). Ktunaxa's shared perspective also include concerns that activities in the Elk Valley will further reduce the habitat available to support future reintroduction of bison, a species that the Ktunaxa are working to restore to its historic range in Qukin ʔamakʔis (KNC, 2020a).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round include the seasonality of sheep and elk harvest, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to hunting and trapping in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in wildlife populations, reduced access to areas for traditional activities), the potential future use of these areas for hunting and trapping without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future hunting and trapping activities in the KNRI LSA and RSA) (KNC, 2021m).

Change to Use of Lands and Resources for Traditional Harvesting and Gathering Purposes

Potential Project residual effects on terrestrial ecosystems and vegetation VCs that may be of relevant to Indigenous harvesting and gathering have the potential to interact cumulatively with past, present, and reasonably foreseeable future projects and activities within the KNRI RSA. The assessment of potential residual cumulative effects for landscapes and ecosystems VCs and vegetation VCs concluded no significant residual cumulative effects. At this time, specific areas of harvesting and gathering are unknown within the KNRI RSA. The residual cumulative effects assessment considers the potential for current and future use within the KNRI RSA and the various landscapes and ecosystems that cover this area. Changes in climatic conditions, including higher annual precipitation and increases in average annual air temperatures (EV-CEMF, 2018), may alter the abundance and distribution of plant communities in the Elk Valley, resulting in impacts to the Ktunaxa Nation's harvesting and gathering activities.

The residual cumulative effects of a change to use of lands and resources for the traditional purpose of harvesting and gathering arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities, are characterized as follows:

- Duration: *Long-term to Permanent*, as the loss of vegetation communities and plant species of interest used in harvesting and gathering, as well as the opportunity to access harvesting and gathering areas, may be impacted as a result of the construction of reasonably foreseeable future projects and activities. Reclamation activities may reclaim impacted communities over the long-term and re-establish areas potentially used for harvesting and gathering.
- Magnitude: *Moderate*, the Project acting cumulatively with past, present, and reasonably foreseeable projects and activities will result in the loss of terrestrial ecosystems and plant species that may be of interest to Ktunaxa Nation's harvesting and gathering practices, but the sustainability of populations and ecosystems is not expected to be affected.
- Geographic Extent: *Regional*, as the loss of terrestrial ecosystems that may be accessed and used for harvesting and gathering will be limited to the respective footprints of the Project and those of other reasonably foreseeable future developments within the KNRI RSA.
- Frequency: *Once to Intermittent,* as the removal of vegetation potentially used for harvesting and gathering will occur during the construction of reasonably foreseeable future projects and activities (e.g., site clearing activities). Climatic changes may result in alteration of vegetation communities sporadically over the long-term.
- Reversibility: *Reversible Long-term to Irreversible*, as ecological restoration activities anticipated to occur through reclamation strategies associated with the Project and past, present, and reasonably foreseeable future projects and activities will result in reclaimed terrestrial ecosystems and vegetation communities potentially accessed and used for harvesting and gathering. If areas used for harvesting and gathering can no longer be accessed due to developments, there is a potential for the change in access to be irreversible.
- Context: *Neutral*, as the opportunity to harvest and gather within the KNRI RSA is dependent on the location of ecosystems and plant species of interest as well as the access to these areas. The KNRI RSA overlaps with several Indigenous Communities' traditional territories, and as such, changes in the accessibility to harvest and gather may impact the ability to undertake cultural and traditional practices for community members and the importance of available lands for traditional practices. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to conduct traditional harvesting and gathering activities within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance of Residual Cumulative Effects

In consideration of mitigation measures and reclamation activities that may occur as part of development of reasonably foreseeable future projects and activities and information currently available on the current and potential use of lands and resources within the KNRI RSA for harvesting and gathering, the potential residual cumulative effects of a change to use of land and resources for the traditional purpose of harvesting and gathering arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be not significant. The Project's contribution to residual cumulative effects on changes in landscapes and ecosystems and relevant vegetation VCs is not anticipated to significantly reduce the ability and opportunity for Ktunaxa

Nation to practice their rights and interests related to harvesting and gathering within the KNRI RSA. Due to the lack of specific information available on the Ktunaxa Nation's use of the Project footprint and the ATRI LSA for harvesting and gathering, the Project's contribution to residual cumulative effects on changes in landscapes and ecosystems and relevant vegetation VCs is not anticipated to reduce the ability and opportunity for the Ktunaxa Nation to practice their rights and interests related to harvesting and gathering within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's rights and interests of the residual cumulative effect on traditional harvesting and gathering activities are discussed further in Section 23.10.2.1.2.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. The full extent of loss of lands that are used by Ktunaxa Nation for harvesting and gathering historically and currently or that could be used in the future is not well understood within the KNRI RSA. In conjunction with this, the full extent of loss to landscapes and ecosystems and vegetation species of interests associated with past, present, and reasonably foreseeable future projects and activities cannot be accurately predicted based on the scale and availability of the information publicly available at this time and will continue to be refined as engagement with Ktunaxa Nation on this Project is continued. As such, the confidence of the residual cumulative effects of a change to use of lands and resources for harvesting and gathering is considered to be low.

NWP is committed to further discussions with Ktunaxa Nation to understand the use of lands within the KNRI RSA for harvesting and gathering activities, in order to improve the level of confidence in this prediction.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.3 and 23.8.3.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, the Ktunaxa Nation has previously identified the importance of wetland, riparian and floodplains ecosystems, avalanche path ecosystems, karst ecosystems, old growth forests and mature forests, grassland and brushland ecosystems and all listed ecological communities as they relate to biodiversity in the KNRI LSA in general (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access culturally significant plants and the related harvesting and gathering activities may potentially be impacted by the alteration or loss of vegetation and increased potential dust loading (IAAC, 2015a). In previous Section C submissions for EIS/Applications in the Elk Valley, Ktunaxa knowledge holders have highlighted the importance of plants and vegetation for human use, and as habitat for other living things within qukin ʔamakʔis (KLR et al., 2011). Beyond use, all indigenous plant species are understood to have inherent value as part of biodiversity and as part of the unique ecosystems that sustain Ktunaxa people and rights. The knowledge of how to use certain plants may not currently be held, or may not be reported by Ktunaxa citizens, but may become known, or be reported, in the future.

Ktunaxa Traditional Knowledge shared in previous EIS/Applications indicates that the old growth forests were and continue to be heavily used for the collection of culturally important plants (KNC et al., 2015). Based on Ktunaxa Traditional Knowledge holders, certain culturally important plants are only found in wet or very wet sites (wetlands or wet forests) and high elevation grasslands (KNC et al., 2015). From a Ktunaxa

perspective, natural geological and terrain features provide a connection to ongoing creation and are often associated with special meaning and cultural importance within the context of Ktunaxa knowledge and especially the Ktunaxa creation stories (KNC et al., 2015).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round include the seasonality of berry collection, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Table 23.A-2). There is also potential for Ktunaxa Nation to utilize the KNRI RSA for undertaking traditional and ceremonial activities (IAAC, 2015a). As shared by Ktunaxa Nation, it is also noted that the exercise of Ktunaxa Nation's rights and interests related to harvesting and gathering sites in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduced access to areas for traditional activities) and the potential future use of these areas for harvesting and gathering opportunities without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact potential future harvesting and gathering activities in the KNRI LSA and RSA) (KNC, 2021m; 2022c).

23.8.3.4.3 Traditional Knowledge and Language Sector: Change to Physical and Cultural Heritage, and Change to any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance

There is potential for physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance to be located with the KNRI RSA and as such, a potential for development of reasonably foreseeable future projects and activities to overlap with these resources and sites. At this time, the locations of these resources and sites require further consultation with the Ktunaxa Nation within the KNRI RSA, other than those documented as part of the Project Archaeological Baseline Assessment within the Project footprint and the Archaeological Resources LSA (Chapter 16).

The residual cumulative effects of a change to physical and cultural heritage and a change to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities are characterized as follows:

- Duration: *Permanent*, as the potential loss of physical and cultural heritage and of any structure, site, or things that is of historical, archaeological, paleontological, or architectural significance cannot be reversed once it occurs within the KNRI RSA.
- Magnitude: *High*, the potential alteration of physical and cultural heritage and of any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance may result in a measurable change from existing conditions.
- Geographic Extent: *Regional*, as the potential loss of physical and cultural heritage and of any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance is limited to the KNRI RSA.
- Frequency: *Once*, as the direct loss of physical and cultural heritage and of a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance that may exist within the KNRI RSA will occur as reasonably foreseeable future projects and activities are constructed or carried out across the KNRI RSA.

- Reversibility: *Irreversible*, as impacts to or alteration of physical and cultural heritage and of any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance cannot be returned/reburied and are permanent.
- Context: *Low*, as physical and cultural heritage and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance have a low resilience to change as alterations to areas or sites of interest and significance may not adapt to effects that alter their presence or existence. The context is also deemed low as it is expected that the Ktunaxa Nation's ability to know and teach their way of living can continue outside of the Project footprint during all Project phases based on the information available from the Ktunaxa Nation regarding their opportunity to conduct traditional cultural activities within the Project footprint at this time.

Determination of Significance of Residual Cumulative Effect

It is anticipated that mitigation measures to identify heritage resources will be implemented as part of current and reasonably foreseeable future projects and activities prior to development. Within the KNRI RSA, the location of physical and cultural heritage and of structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance are currently unknown outside of the Project footprint and Archaeological Resources LSA. A significant adverse residual cumulative effect on Ktunaxa Nation's physical and cultural heritage related to heritage resources is one that results in a permanent Project-related disturbance to, or destruction of, all or part of a pre-contact heritage resource considered to be of importance, to the spiritual or cultural identity of Ktunaxa Nation that cannot be mitigated or compensated.

Based on information provided by Ktunaxa Nation Council (KNC, 2018; KNC, 2022b), Grave Prairie is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint. As the Grave Prairie Cultural Landscape contains extremely important Ktunaxa Nation cultural values and is located within the Project footprint, Ktunaxa perspectives on mitigation measures will be utilized were proposed and applicable. During conformity review, KNC indicated that the cultural impacts to the Grave Prairie Cultural Landscape cannot be mitigated. NWP is committed to continuing disucssions and assessing alternatives for the siting of the rail loadout facility.

Should reasonable foreseeable future projects and activities be carried out within the KNRI RSA and mitigation measures be implemented to protect and avoid physical and cultural heritage and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (i.e., no permanent loss), the residual cumulative effects of a change to physical and cultural heritage and a change to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be not significant.

Due to information available on the Ktunaxa Nation's physical and cultural heritage within the Project footprint and the KNRI LSA, the Project's contribution to the residual cumulative effects to physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance is not anticipated to reduce the ability and opportunity of the Ktunaxa Nation to practice their rights and interests within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's rights and interests of the residual cumulative effect on their physical and cultural heritage are discussed further in Section 23.11.2.1.3.

Likelihood and Confidence

Effects that are determined to be not significant do not require a characterization of likelihood. Confidence considers the reliability of data and analytical methods used in the assessment of effects. The confidence in the characterization of the potential residual cumulative effect of a change to physical and cultural heritage and a change to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance is considered to be low. Mitigation measures that may be used by present and future reasonably foreseeable projects and activities to avoid impacts to physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (e.g., archaeological impact assessment, cultural monitoring) are generally considered to be moderate to high. The lack of regional information on Ktunaxa Nation's physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance reduces the level of confidence of the significance of effects to low.

Adaptive management measures will be implemented as part of future projects and activities, in combination with Indigenous consultation, to understand potential regional impacts to physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance. It is anticipated that Section 12.2 Heritage Inspection Permits will be required to determine if and where archaeological resources are present prior to developments of reasonably foreseeable future projects and activities within the KNRI RSA. Continued consultation with Ktunaxa Nation to mitigate potential cumulative effects of Project-related activities will be undertaken through the Indigenous Impact Management Plan. As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the identified Indigenous Communities to address related concerns.

Ktunaxa Perspectives

Ktunaxa oral history and worldview recognizes the lands and waters of the Ktunaxa Territory as alive, and evolving, and as the home of powerful sacred beings whose travels, battles and lives have left marks and remains across the Ktunaxa landscape, including the Elk Valley (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact lands may impact unknown historical or archaeological sites. There is potential for Ktunaxa Nation utilizing the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a). It is noted that Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past disturbance which has removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

As noted in Section 23.8.3.2.1, the exercise of Ktunaxa Nation's rights and interests related to physical and cultural heritage in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). This general trend of north-south oriented mining and potential related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges (KNC et al., 2015). As shared by

Ktunaxa Nation, Ktunaxa perspectives include acknowledging that the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact ceremonial practices and use of sacred areas and access and travel through the KNRI LSA and RSA) (KNC, 2021m; 2022c).

With respect to the Grave Prairie Cultural Landscape, it is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint (KNC, 2022b). The KNC Lands Advisory Working Group have determined that the area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout, is not compatible with this cultural landscape. Based on the direction from Ktunaxa Knowledge Holders, the area currently known as the "Grave Prairie Cultural Landscape" contains two "zones"; a "Culturally Significant Area" and a "Culturally Sensitive Area". The impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility as stated by Ktunaxa Nation (KNC, 2022b). During conformity review, KNC indicated that cultural impacts to the Grave Prairie Cultural Landscape cannot be mitigated. KNC suggested the evaluation for all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape including the adequate consideration to avoidance impact through alternative means that may include longer truck haul to a less sensitive load out location, extension of rail to the Alexander Valley side of the facility, and agreement with existing operators to share already existing rail load out infrastructure (Appendix 23.A-1, Table 23.A-2). NWP is committed to continuing disucssions and assessing alternatives for the siting of the rail loadout facility in the Grave Prairie Cultural Landscape.

23.8.3.4.4 Change to Social, Health, and Economic Conditions

The assessment of potential residual cumulative effects to terrestrial and aquatic wildlife health as well as human health concluded the health risks are considered to be low. The Project is not anticipated to act cumulatively with other future projects or activities to contribute significantly to a change in the health of terrestrial and aquatic country foods and Indigenous health. As there may be potential for impacts to species of interest (for fishing, hunting, trapping, harvesting, and gathering) to Ktunaxa Nation due to subsistence harvesting activities and potential of change to opportunity for access to country foods, the human and wildlife health conditions VCs are assessed cumulatively. As a result, the following assessment focuses on the human and wildlife health conditions of the residual cumulative effects.

As noted in Chapter 18 (Section 18.5.5), all anticipated residual socio-community effects are considered to be negligible and no significant adverse residual effects are expected. As such, there is no spatial or temporal overlap of Project effects in combination with those of past, present, or reasonably foreseeable future projects or activities. Therefore, residual adverse cumulative effects on the socio-community are not expected. Similarly, as previously mentioned and noted in Chapter 17 (Section 17.6), residual adverse cumulative effects on economic conditions are not expected. It must be noted that due to the potential for change to opportunity for access to country foods within the KNRI LSA and the lack of information on subsistence harvesting, a potential for development of reasonably foreseeable future projects and activities to overlap with these resources and sites have the potential to impact socio-community and economic conditions (i.e., diet, financial impact); these potential cumulative effects will be updated through further consultation with Ktunaxa Nation.

The residual cumulative effects to a change to social, health, and economic conditions arising from the effects of the Project in combination with the effects of other past, present, and reasonably foreseeable future projects or activities are characterized as follows:

- Duration: *Long-Term*, as the predicted residual cumulative effects to the health of wildlife and potential country foods, as well as human health, are only associated with the Project footprint or close to Project infrastructure in areas that will be reclaimed during Reclamation and Closure; there were no residual adverse effects on socio-community and economic conditions.
- Magnitude: *Low*, as the potential residual cumulative effects of the Project are considered to present a low risk to wildlife and human health and therefore a low magnitude to quality of country foods; there were no residual adverse effects on socio-community and economic conditions.
- Geographic Extent: *Local to Discrete*, as the potential effects on wildlife and human health and country foods are restricted to the HHERA RSA, receiving watersheds, and the Project footprint in which effects are inferred to be largely undetectable outside of the HHERA RSA; there were no residual adverse effects on socio-community and economic conditions.
- Frequency: *Continuous*, as the potential risk to country foods is most possible during the Operations phase of the Project.
- Reversibility: *Reversible Long-Term*, as the low risk to wildlife and human health and associated country foods and consumption of country foods is diminished (mitigated) as the Project disturbance footprint is reclaimed in Reclamation and Closure; there were no residual adverse effects on socio-community and economic conditions.
- Context: *Neutral*, as aquatic and terrestrial wildlife species and humans have a neutral sensitivity and resilience to the low potential exposure/risk; the low exposure risk is unlikely to adversely affect individuals or local populations and therefore an unlikely disruption to country food quality or accessibility; there were no residual adverse effects on socio-community and economic conditions. The context is also deemed neutral due to the lack of specific information available from the Ktunaxa Nation regarding their opportunity to consume country foods within the Project footprint at this time, as it is expected that their ability to know and teach the Ktunaxa way of living can continue outside of the Project footprint during all Project phases.

Determination of Significance of Residual Cumulative Effects

The assessment of residual cumulative effects of the Project in combination with those of past, present, and reasonably foreseeable future projects and activities on wildlife and human health concluded no significant adverse cumulative effects on terrestrial, aquatic, and human health. Additionally, no adverse residual effects on socio-community and economic conditions were anticipated, therefore no cumulative effect to socio-community and economic conditions are expected to occur. As such, the residual cumulative effects of a change to social, health, and economic conditions arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are considered not significant.

The wildlife and human health risk estimates inherently consider operational activities, emissions, and other contaminant releases intrinsic to the predictive modelling of water quality, air quality, and secondarily food via transport, fate and food chain modelling. Due to the lack of specific information available on the Ktunaxa Nation's use of the Project footprint and the KNRI LSA to consume country foods, the Project's contribution to the residual cumulative effects on social, health, and economic conditions

are not anticipated to reduce the ability and opportunity of the Ktunaxa Nation to practice their rights and interests within the KNRI RSA. The potential cumulative impacts to the Ktunaxa Nation's interests of the residual cumulative effect on their social, health, and economic conditions are discussed further in Section 23.11.2.1.4.

Likelihood and Confidence

Cumulative effects that are determined to be not significant, as anticipated for social, health, and economic conditions, do not warrant a characterization of likelihood.

The confidence in the characterization of residual cumulative effects of a change to social, health, and economic conditions, and in particular country foods and Indigenous health, is considered to be moderate. The confidence derives from consideration of confidence in:

- Contaminant fate and transport modelling for releases to air and water which dictate exposure point concentration for exposure assessment;
- Substantive knowledge of ecological dietary/food chain relationships for exposure modelling; and
- Conservatism of assumptions that err towards overestimating rather than underestimating exposure and risk (e.g., assumptions of statistical upper-bound exposure concentrations in water, assumption of lifetime exposure scenarios).

Collectively, the above-listed practices provide moderate to high confidence that the risk estimates are not underestimated, and in the present case, an overall moderate level of confidence that the estimated health risk to aquatic and terrestrial wildlife and human health as a result of the Project is low and not significant.

Ktunaxa Perspectives

As noted in Section 23.7.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, waterbodies and watercourses within the Elk Valley continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation. Access to wild meat (i.e., country foods) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Access to these waters and lands for species and resources are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice their rights, the Ktunaxa Nation require access to healthy habitats free from disturbances within their traditional territory (KNC, 2016a). The rights and interests of current and future Ktunaxa citizens with respect to access to water and lands and resources used for subsistence harvesting and country foods include the perspectives that these resources will be in sufficient quantity and quality and in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage and access rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water and lands and resources according to the Ktunaxa law, ʔaknumuɬtiɬiɬ (KLR et al., 2011).

From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaʕa'k ɖapiqapsin (all living things) (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on air and water quality, spatial disturbance, and other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a). Ktunaxa citizens have already expressed elevated concern regarding industrial contaminants in the area, and psychosocial effects of contaminants consistent are being experienced. Levels of contaminants, particularly selenium, are already at levels that may cause abnormalities in fish resulting in changes in reproduction of some species and ongoing impacts to the real or perceived quality and quantity of wild foods available for Ktunaxa harvest in preferred locations, including fish in the Elk River and Michel Creek, and Lake Koocanusa, are anticipated by the KNC. As per Ktunaxa Nation, this Project in combination with other past, present, and reasonably foreseeable projects and activities will potentially exacerbate these effects on country food access and quality (at least in the short term), suggesting that existing impacts to Ktunaxa rights and interests related to country foods in the Elk Valley will get worse before they get better.

During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to social, health, and economic conditions in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduction in fish and wildlife populations, reduced access to waterways and areas for traditional activities, water quality concerns in the Elk Valley), the possible future use of these areas for access to and usage of country foods without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future traditional activities in and access and travel through the KNRI LSA and RSA) (KNC, 2021m; 2022c).

23.8.3.5 Summary of Cumulative Effects Assessment of Changes to the Environment on Ktunaxa Nation

Residual cumulative effects and the selected mitigation measures, characterization criteria, likelihood, significance determination, and confidence are summarized in Table 23.8-8.

Table 23.8-8: Summary of the Assessment of Cumulative Effects of the Changes to the Environment on Ktunaxa Nation

Residual Cumulative Effect	Project Phase(s)	Mitigation Measures	Summary of Cumulative Residual Effects Characterization	Significance (Significant, Not Significant)	Confidence (High, Moderate, Low)
Water Sector: Change to Use of Water for Traditional Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	• Implementation of mitigation measures, including monitoring activities, proposed for relevant VCs and VC groups will be undertaken over the life of the Project. • Implementation of management programs and plans specific to VCs or VC groups (e.g., Ecological Restoration Plan, Traffic Control Plan). • Implementation of the Indigenous Impact Management Plan will be undertaken in consultation with Ktunaxa Nation. • Regional collaboration between Ktunaxa Nation, other Indigenous Communities, proponents, and governments and implementation of	Duration: Long-term Magnitude: Low Geographic Extent: Regional Frequency: Continuous Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Moderate
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Fishing Purposes	• Construction and Pre-Production, • Operations • Reclamation and Closure • Post-Closure		Duration: Long-term Magnitude: Moderate Geographic Extent: Regional Frequency: Continuous Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Low
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Hunting and Trapping Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure		Duration: Long-term to Permanent Magnitude: Low Geographic Extent: Regional Frequency: Continuous Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Low

Residual Cumulative Effect	Project Phase(s)	Mitigation Measures	Summary of Cumulative Residual Effects Characterization	Significance (Significant, Not Significant)	Confidence (High, Moderate, Low)
Lands and Resources Sector: Change to Use of Lands and Resources for Traditional Harvesting and Gathering Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure	initiatives to minimize collective impacts of past, present, and future projects and activities. • Continued consultation and engagement with Ktunaxa Nation over the course of the Project to identify and understand current use of lands and resources for traditional purposes within the KNRI LSA and KNRI RSA. • Opportunity for ceremonies on the land prior to construction of Project infrastructure as well as opportunities for harvesting and gathering within the Project footprint prior to construction for Ktunaxa Nation citizens.	Duration: Long-term to Permanent Magnitude: Moderate Geographic Extent: Regional Frequency: Once to Intermittent Reversibility: Reversible Long-term to Irreversible Context: Neutral	Not Significant	Low
Traditional Knowledge and Language Sector: Change to Physical and Cultural Heritage and Change to any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	• Construction and Pre-Production • Operations		Duration: Permanent Magnitude: High Geographic Extent: Regional Frequency: Once Reversibility: Irreversible Context: Low	Not Significant	Low
Social and Health and Economic Investment Sectors: Change to Social, Health, and Economic Conditions	• Operations		Duration: Long-term Magnitude: Low Geographic Extent: Local to Discrete Frequency: Continuous Reversibility: Reversible Long-term Context: Neutral	Not Significant	Moderate to High

23.9 Overview of the Changes to the Environment on Ktunaxa Nation and their Perspectives

The following is a summary of Section 23.8 which provides an assessment of changes to the environment and the potential resulting impact on the Ktunaxa Nation[26] and its member Bands. Effects of the changes to the environment could result in impacts to the Ktunaxa Nation and their rights (see Section 23.11) that may occur where the Project has a residual effect and residual cumulative effect on traditional activities such as water use, fishing, hunting and trapping, harvesting and gathering. As well, the Project could result in changes to physical activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, and physical and cultural heritage areas and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance and social, health, economic conditions.

The Project related residual effects are generally concluded to be rated as "not significant" other than for the change to physical and cultural heritage, with a low to moderate level of confidence. For each Ktunaxa Nation Sector, effects are generally considered to be minor in nature and are not considered to be significant. Further to the potential direct effects of the Project, an assessment of potential cumulative effects was undertaken and as a result of the assessment it was determined that the potential cumulative effects for each Ktunaxa Nation Sector would also be minor in nature and are not considered to be significant. These potential residual and cumulative effects are not anticipated to alter long-term populations and abundance of fish, wildlife, and plant species of interest within the KNRI RSA which may be relied upon by the Ktunaxa Nation to exercise their rights and interests. Additionally, the potential for residual cumulative effects of the Project in combination with reasonably foreseeable future projects and activities on physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance are restricted to those located within the footprint of the Project and of other potential projects developed within the KNRI RSA.

Mitigation measures considered in the assessment and related VC assessment chapters are expected to largely reduce or eliminate effects on the Ktunaxa Nation Sectors. The Ktunaxa Nation have identified HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. These receptor locations were considered in the assessment of effects. It is anticipated that traditional land and resource use activities will be able to continue generally undeterred in the KNRI LSA and KNRI RSA. With the previously identified displacement of existing features and where restricted for safety purposes (e.g., the temporary blast restriction area in the vicinity of the mine site) within the Project footprint, traditional land and resource use activities will be restricted during certain Project phases. As identified throughout the Application/EIS, it is again noted that engagement is ongoing, and the Ktunaxa Nation may provide additional information about the potential effects of the Project on Ktunaxa Nation's rights and interests during the assessment processes.

As identified throughout Chapter 23 and specifically in Sections 23.7.1, 23.8.2.2, 23.8.3.2, and 23.8.3.4, acknowledging Ktunaxa Nation's shared perspectives, considering the overall disturbance of lands and

[26] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqǂi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

waters within the Elk Valley over time, and considering both quantitative percent disturbance, and more qualitative factors, a threshold of adverse, long term, high magnitude effect in the Elk Valley is understood to have already been surpassed (KNC & the Firelight Group, 2015). Based on past work in the Elk Valley, Ktunaxa Nation has determined that cumulative effects on Ktunaxa Nation's rights and interests stemming from impacts to lands and waters within the Elk Valley drainage have already exceeded a threshold of significance, and that without substantial mitigations and other measures, adverse impacts from other projects in the region will act cumulatively to increase the magnitude and duration of significant effects (KNC, 2020a). Future changes caused by the Project will be experienced within a wide range of existing ecological and industrial impacts in the Elk Valley. As stated by the KNC, it should be noted that the Elk Valley was, and remains, the only area in B.C. that has an Area Based Management Plan (ABMP) that requires the stabilization and progressive reduction to water quality contamination in the Elk Valley. As per the KNC, this is a testament to the extent and magnitude of impacts in Ktunaxa homelands (KNC, 2021m).

As noted earlier, Ktunaxa land users do not experience distinct Project-specific effects in isolation from those of the past (KNC & the Firelight Group, 2015). Current changes, including effects from environmental change and industrial projects, are experienced on top of ongoing legacies from past impacts on Ktunaxa lands and waters. From a Ktunaxa perspective, consideration of cumulative effects in relation to the Project requires consideration of a pre-development baseline, and of the significance of already existing effects on Ktunaxa Nation's rights and interests, as well as the additional effects of the Project in combination with reasonably foreseeable developments, and effects from changes in the environment including forest fires and climate change (KNC & the Firelight Group, 2015).

Within Qukin ?amak?is (Raven's Land), as noted by Ktunaxa Nation (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a) valley bottoms and higher altitude valleys and slopes are impacted in many areas by forestry, mining, recreational development, and associated road networks, with a general trend of north-south oriented mining and related disturbance along valley bottoms and some ridges that limit the east-west connectivity between alpine ranges. The Elk River system has been affected by sport fishing, transportation infrastructure, mining related impacts, and forestry activities (KNC & the Firelight Group, 2015). The Elk River Valley has also seen substantial residential development and associated municipal water use and waste effluent deposition. Outside the Elk Valley, hydro-electric, agricultural, and industrial development, as well as environmental changes, have resulted in the loss of two culturally significant species from Ktunaxa ?amak?is: bison and anadromous salmon. Other culturally significant species, including grizzly bear, are at risk (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a). From a Ktunaxa perspective, KNC has expressed high levels of concern about the cumulative effects of past, current, and proposed developments (KNC et al., 2014). Ktunaxa has communicated that alteration of the land and ecosystems directly affects Ktunaxa culture in a manner that cannot often be fully reclaimed through reclamation activities (KNC et al., 2014).

Based on available Ktunaxa perspectives, existing impacts on Ktunaxa practice of rights in the Crowsnest Pass area have also been significant and Ktunaxa use, rights, and interests within the KNRI LSA are also adverse and are likely to extend the duration, magnitude and extent of existing significant impacts in the region, including impacts on cultural landscapes, water, bison, and other resources that are fundamental to Ktunaxa practice in the area. Based on existing information, and uncertainties related to mitigation and the EVWQP, the KNC anticipates that these cumulative effects will exacerbate already significant effects

in the Elk Valley, and on Ktunaxa Nation's rights and interests, for the foreseeable future (KNC & the Firelight Group, 2015). For specific perspectives shared by the Ktunaxa Nation related to the Project, the KNC also noted that based on the development of the *Koocanusa Selenium Water Quality Objective*, recent scientific evidence indicates that in order to protect fish and Ktunaxa cultural practice and health, selenium water quality concentrations will need more stringent limits and additional mitigation (KNC, 2021m). High road density and human access were two of the leading contributors to negative cumulative impacts in the region. Assessments conducted found that 91% and 38% of watersheds are ranked high hazard for road density near streams and steep slopes respectively. Furthermore, 88% of the sub basin watersheds exceed recommended levels for grizzly bear (KNC, 2021m).

The KNC notes that development and damage present in Qukin ʔamakʔis must be viewed from the perspective of the lasting impacts of colonialism where much of the activities have occurred without Ktunaxa consent (KNC, 2021m). This ongoing practice of approving mines further fragments ʔamakʔis Ktunaxa, alienates Ktunaxa from the land, and impacts Ktunaxa title, rights, and interests. Based on Ktunaxa perspectives, nowhere else in Canada is such intense coal mining pressure applied to a land base. As noted in Section 23.5.2, both the provincially B.C. and the federal Canadian government have expressed a commitment to fully implement the UNDRIP, through respective Provincial and Federal legislation, and as stated by the KNC, are obliged to recognize the Ktunaxa Nation's right to self-determination and right to establish priorities, strategies, and be decision makers on any development or use of Ktunaxa lands and resources. As per the KNC, the Ktunaxa Nation holds stewardship responsibility for Qukin ʔamakʔis and based on Ktunaxa perspectives, future development can only go forward with their free, prior, and informed consent (KNC, 2021m).

Ktunaxa Nation's concerns as stated by KNC, are based on the understanding that the Elk Valley is out of balance in terms of Ktunaxa natural law and it appears to the Ktunaxa that more has been taken than needed. As per KNC, before further development is considered there is the need to give back to the land and waters, and to restore the balance as is aligned with Ktunaxa natural law and taking only what is needed, it is important to the Ktunaxa that these initiatives are completed prior to new projects being contemplated (KNC, 2021m). Ktunaxa leadership, and specifically Yaq̓it ʔa·knuqƚi 'it First Nation, have been clear that Ktunaxa stewardship values are not being protected in the Elk Valley (KNC, 2022c). Recent provincially approved EAs in the Elk Valley based on Ktunaxa perspective, confirm that Ktunaxa rights and interests, including knowledge and use, have already been impacted by mining in the area (KNC, 2022c).

As details on cumulative effects to the Ktunaxa Nation in the KNRI RSA are restricted to secondary sources of information, further information from the Ktunaxa Nation, including Project-specific TK/TLU when provided might lead to a better understanding of these potential Project-related cumulative effects to the Ktunaxa Nation. This information if and when provided would also be considered in the assessment of the impacts on Ktunaxa Nation's rights and interests as they relate to cumulative effects of the Project in combination with other reasonably foreseeable future projects and activities.

23.10 Indigenous Impact Management Plan

Following the assessment of the Project effects on Ktunaxa Nation[27] and its member Bands and the cumulative effects assessment, this section describes the Indigenous Impact Management Plan that will be implemented as a result of the outcomes of the assessment processes outlined in Section 23.3.

Mitigation measures identified for the potential impacts on the Ktunaxa Nation's rights and interests are based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as well as preliminary consultation activities summarized in Section 23.5 (IAAC, 2015a; Appendix 23-A, Tables 23.A-1 and 23.A-2). As previously identified, the Ktunaxa Nation's rights and interests are defined as those outlined in the correspondence from the Impact Assessment Agency of Canada (IAAC, 2015a), indicating the Agency's preliminary understanding of the nature and extent of the Ktunaxa Nation's rights and interests as described in Section 23.5.4. Continued consultation and engagement with the Ktunaxa Nation to further identify and adapt mitigation measures to address impacts on their rights and related interests within the Project footprint and the KNRI LSA are expected to refine this process throughout the Project lifecycle. Ktunaxa Nation provided information regarding the evaluation of options to reduce impacts on the Grave Prairie Cultural Landscape during coformity review but did not provide any input into the impact management measures identified in the Indigenous Impact Management Plan. It is to be noted that the effectiveness of these measures has not been confirmed by the Ktunaxa Nation to date.

Impact on Ktunaxa Nation Title and Rights and related interests may occur where the Project has a residual effects and residual cumulative effect on traditional activities such as water use, fishing, hunting and trapping, harvesting and gathering, or on physical activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, and physical and cultural heritage areas and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and social, health, and economic conditions. Project activities and components during the Construction and Pre-Production, Operations, Reclamation and Closure, and the Post-Closure phases have the potential to interact with Ktunaxa Nation's rights and interests.

In the assessment of potential impacts on Ktunaxa Nation's rights and interests, determining the severity of potential impacts has considered historic and current (including future) use of lands and resources for traditional purposes, and social, health, and economic conditions. As noted in Section 23.7.1, traditional land and resource use is defined as current use that may not be reflective of desired current use, as such, current use as defined in Chapter 23 is reflective of current use of lands and resources for traditional purposes as well as the potential future use as desired by Ktunaxa Nation. The potential future use of the Project footprint, the KNRI LSA, and the KNRI RSA with the Project in place for the exercise of Ktunaxa Nation's rights and interests is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could potentially impact these rights and interests as organized by Sector.

[27] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƛi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

Based on the evaluation of the environmental effects of the Project, as determined through Project-related residual effects and residual cumulative effects anticipated for the associated VCs (e.g., Wildlife and Wildlife Habitat VCs) and anticipated effects to non-VC groups (i.e., broad ecosystem types), and after implementation of proposed mitigation measures as well as additional information (certain intermediate and receptor VCs) included in the assessment, the potential severity of adverse impacts on Ktunaxa Nation rights and interests are anticipated to occur as they relate to:

- Water Sector: Change to use of water for traditional purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional fishing purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional hunting and trapping purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional harvesting and gathering purposes;
- Traditional Knowledge and Language Sector: Change to physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; and
- Social and Health and Economic Investment Sectors: Change to social, health, and economic conditions.

Specific and detailed mitigation for VCs related to Ktunaxa Nation's rights and interests can be referenced in the respective effects assessment VC chapters. The VC interactions are anticipated to be more for some activities than for others, and as a result the comprehensiveness of the Indigenous Impact Management Plan and the monitoring programs for the specific elements of the environment (e.g., plants, wetlands, groundwater) reflect the nature of the potential interaction with the environment, the anticipated magnitude or extent of the environmental effects, the expected effectiveness of mitigation, the level of certainty in the environmental effects predictions, and the resulting potential for impact on Ktunaxa Nation's rights and interests. As the potential for, and consequences of, adverse environmental effects increases; so does the comprehensiveness of the Indigenous Impact Management Plan in order to meet the requirements and objectives of each mitigation measure and/or monitoring program.

NWP is committed to an ongoing dialogue with the Ktunaxa Nation, including commitments to the following:

- Best management practices and procedures related to each VC of interest are based on Ktunaxa perspectives shared with respect to the principles of reclamation and restoration in Qukin ʔamakʔis and the Elk Valley including the design of mitigation measures for cumulative effects as outlined in the various specific VC chapters in the Application/EIS.
- Follow-up, monitoring and offsetting and compensation programs related to anticipated residual effects of select VCs.
- Implementation of the engagement agreement between NWP and Ktunaxa Nation.
- Confirmation and implementation of the Indigenous Impact Management Plan that outlines mitigation measures to avoid, minimize, reduce, and/or offset potential direct and indirect impacts of the Project on the Ktunaxa Nation's rights and related interests and utilizes adaptive management approaches for follow-up strategies and monitoring programs.

- Consideration of collaborative strategies for addressing the cumulative effects where applicable, with the Ktunaxa Nation, the identified Indigenous Communities, other proponents, and regulatory agencies.
- Follow the spirit and intent of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its guiding principles.
- Support the recognition of Indigenous stewardship and governance in the Elk Valley and respecting Ktunaxa perspectives on their use of lands and resources for traditional purposes.
- Recognize and respect the deep personal, community, and cultural attachment of the Ktunaxa Nation to the land and resources where NWP does business.
- Incorporate NWP's understanding of Indigenous interests, values, knowledge, and ways of knowing into NWP decision making where practicable. To this end, NWP is committed to the Canadian Council for Aboriginal Business' Progressive Aboriginal Relations program[28].

In addition to the mitigations outlined in the specific VC chapters, the following preliminary mitigation measures are proposed to reduce the potential impact on Ktunaxa Nation's rights and interests based on the response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities:

- Engaging with Ktunaxa Nation to refine the Indigenous Impact Management Plan specific to the rights-based activities and other interests (e.g., cultural activities, hunting, trapping, fishing, gathering, and cultural heritage) exercised by Ktunaxa Nation within the Project footprint and the KNRI LSA.
- The Indigenous Impact Management Plan will further describe cross-cultural awareness training, which will be developed in collaboration with Ktunaxa Nation. This training is expected to build awareness and reduce potential adverse interactions with Ktunaxa Nation citizens and will include cultural awareness education and training for staff and on-the-ground personnel during the applicable phases of the Project.
- Restoration and progressive reclamation at various phases of the Project related to cumulative effects reflects the Ktunaxa perspectives of steady reclamation to maintain pace with mining activities in an effort to address the usually slow reclamation progress in the Elk Valley.
- Supporting possible opportunities to augment VC-specific monitoring programs to include responses to concerns raised by the Ktunaxa Nation utilizing adaptive management approaches for follow-up strategies.
- Participation in the Elk Valley Cumulative Effects Management Framework as co-lead by the KNC and other relevant regional cumulative effects initiatives, where appropriate.
- As part of the cumulative effects mitigation and the overall impact management measures, based on Ktunaxa's shared information, NWP will encourage the participation of the Ktunaxa Nation on the applicable Project Advisory, Environmental Stewardship, and in the Environmental Monitoring committees to review, shape, and steer monitoring activities and to guide future priorities.
- Encouraging the participation of the Ktunaxa Nation in the Reclamation Planning Committee to review how traditional knowledge has been incorporated, including Indigenous traditional use and cultural expression as part of the Project closure goals.
- Supporting access to the Project site and provide applicable available resources for the Indigenous-Guardians Program to develop and lead monitoring programs related to the Project.

[28] Based on the CCAB's PAR program, NWP continues to improve their Indigenous relationships and to working across cultures and are committed to prosperity in Indigenous Communities.

- Incorporating feedback from the Ktunaxa Nation in the development of an Access Management and Monitoring Program which would address any concerns raised regarding access to areas that might be temporarily restricted due to safety concerns (e.g., in the Project footprint during construction and operations) by creating alternatives to guarantee access to key land use areas. NWP will establish No Unauthorized Entry (NUE) areas in order to ensure worker and public safety within and near the Project.
- Committed to supporting the establishment of more new conservation lands than the loss of existing conservation lands. New lands may be privately held by NWP, an Indigenous Nation, or a recognized conservation organization.
- Supporting Ktunaxa Nation work related to land and resource use planning objectives in proximity to the Project and following the EAC, NWP will support Ktunaxa Nation work related to land and resource use planning objectives for consideration during the relevant Project phases.
- Providing access to requested reports and identify feedback opportunities where applicable including the various mitigation and monitoring plans as well as those related to the Indigenous Impact Management Plan.

For each potential impact as previously described and assessed in Section 23.8, the specific mitigation measures identified that relate to Ktunaxa Nation's rights and interests are described in the following sections and are also presented in Table 23.10-1.

23.10.1 Water Sector Impact Management

The mitigation measures identified for the change to the use of water for traditional purposes are related to management and monitoring plans associated with water quality as identified in Chapter 10, Section 10.5.3 and Chapter 11, Section 11.5.3 including the Erosion and Sediment Control Management Plan (Section 33.4.1.4), Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1), and the Site Water Management Plan (Section 33.4.1.8). These are identified in combination with the key mitigations for traditional activities in relation to water use to reduce the impacts on the Ktunaxa Nation's rights including those related to their ability to know and teach the Ktunaxa way of living during all Project phases.

Key mitigation measures for water use include, where practicable:

- Implementing the Erosion and Sediment Control Management Plan (Section 33.4.1.4) to reduce the potential for erosion and the transportation of material in surface runoff to the West Alexander Creek, Alexander Creek, Grave Creek, and Elk River drainages.
- Reducing the potential for dust to settle in the West Alexander Creek, Alexander Creek, Grave Creek, and Elk River drainages through the implementation of the Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1).
- Earth moving activities throughout the life of mine scheduled to limit durations of exposed soils.
- Sediment loading in runoff reduced by the application of standard industry practices to intercept sediment before it reaches the receiving environment.
- Regular inspections to ensure drainage, erosion, sediment control, air quality, and dust control measures are effective and functioning properly, and allow for timely repairs and adjustments as required.

Table 23.10-1: Summary of Indigenous Impact Management Plan in relation to the Ktunaxa Nation

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
Potential Change to all Sectors	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	NWP is committed to an ongoing dialogue with the Ktunaxa Nation, including commitments to the following: • Best management practices and procedures related to each VC of interest are based on Ktunaxa perspectives shared with respect to the principles of reclamation and restoration in Qukin ʔamakʔis and the Elk Valley including the design of mitigation measures for cumulative effects as outlined in the various specific VC chapters in the Application/EIS. • Follow-up, monitoring and offsetting and compensation programs related to anticipated residual effects of select VCs. • Implementation of the engagement agreement between NWP and Ktunaxa Nation. • Confirmation and implementation of the Indigenous Impact Management Plan that outlines mitigation measures to avoid, minimize, reduce, and/or offset potential direct and indirect impacts of the Project on the Ktunaxa Nation's rights and related interests and utilizes adaptive management approaches for follow-up strategies and monitoring programs. • Consideration of collaborative strategies for addressing the cumulative effects where applicable, with the Ktunaxa Nation, the identified Indigenous Communities, other proponents, and regulatory agencies. • Follow the spirit and intent of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its guiding principles. • Support the recognition of Indigenous stewardship and governance in the Elk Valley and respecting Ktunaxa perspectives on their use of lands and resources for traditional purposes. • Recognize and respect the deep personal, community, and cultural attachment of the Ktunaxa Nation to the land and resources where NWP does business. • Incorporate NWP's understanding of Indigenous interests, values, knowledge, and ways of knowing into NWP decision making where practicable. In addition to the mitigations outlined in the specific VC chapters, the following preliminary mitigation measures are proposed to reduce the potential impact on Ktunaxa Nation's rights and interests based on the response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities:

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Engaging with Ktunaxa Nation to refine the Indigenous Impact Management Plan specific to the rights-based activities and other interests (e.g., cultural activities, hunting, trapping, fishing, gathering, and cultural heritage) exercised by Ktunaxa Nation within the Project footprint and the KNRI LSA. • The Indigenous Impact Management Plan will further describe cross-cultural awareness training, which will be developed in collaboration with Ktunaxa Nation. This training is expected to build awareness and reduce potential adverse interactions with Ktunaxa Nation citizens and will include cultural awareness education and training for staff and on-the-ground personnel during the applicable phases of the Project. • Restoration and progressive reclamation at various phases of the Project related to cumulative effects reflects the Ktunaxa perspectives of steady reclamation to maintain pace with mining activities in an effort to address the usually slow reclamation progress in the Elk Valley. • Supporting possible opportunities to augment VC-specific monitoring programs to include responses to concerns raised by the Ktunaxa Nation utilizing adaptive management approaches for follow-up strategies. • Participation in the Elk Valley Cumulative Effects Management Framework as co-lead by the KNC and other relevant regional cumulative effects initiatives, where appropriate. • As part of the cumulative effects mitigation and the overall impact management measures, based on Ktunaxa's shared information, NWP will encourage the participation of the Ktunaxa Nation on the applicable Project Advisory, Environmental Stewardship, and in the Environmental Monitoring committees to review, shape, and steer monitoring activities and to guide future priorities. • Encouraging the participation of the Ktunaxa Nation in the Reclamation Planning Committee to review how traditional knowledge has been incorporated, including Indigenous traditional use and cultural expression as part of the Project closure goals. • Supporting access to the Project site and provide applicable available resources for the Indigenous-Guardians Program to develop and lead monitoring programs related to the Project. • Incorporating feedback from the Ktunaxa Nation in the development of an Access Management and Monitoring Program which would address any concerns raised regarding access to areas that might be temporarily restricted due to safety concerns (e.g., in the Project footprint during construction and operations) by creating

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		alternatives to guarantee access to key land use areas. NWP will establish No Unauthorized Entry (NUE) areas in order to ensure worker and public safety within and near the Project. • Committed to supporting the establishment of more new conservation lands than the loss of existing conservation lands. New lands may be privately held by NWP, an Indigenous Nation, or a recognized conservation organization. • Supporting Ktunaxa Nation work related to land and resource use planning objectives in proximity to the Project and following the EAC, NWP will support Ktunaxa Nation work related to land and resource use planning objectives for consideration during the relevant Project phases. • Providing access to requested reports and identify feedback opportunities where applicable including the various mitigation and monitoring plans as well as those related to the Indigenous Impact Management Plan.
Water Sector Impact Management	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	The mitigation measures identified for the change to the use of water for traditional purposes are related to management and monitoring plans associated with water quality as identified in Chapter 10, Section 10.5.3 and Chapter 11, Section 11.5.3. Key mitigation measures for water use include, where practicable: • Implementing the Erosion and Sediment Control Management Plan (Section 33.4.1.4) to reduce the potential for erosion and the transportation of material in surface runoff to the West Alexander Creek, Alexander Creek, Grave Creek, and Elk River drainages. • Reducing the potential for dust to settle in the West Alexander Creek, Alexander Creek, Grave Creek, and Elk River drainages through the implementation of the Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1). • Earth moving activities throughout the life of mine scheduled to ensure limited durations of exposed soils. • Sediment loading in runoff reduced by the application of standard industry practices to intercept sediment before it reaches the receiving environment. • Regular inspections to ensure drainage, erosion, sediment control, air quality, and dust control measures are effective and functioning properly, and allow for timely repairs and adjustments as required. • Limiting the mine disturbance footprint and avoiding affecting additional drainages beyond West Alexander and Grave Creeks and further to the north of the Grave Creek-West Alexander Creek drainage divide through the Site Water Management Plan

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		(Section 33.4.1.8). Runoff will be directed to small catchment sumps prior to release or managed with localized erosion mitigations for small isolated areas of disturbance. • For surface water that cannot be diverted, capturing it in sediment ponds prior to release into the West Alexander Creek drainage. • Progressive reclamation and re-vegetation throughout the mine life to minimize erosion potential and reduce the Project footprint, minimizing the potential for runoff effects to surface water. • Surface water quality monitoring and adaptive management through the Fish and Fish Habitat Management Plan (Section 33.4.1.5) and permit conditions will be used to validate the efficiency of the proposed mitigation measures. • NWP will support Ktunaxa Nation's stewardship initiatives where identified and applicable to review existing Project Specific programs and plans related to water stewardship and, if required, jointly develop a program to encourage a culture of water stewardship by employees within the Project work environment. • Where not addressed through other processes, NWP and Ktunaxa Nation will jointly determine a funding and prioritization mechanism for supporting continued aquatic research studies specific to the Project where applicable and required. • Consideration of Ktunaxa Nation requests through existing committees for monitoring studies related to water quality. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on use of the use of water resources for traditional purposes within the Project footprint and the KNRI LSA.
Lands and Resources Sector Impact Management: Fishing.	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	The mitigation measures identified for the change to use of lands and resources for traditional fishing purposes are as identified in Chapter 12, Section 12.5.3. Key mitigation measures for fishing also include, where practicable: • Limiting erosion and contain sediment through the application of standard industry practices (Erosion and Sediment Control Plan, Chapter 33, Section 33.4.1.8). • Conducting regular inspections to ensure control measures are effective and functioning properly. • Diverting clean runoff around mine disturbed areas. • Capturing clean surface water that cannot be diverted in sediment ponds prior to release.

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Limiting the mine disturbance footprint through Project design and progressive reclamation. • Prohibiting or limiting non-Indigenous access to fishing areas to assure compliance with fishing restrictions. • Respecting traditional fisheries timing windows and seasonal rounds where practicable. • As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including fishing where practicable. • Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to fishing areas within the Project footprint. • Educating the Project workforce about fish and fish habitats and implementing an angling policy for NWP non-Indigenous employees and contractors where practicable. • NWP will coordinate with local conservation enforcement for Alexander and West Alexander Creeks should increases in non-Indigenous recreational fishing be observed by NWP employees. • Progressive reclamation to occur such that riparian habitats are reclaimed as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting.
Lands and Resources Sector Impact Management: Hunting and Trapping.	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	The mitigation measures identified for the change to use of lands and resources for traditional hunting and trapping purposes are as identified in Chapter 15 (e.g., ungulates, Chapter 15, Section 15.4.3.3). Key mitigation measures for hunting and trapping also include, where practicable: • Minimizing disturbance and encroachment into natural vegetation, to the extent feasible, by clearing and grubbing only what is required for Construction and Pre-Production activities and progressive development of pits and Mine Rock Storage Facility.

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Clearing vegetation only in the year in which the area will be required for Construction or Operation activities to minimize the extent of cleared vegetation, to the extent possible. • Sequencing the development of pits and Mine Rock Storage Facility areas to limit total disturbance during any one period and maximizing progressive reclamation opportunities during Operations where practicable. • Implementation of the Erosion and Sediment Control Plan (Chapter 33, Section 33.4.1.4) to reduce the potential for sedimentation of riparian, wetland, and aquatic habitat used by wildlife VCs. • Minimizing sensory disturbances and disruption by limiting construction activities, especially those with high noise impact, to daytime hours and appropriately timing construction activities to minimize cumulative noise levels. • Installing and maintaining noise and light mitigation measures, where practicable, on and around Project infrastructure to minimize sensory disturbances. • A wildlife education program will be developed to raise awareness of requirements and commitments to avoid wildlife and protect wildlife and wildlife habitat including educating employees on noise impacts and potential mitigation/control measures through appropriate training. • Management of vehicle traffic (including limiting road traffic and access and the Traffic Control Plan) contributes to minimization of sensory disturbance and direct mortality along roads and reducing the barrier effect of roads or filters to movement. • Wildlife will be given the right-of-way on all Project roads and gaps will be created in snowbanks to allow for unimpeded wildlife passage across roads at regular intervals. • Preventing wildlife entrapment through implementation of wildlife protection protocols including during avalanche control activities. • Minimizing the potential for exposure to chemical hazards and attractants through the use of holding tanks or closed facilities that exclude wildlife. • As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including hunting and trapping where practicable. • Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to traditional hunting and trapping use areas within the Project footprint.

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Respecting traditional hunting and trapping timing windows and seasonal rounds where practicable. • Progressive reclamation and revegetation throughout the mine life to reduce the Project footprint as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting.
Lands and Resources Sector Impact Management: Harvesting and Gathering.	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	The mitigation measures identified for the change to use of lands and resources for traditional harvesting and gathering purposes are as identified in Chapter 13 (e.g., riparian habitat, Section 13.6.5.2) and Chapter 14 (e.g., whitebark pine, Section 14.5.5.2.1). Key mitigation measures for harvesting and gathering also include, where practicable: • Minimizing disturbance and encroachment into natural vegetation, to the extent feasible, by clearing and grubbing only what is required for Construction and Pre-Production activities and progressive development of pits and Mine Rock Storage Facility. • Clearing vegetation only in the year in which the area will be required for Construction or Operation activities to minimize the extent of cleared vegetation, to the extent possible. • Sequencing the development of pits and Mine Rock Storage Facility areas to limit total disturbance during any one period and maximizing progressive reclamation opportunities during Operations where practicable. • Implementation of the Erosion and Sediment Control Plan (Chapter 33, Section 33.4.1.4) to reduce the potential for sedimentation of riparian, wetland, and aquatic habitats and ecosystems. • Implement the Vegetation and Ecosystems Management and Monitoring Plan (Chapter 33, Section 33.4.1.11), to limit the effects that invasive plants may have on natural vegetation. • Develop and implement whitebark pine salvage, propagation, and restoration as outlined briefly in Chapter 14, Section 14.5.5.2.1.

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Revegetation with Indigenous species to limit the effects that invasive plants may have on natural vegetation. • As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including harvesting and gathering where practicable. • Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to traditional harvesting and gathering use areas within the Project footprint. • Respecting traditional harvesting and gathering timing windows and seasonal rounds where practicable. • Identifying opportunities for harvesting and gathering prior to construction for the Ktunaxa Nation citizens within the Project footprint and the reestablishment of plant harvesting activities in the reclamation phase. • Consideration of support for possible mapping of all high priority cultural use areas in the proximity to the Project by Ktunaxa Nation including support for research and development of approaches for restoring Landscape and Ecosystem VCs. • Progressive reclamation and revegetation throughout the mine life to reduce the Project footprint as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation. As part of Project Reclamation and Closure activities, the Project footprint will be reclaimed to similar ecosystem types to the local area and which previously existed before disturbance. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting.
Traditional Knowledge and Language Sector Impact Management	• Construction and Pre-Production • Operations	An Archaeology Management Plan (Chapter 33, Section 33.4.1.2) was developed for the Project and describes protocols that will be followed where the Project footprint encroaches upon the recorded boundaries of pre-contact archaeological sites (pre-dating A.D. 1846) that are protected under the *Heritage Conservation Act*, in addition to best management practices for archaeological potential zones and Chance Finds. Key mitigation measures for physical and cultural heritage also include, where practicable:

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Continued support of site visits from representatives of the Ktunaxa Nation. • Providing opportunities for ceremonies on the land prior to construction of Project infrastructure. • Seeking Ktunaxa Nation consent where applicable on any cultural heritage site or resource that may be impacted by a proposed development/land alteration. • Protection of all cultural heritage sites and resources and managed in a way that is respectful of Ktunaxa stewardship, cultural values, and traditional teachings. • NWP will support the development of a Traditional and Cultural Protection Plan to include cultural programs on site where applicable; and events and activities in communities where resource capacity may be supported by NWP. • Supporting measures to document and protect Ktunaxa efforts to safeguard knowledge and language related to Elk Valley and surrounding areas including support for establishing a plan for educational and potential archaeological work designed to identify, record, and protect remaining tangible and intangible Ktunaxa cultural heritage to result in legacy benefits to the Ktunaxa Nation and be geared to the protection and revitalization of Ktunaxa knowledge and language for future Ktunaxa generations in the Elk Valley will also be considered. • NWP with guidance from the identified Ktunaxa Nation will support the following: • Recording the nature and extent of any identified trail corridors and associated passes in proximity of the Project footprint including areas potentially disturbed by Project-related infrastructure, and • The rehabilitation of trails, marking of trail sections interrupted by disturbance within the Project footprint, and any additional archival information available regarding them. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological, or architectural significance within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. Impacts on physical and cultural heritage related to the Grave Prairie Cultural Landscape may be addressed through:

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Continued collaboration with the Ktunaxa Nation and other identified Indigenous Communities to consult on alternative means of access to the Rail Loadout including utilization of the proposed road access that may be situated in the previously disturbed footprint of a current road which may require further assessment (KNC, 2020). • Providing opportunities for ceremonies on the land prior to construction of Project infrastructure. • Evaluating all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape including the adequate consideration to avoidance impact through alternative means that may include: o *Longer truck haul to a less sensitive load out location,* o *The extension of rail to the Alexander Valley section of the facility, and* o *Agreements with existing operators to share already existing rail load out infrastructure if possible (KNC, 2022b).* • As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the Ktunaxa Nation to address related concerns.
Social and Health and Economic Investment Sectors Impact Management	• Construction and Pre-Production • Operations • Reclamation and Closure	The mitigation measures identified for the change to social, health, and economic conditions are as identified in Chapters 17 (Section 17.5.5) and 18 (Section 18.5.4). Key mitigation measures for change to social, health, and economic conditions also include, where practicable: • With respect to the use of water and lands and resources for traditional purposes (including fishing, hunting and trapping, harvesting and gathering, physical and cultural heritage, and social, health and economic conditions) NWP with guidance from the Ktunaxa Nation, will include a process to monitor during the relevant phases of the Project: o Potential Project contaminants to water, country foods, and medicines, including identifying areas or species of particular risk where practicable and applicable. o The development and implementation of mitigation strategies and measures to address contaminants related to water, country foods, and medicines and their impact on Ktunaxa Nation citizens and Indigenous culture. o A culturally appropriate communication strategy to inform Ktunaxa Nation citizens regarding the relative safety or risks of water, country foods, and medicine

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		consumption in proximity of the Project based on scientific and Ktunaxa Traditional Knowledge. o A joint process for the incorporation of Ktunaxa Traditional Knowledge and the participation of Ktunaxa Nation representatives in monitoring activities relate to water, country foods, and medicines within and downstream (Alexander Creek) of the Project. • Avoidance strategies to reduce exposure by Indigenous harvesters active near the Project footprint during Operations, such as site fencing to preclude access and signage. • Implementation of the Health and Safety Management Plan (Chapter 33, Section 33.4.2.3) to mitigate possible social issues that could emerge as a result of the changes to the environment due to the Project. • Incorporating diversity and inclusivity and GBA+ in all areas of the company such that acceptable and expected behaviours are integrated in the company and are reflected at the community level. • Implementation of social safety measures and preventative plans to reduce incidents and developing incident support programs. • Collaborating with local Indigenous organizations on diversity and inclusivity initiatives and events. • Providing preferential employment provisions including where applicable training programs that encourage the Ktunaxa Nation citizens to have the training, skills, and qualifications to apply for jobs that become available. • Developing a well-being management plan with Indigenous partners to address ways to reduce the potential effects of shift work for new Indigenous employees and to promote the safety and security of Indigenous women, girls, and 2SLGBTQIAA+ people in the workplace. • Defining goals for a certain percentage of the workforce to be comprised of Indigenous employees while prioritizing Indigenous women where applicable and requirements that all contractors and subcontractors agree to the preferential hiring process. • Providing flexible and individually tailored shift work hours for Indigenous employees new to shift work and possibly wage based employment, as well as those Indigenous employees needing time off for traditional hunting, fishing, trapping, and/or gathering activities.

Impact on Rights and Interests	Applicable Project Phase(s)	Key Commitments/Mitigation Measures
		• Designation of an Indigenous Project Liaison to assist Indigenous employees and to address workplace concerns, the availability of different types of cultural leaves for Indigenous employees where applicable. • Distribution of relevant materials where applicable in local languages and on-site interpretation where needed for Indigenous employees, and employment assistance programs that offer culturally relevant support for Indigenous employees where applicable. • Where practicable, contracting and sub-contracting related to the Project will be given to qualified businesses that are owned at least in part by Ktunaxa Nation citizens and requirements that all businesses contract employ Indigenous employees. • NWP will work with the Ktunaxa Nation to create economic benefits for the community that might include initiatives related to: o Capacity building; o Direct and indirect employment; o Education and training; and o Procurement and business relationships. • NWP will support activities related to monitoring and address potential beneficial and adverse economic and social effects related to increased participation of Ktunaxa Nation citizens in the NWP work force including providing support to related Ktunaxa Nation to conduct community-based surveys to monitor baseline trends and track positive and negative changes in socio-economic conditions. • Continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on social, health, and economic conditions within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting.

- Limiting the mine disturbance footprint and avoiding affecting additional drainages beyond West Alexander and Grave Creeks and further to the north of the Grave Creek-West Alexander Creek drainage divide through the Site Water Management Plan (Section 33.4.1.8). Runoff will be directed to small catchment sumps prior to release or managed with localized erosion mitigations for small, isolated areas of disturbance.
- For surface water that cannot be diverted, capturing it in sediment ponds prior to release into the West Alexander Creek drainage.
- Progressive reclamation and re-vegetation throughout the mine life to minimize erosion potential and reduce the Project footprint, minimizing the potential for runoff effects to surface water.
- Surface water quality monitoring and adaptive management through the Fish and Fish Habitat Management Plan (Section 33.4.1.5) and permit conditions will be used to validate the efficiency of the proposed mitigation measures.
- NWP will support Ktunaxa Nation's stewardship initiatives where identified and applicable to review existing Project Specific programs and plans related to water stewardship and, if required, jointly develop a program to encourage a culture of water stewardship by employees within the Project work environment.
- Where not addressed through other processes, NWP and Ktunaxa Nation will jointly determine a funding and prioritization mechanism for supporting continued aquatic research studies specific to the Project where applicable and required.
- Consideration of Ktunaxa Nation requests through existing committees for monitoring studies related to water quality.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on use of the use of water resources for traditional purposes within the Project footprint and the KNRI LSA. The mitigation measures relevant to surface water quality and quantity are connected to the Ktunaxa Nation's rights and interests related to their ability to access healthy aquatic systems, their perspectives on water quality and access, the values associated with sustenance based on water resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

23.10.2 Lands and Resources Sector Impact Management

23.10.2.1 Fishing

The mitigation measures identified for the change to use of lands and resources for traditional fishing purposes are as identified in Chapter 12, Section 12.5.3 including the Fish and Fish Habitat Management Plan and the Ecological Restoration Plan. The operational practices and procedures that are prescribed in the Site Water Management Plan in (Section 33.4.1.8) including selenium, nitrate, and calcite management, and the Noise and Vibration Management Plan (Section 33.4.1.7), the Vegetation and Ecosystems Management and Monitoring Plan (Section 33.4.1.11) and the Aquatic Effects Management Program described in Section 33.4.1.5 will be the primary means by which the Project will address adverse effects to fish and fish habitat. These are identified in combination with the key mitigations for traditional fishing activities to reduce the impacts on the Ktunaxa Nation's fishing rights including those related to their ability to know and teach the Ktunaxa way of living during all Project phases.

Key mitigation measures for fishing also include, where practicable:

- Limiting erosion and contain sediment through the application of standard industry practices (Erosion and Sediment Control Plan, Chapter 33, Section 33.4.1.8).
- Conducting regular inspections to ensure control measures are effective and functioning properly.
- Diverting clean runoff around mine disturbed areas.
- Capturing clean surface water that cannot be diverted in sediment ponds prior to release.
- Limiting the mine disturbance footprint through Project design and progressive reclamation.
- Prohibiting or limiting non-Indigenous access to fishing areas to assure compliance with fishing restrictions.
- Respecting traditional fisheries timing windows and seasonal rounds where practicable.
- As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including fishing where practicable.
- Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to fishing areas within the Project footprint.
- Educating the Project workforce about fish and fish habitats and implementing an angling policy for NWP non-Indigenous employees and contractors where practicable.
- NWP will coordinate with local conservation enforcement for Alexander and West Alexander Creeks should increases in non-Indigenous recreational fishing be observed by NWP employees.
- Progressive reclamation to occur such that riparian habitats are reclaimed as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. The mitigation measures relevant to the fish and fish habitat VCs are connected to the Ktunaxa Nation's rights and interests related to their ability to fish for species of interest, their perspectives on fish quality and abundance, the values associated with sustenance based on fish resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

23.10.2.2 Hunting and Trapping

The mitigation measures identified for the change to use of lands and resources for traditional hunting and trapping purposes are as identified in Chapter 15 (e.g., ungulates, Chapter 15, Section 15.4.3.3) including the Wildlife Management and Monitoring Plan and the Ecological Restoration Plan. Many of the measures to mitigate impacts to wildlife VCs are part of protocols described in Chapter 33 including the Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1), the Noise and Vibration Management Plan (Section 33.4.1.7), the Vegetation and Ecosystems Management and Monitoring Plan (Section 33.4.1.11), the Spill Prevention, Control, and Countermeasures Plan (Section 33.4.1.10), the Waste Management Plan (Section 33.4.1.12), and the Traffic Control Plan (Section 33.4.2.4) which includes access management. These are identified in combination with the key mitigations for traditional hunting and trapping activities to reduce the impacts on the Ktunaxa Nation's hunting and trapping rights

including those related to their ability to know and teach the Ktunaxa way of living during all Project phases.

Key mitigation measures for hunting and trapping also include, where practicable:

- Minimizing disturbance and encroachment into natural vegetation, to the extent feasible, by clearing and grubbing only what is required for Construction and Pre-Production activities and progressive development of pits and Mine Rock Storage Facility.
- Clearing vegetation only in the year in which the area will be required for Construction or Operation activities to minimize the extent of cleared vegetation, to the extent possible.
- Sequencing the development of pits and Mine Rock Storage Facility areas to limit total disturbance during any one period and maximizing progressive reclamation opportunities during Operations where practicable.
- Implementation of the Erosion and Sediment Control Plan (Chapter 33, Section 33.4.1.4) to reduce the potential for sedimentation of riparian, wetland, and aquatic habitat used by wildlife VCs.
- Minimizing sensory disturbances and disruption by limiting construction activities, especially those with high noise impact, to daytime hours and appropriately timing construction activities to minimize cumulative noise levels.
- Installing and maintaining noise and light mitigation measures, where practicable, on and around Project infrastructure to minimize sensory disturbances.
- A wildlife education program will be developed to raise awareness of requirements and commitments to avoid wildlife and protect wildlife and wildlife habitat including educating employees on noise impacts and potential mitigation/control measures through appropriate training.
- Management of vehicle traffic (including limiting road traffic and access and the Traffic Control Plan) contributes to minimization of sensory disturbance and direct mortality along roads and reducing the barrier effect of roads or filters to movement.
- Wildlife will be given the right-of-way on all Project roads and gaps will be created in snowbanks to allow for unimpeded wildlife passage across roads at regular intervals.
- Preventing wildlife entrapment through implementation of wildlife protection protocols including during avalanche control activities.
- Minimizing the potential for exposure to chemical hazards and attractants through the use of holding tanks or closed facilities that exclude wildlife.
- As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including hunting and trapping where practicable.
- Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to traditional hunting and trapping use areas within the Project footprint.
- Respecting traditional hunting and trapping timing windows and seasonal rounds where practicable.
- Progressive reclamation and revegetation throughout the mine life to reduce the Project footprint as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. The mitigation measures relevant to the wildlife VCs are connected to the Ktunaxa Nation's rights and interests related to their ability to hunt and trap species of interest, their perspectives on the quality and abundance of these species, the values associated with sustenance based on traditional resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

23.10.2.3 Harvesting and Gathering

The mitigation measures identified for the change to use of lands and resources for traditional harvesting and gathering purposes are as identified in Chapter 13 (e.g., riparian habitat, Section 13.6.5.2) and Chapter 14 (e.g., whitebark pine, Section 14.5.5.2.1) including the Vegetation and Ecosystems Management and Monitoring Plan and the Ecological Restoration Plan. Many of the measures to mitigate impacts to plants and vegetation VCs are part of protocols described in Chapter 33 including the Wildlife Management and Monitoring Plan (Section 33.4.1.13), Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1), the Soil Management Plan (Section 33.4.1.9), Spill Prevention, Control, and Countermeasures Plan (Section 33.4.1.10), and the Waste Management Plan (Section 33.4.1.12). These are identified in combination with the key mitigations for traditional harvesting and gathering activities to reduce the impacts on the Ktunaxa Nation's harvesting and gathering rights including those related to their ability to know and teach the Ktunaxa way of living during all Project phases.

Key mitigation measures for harvesting and gathering also include, where practicable:

- Minimizing disturbance and encroachment into natural vegetation, to the extent feasible, by clearing and grubbing only what is required for Construction and Pre-Production activities and progressive development of pits and Mine Rock Storage Facility.
- Clearing vegetation only in the year in which the area will be required for Construction or Operation activities to minimize the extent of cleared vegetation, to the extent possible.
- Sequencing the development of pits and Mine Rock Storage Facility areas to limit total disturbance during any one period and maximizing progressive reclamation opportunities during Operations where practicable.
- Implementation of the Erosion and Sediment Control Plan (Chapter 33, Section 33.4.1.4) to reduce the potential for sedimentation of riparian, wetland, and aquatic habitats and ecosystems.
- Implement the Vegetation and Ecosystems Management and Monitoring Plan (Chapter 33, Section 33.4.1.11), to limit the effects that invasive plants may have on natural vegetation.
- Develop and implement whitebark pine salvage, propagation, and restoration as outlined briefly in Chapter 14, Section 14.5.5.2.1.
- Revegetation with Indigenous species to limit the effects that invasive plants may have on natural vegetation.
- As there is potential for access within the Project footprint, NWP is committed to creating permanent access during the Post-Closure phase for future traditional activities including harvesting and gathering where practicable.
- Developing NUE areas in collaboration with Ktunaxa Nation, regulators, and key stakeholders based on safety, logistical, and administrative considerations to restrict public access to traditional harvesting and gathering use areas within the Project footprint.

- Respecting traditional harvesting and gathering timing windows and seasonal rounds where practicable.
- Identifying opportunities for harvesting and gathering prior to construction for the Ktunaxa Nation citizens within the Project footprint and the reestablishment of plant harvesting activities in the reclamation phase.
- Consideration of support for possible mapping of all high priority cultural use areas in the proximity to the Project by Ktunaxa Nation including support for research and development of approaches for restoring Landscape and Ecosystem VCs.
- Progressive reclamation and revegetation throughout the mine life to reduce the Project footprint as quickly as possible to minimize the magnitude of Project impacts at the temporal scale with collaboration where practicable with Ktunaxa Nation. As part of Project Reclamation and Closure activities, the Project footprint will be reclaimed to similar ecosystem types to the local area and which previously existed before disturbance.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on the use of lands and resources for traditional purposes within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. The mitigation measures relevant to the plant and vegetation VCs are connected to the Ktunaxa Nation's rights and interests related to their ability to harvest and gather plant species of interest, their perspectives on the quality and abundance of these species, the values associated with sustenance based on traditional resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

23.10.3 Traditional Knowledge and Language Sector Impact Management

The mitigation measures identified for the change to physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological, or architectural significance are related to reporting on the implementation of management and monitoring plans associated with the identification of appropriate mitigation for pre-contact archaeological sites based on collaboration with the Ktunaxa Nation. An Archaeology Management Plan (Chapter 33, Section 33.4.1.2) was developed for the Project and describes protocols that will be followed where the Project footprint encroaches upon the recorded boundaries of pre-contact archaeological sites (pre-dating A.D. 1846) that are protected under the *Heritage Conservation Act*, in addition to best management practices for archaeological potential zones and Chance Finds. Mitigation measures for direct impacts to archaeological resources will include, but not be limited to, the application for a provincial Section 12.4 Alteration Permit, to be held concurrently with a Section 12.2 Heritage Inspection Permit. A Heritage Resources response procedure will be put in place as per the Section 12.4 Alteration Permit and will be followed in the event that a Heritage Resource is discovered during Project-related activities. This will include:

- Monitoring by a qualified archaeologist throughout the duration of mechanical activity within defined site boundaries;
- Salvage inspection (≤20% sample screening) of mechanically-excavated sediment extracted from and immediately adjacent to recorded archaeological sites;

- Short-term or long-term halt(s) of mechanical activity should significance archaeological resources be exposed;
- Salvage inspection (100% screening) should any of topsoil/sediment that originates from within an archaeological site be required to be removed from the locality of the site area.

These are identified in combination with the key mitigations for physical and cultural heritage to reduce the impacts on the Ktunaxa Nation's rights including those related to their ability to know and teach the Ktunaxa way of living during all Project phases. Key mitigation measures for physical and cultural heritage also include, where practicable:

- Continued support of site visits from representatives of the Ktunaxa Nation.
- Providing opportunities for ceremonies on the land prior to construction of Project infrastructure.
- Seeking Ktunaxa Nation consent where applicable on any cultural heritage site or resource that may be impacted by a proposed development/land alteration.
- Protection of all cultural heritage sites and resources and managed in a way that is respectful of Ktunaxa stewardship, cultural values, and traditional teachings.
- NWP will support the development of a Traditional and Cultural Protection Plan to include cultural programs on site where applicable; and events and activities in communities where resource capacity may be supported by NWP.
- Supporting measures to document and protect Ktunaxa efforts to safeguard knowledge and language related to Elk Valley and surrounding areas including support for establishing a plan for educational and potential archaeological work designed to identify, record, and protect remaining tangible and intangible Ktunaxa cultural heritage to result in legacy benefits to the Ktunaxa Nation and be geared to the protection and revitalization of Ktunaxa knowledge and language for future Ktunaxa generations in the Elk Valley will also be considered.
- NWP with guidance from the identified Ktunaxa Nation will support the following:
    - Recording the nature and extent of any identified trail corridors and associated passes in proximity of the Project footprint including areas potentially disturbed by Project-related infrastructure, and
    - The rehabilitation of trails, marking of trail sections interrupted by disturbance within the Project footprint, and any additional archival information available regarding them.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on physical and cultural heritage, and structures, sites, or things of historical, archaeological, paleontological, or architectural significance within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. The mitigation measures relevant to the Ktunaxa Nation's physical and cultural heritage are connected to the Ktunaxa Nation's rights and interests related to their perspectives on access to these sites, the values associated with the traditional resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

Impacts on physical and cultural heritage related to the Grave Prairie Cultural Landscape may be addressed through:

- Continued collaboration with the Ktunaxa Nation and other identified Indigenous Communities to consult on alternative means of access to the Rail Loadout including utilization of the proposed

road access that may be situated in the previously disturbed footprint of a current road which may require further assessment (KNC, 2020).

- Providing opportunities for ceremonies on the land prior to construction of Project infrastructure.
- Evaluating all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape including the adequate consideration to avoid impact through alternative means that may include:
  - Longer truck haul to a less sensitive load out location,
  - The extension of rail to the Alexander Valley section of the facility, and
  - Agreements with existing operators to share already existing rail load out infrastructure if possible (KNC, 2022b).
- As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the Ktunaxa Nation to address related concerns and alternatives.

23.10.4 Social and Health and Economic Investment Sectors Impact Management

The mitigation measures identified for the change to social, health, and economic conditions are as identified in Chapters 17 (Section 17.5.5) and 18 (Section 18.5.4), including the Health and Safety Management Plan. As noted in Chapter 22, Section 22.5.3, a wide array of design mitigation measures are having been recommended in relation to surface water and air, and considered in the assessment of impact on soil, plant/animal tissue (i.e., food) and sediment quality. As such, mitigation measures applicable to the surface water and air quality VCs are applicable, as well as the following in relation to social and health conditions as described in this chapter including the Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1), the Noise and Vibration Management Plan (Section 33.4.1.7), the Vegetation and Ecosystems Management and Monitoring Plan (Section 33.4.1.11), the Spill Prevention, Control, and Countermeasures Plan (Section 33.4.1.10), the Waste Management Plan (Section 33.4.1.12), and the Traffic Control Plan (Section 33.4.2.4) which includes access management. These are identified in combination with the key mitigations for the Ktunaxa Nation's traditional activities to reduce the impacts on the Ktunaxa Nation's interests including those related to their ability to know and teach the Ktunaxa way of living during all Project phases.

Key mitigation measures for change to social, health, and economic conditions also include, where practicable:

- With respect to the use of water and lands and resources for traditional purposes (including fishing, hunting and trapping, harvesting and gathering, physical and cultural heritage, and social, health and economic conditions) NWP with guidance from the Ktunaxa Nation, will include a process to monitor during the relevant phases of the Project:
  - Potential Project contaminants to water, country foods, and medicines, including identifying areas or species of particular risk where practicable and applicable.
  - The development and implementation of mitigation strategies and measures to address contaminants related to water, country foods, and medicines and their impact on Ktunaxa Nation citizens and Indigenous culture.
  - A culturally appropriate communication strategy to inform Ktunaxa Nation citizens regarding the relative safety or risks of water, country foods, and medicine consumption in proximity of the Project based on scientific and Ktunaxa Traditional Knowledge.

    - A joint process for the incorporation of Ktunaxa Traditional Knowledge and the participation of Ktunaxa Nation representatives in monitoring activities relate to water, country foods, and medicines within and downstream (Alexander Creek) of the Project.
- Avoidance strategies to reduce exposure by Indigenous harvesters active near the Project footprint during Operations, such as site fencing to preclude access and signage.
- Implementation of the Health and Safety Management Plan (Chapter 33, Section 33.4.2.3) to mitigate possible social issues that could emerge as a result of the changes to the environment due to the Project.
- Incorporating diversity and inclusivity and GBA+ in all areas of the company such that acceptable and expected behaviours are integrated in the company and are reflected at the community level;
- Implementation of social safety measures and preventative plans to reduce incidents and developing incident support programs.
- Collaborating with local Indigenous organizations on diversity and inclusivity initiatives and events.
- Providing preferential employment provisions including where applicable training programs that encourage the Ktunaxa Nation citizens to have the training, skills, and qualifications to apply for jobs that become available.
- Developing a well-being management plan with Indigenous partners to address ways to reduce the potential effects of shift work for new Indigenous employees and to promote the safety and security of Indigenous women, girls, and 2SLGBTQIAA+ people in the workplace.
- Defining goals for a certain percentage of the workforce to be comprised of Indigenous employees while prioritizing Indigenous women where applicable and requirements that all contractors and subcontractors agree to the preferential hiring process.
- Providing flexible and individually tailored shift work hours for Indigenous employees new to shift work and possibly wage based employment, as well as those Indigenous employees needing time off for traditional hunting, fishing, trapping, and/or gathering activities.
- Designation of an Indigenous Project Liaison to assist Indigenous employees and to address workplace concerns, the availability of different types of cultural leaves for Indigenous employees where applicable.
- Distribution of relevant materials where applicable in local languages and on-site interpretation where needed for Indigenous employees, and employment assistance programs that offer culturally relevant support for Indigenous employees where applicable.
- Where practicable, contracting and sub-contracting related to the Project will be given to qualified businesses that are owned at least in part by Ktunaxa Nation citizens and requirements that all businesses contract employ Indigenous employees.
- NWP will work with the Ktunaxa Nation to create economic benefits for the community that might include initiatives related to:
    - Capacity building;
    - Direct and indirect employment;
    - Education and training; and
    - Procurement and business relationships.
- NWP will support activities related to monitoring and address potential beneficial and adverse economic and social effects related to increased participation of Ktunaxa Nation citizens in the NWP work force including providing support to related Ktunaxa Nation to conduct community-

based surveys to monitor baseline trends and track positive and negative changes in socio-economic conditions.

NWP is committed to continued consultation and engagement with Ktunaxa Nation to identify and adapt mitigation measures to address impacts on social, health, and economic conditions within the Project footprint and the KNRI LSA will be undertaken where appropriate to implement an adaptive management strategy that creates feedback loops through monitoring and reporting. The mitigation measures relevant to the Ktunaxa Nation's social, health, and economic conditions are connected to the Ktunaxa Nation's interests related to their perspectives on country food consumption, the values associated with the traditional resources available to the Ktunaxa Nation, and their ability to know and teach the Ktunaxa way of living during all Project phases.

23.10.5 Summary of the Indigenous Impact Management Plan

The Indigenous Impact Management Plan commitments and measures related to Ktunaxa Nation's rights and related interests for each Sector are summarized in Table 23.10-1.

23.11 Assessment of Potential Impacts on Ktunaxa Nation Rights and Interests

Considering the assessment of effects of the changes to the environment on Ktunaxa Nation[29] and its member Bands and the cumulative effects assessment, detailed in Sections 23.8.2 and 23.8.3 and the Indigenous Impact Management Plan in Section 23.10, this section undertakes an assessment of the impacts on Ktunaxa Nation's rights and interests as a result of the Project. It includes a description and assessment of the potential impact of the Project on Ktunaxa Nation's rights and interests considering the potential future use of the Project footprint with and without the Project.

The potential for impacts on Ktunaxa Nation's rights and interests may occur when there is potential for residual (after mitigation) Project effects (direct, indirect, and/or cumulative) on traditional activities such as water use, fishing, hunting and trapping, harvesting and gathering, or on activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, and on physical and cultural heritage areas. This section provides an assessment of impacts on Ktunaxa Nation's rights and interests through the determination of potential Project effects on traditional land and resource use, including: potential change to use of water for traditional purposes; potential change to use of lands and resources for traditional purposes; potential change to physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; and potential change to social, health, and economic conditions based on the Ktunaxa Nation Sectors.

An assessment of the possible impacts on the Ktunaxa Nation's rights and interests is based on the identified HHRA and sensory receptor locations within the Project footprint, the KNRI LSA, and the KNRI RSA that relate to current and rights-based use. Where no direct input from Ktunaxa Nation was provided, based on Ktunaxa perspectives from previous publicly available EIS/Applications in the Elk Valley and

[29] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƛi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

consultation and engagement activities conducted to date as summarized in Section 23.5 (IAAC, 2015a; Appendix 23-A, Tables 23.A-1 and 23.A-2), it is understood that there may be potential for the Ktunaxa Nation to utilize the KNRI LSA and the KNRI RSA for traditional purposes.

It should be noted that as previously identified, Ktunaxa Nation's rights and interests are defined as those outlined in the correspondence from the Impact Assessment Agency of Canada to Chief Teneese and Council of Ktunaxa Nation (IAAC, 2015a), indicating the Agency's preliminary understanding of the nature and extent of the Ktunaxa Nation's rights and interests as described in Section 23.5.4.

23.11.1 Assessment Methods

As required by IAAC (EIS Guidelines; CEAA, 2015; IAAC, 2015a), an assessment on the level of severity of the impacts that the Project may have on the exercise of rights and related interests has been undertaken. An iterative approach has been taken to evaluate the severity of impacts; it may be deemed necessary to update the evaluation as new information becomes available and/or as new mitigation measures are proposed. As previously stated, at the time of the submission of this chapter, the Ktunaxa Nation have yet to undertake their Section C and thus no Traditional Knowledge/Traditional Land and Resource Use study within the KNRI LSA for the Project is currently available. Ktunaxa Nation did provide HHRA and sensory receptor locations for current and rights-based use related to Ktunaxa traditional use that are utilized in the impact on rights assessment in this section where applicable and publicly available information regarding Ktunaxa perspectives. Therefore, the severity assessment may be further refined through continued consultation with the Ktunaxa Nation. Additionally, the severity assessment considers that the confidence of the residual effects to the use of lands and resources by the Ktunaxa Nation is considered to be moderate where applicable, reflecting the current information that is available for the assessment.

Generally, the methods for assessing potential impact on Ktunaxa Nation Title and Rights and related interests in relation to the Project are as listed in Sections 23.3. Further details are provided on the following:

- Considering the seven guiding principles as outlined in the CEAA-Mikisew Cree First Nation Methodology for Assessing Potential Impacts on the Exercise of Aboriginal and Treaty Rights of the Proposed Frontier Oil Sands Mine Project (CEAA-MCFN, 2018), to understand whether the Project will have a residual impact on the exercise of rights. A lens based on the seven guiding principles was applied for the assessment of impacts to rights and interests related to the Project; and
- Identifying and describing potential adverse impacts that may result from the residual effects including cumulative environmental effects in terms of IAAC Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples, updated 2022 (IAAC, 2022b). The criteria include likelihood, geographic extent, frequency, duration, and reversibility, cultural well-being, health, cumulative impacts, governance, impact inequity, and the severity of these adverse impacts[30].

Current use as defined in Section 23.7.1 is reflective of current use of water and lands and resources for traditional purposes as well as the potential desired future use by Ktunaxa Nation. The potential future use of the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place for the exercise of Ktunaxa Nation's rights and interests is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could potentially impact the potential

[30] Based on the criteria identified by IAAC in the Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples, updated 2022.

future use of water for traditional purposes, the use of lands and resources for traditional purposes, potential change to physical and cultural heritage activities and areas, potential change to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and the anticipated future social, health, and economic conditions.

The assessment of the potential impacts on Ktunaxa Nation's rights and interests described in Section 23.11.2 are in consideration of the existing and potential future use of the Project footprint, the KNRI LSA, and the KNRI RSA by the Ktunaxa Nation to exercise their rights and interests with and without the Project. This section also notes where applicable that the potential future use of the Ktunaxa Nation to exercise its rights in the KNRI LSA and the KNRI RSA may likely be influenced by past and ongoing development activities that have been included in the description of the baseline conditions in Section 23.7 utilizing the assessment methodology identified in Chapter 5 and referenced in Sections 23.3, 23.8.2, and 23.8.3.2.

23.11.1.1 Limitations of the Impact on Rights and Interests Assessment

As noted in Section 23.8.2.1, not all heritage is "tangible" and can be quantified as physical sites and objects. Intangible cultural heritage for the Ktunaxa Nation includes traditional knowledge, practices, and skills which can define culture such as language, oral history, art techniques, rituals, stories, intergenerational transfer of knowledge, representations, values, landscapes, and place names. Ktunaxa Nation's language and culture, which are intangible cultural resources are understood to include non-site specific values that are based in Ktunaxa Traditional Knowledge but which may be spatially indistinct or difficult to record using maps. The connection that the Ktunaxa have with the land is an example of intangible cultural heritage. As a result of environmental change, including from urbanization and industrial development, the connection to the land can be "broken" and result in impacts to intangible cultural heritage.

The Ktunaxa Nation have identified HHRA and sensory receptor locations within the Project footprint, the KNRI LSA and the KNRI RSA that relate to current and rights-based use. There is information available publicly regarding the importance of the land proposed for the Project and how it ties to Ktunaxa cultural heritage and correspondence from KNC (KNC, 2016b; 2018; 2021m; 2022b) that outlines the importance of the Grave Prairie Cultural Landscape. The Grave Prairie Cultural Landscape is a land-based feature that has been identified by the Ktunaxa Nation as being of cultural importance. Information available to date on how impacts to this landscape feature might result in cultural heritage impacts has been limited to the Project's rail load-out facility. As consultation on the siting of the facility are on-going, it is to be noted that while the potential of the physical changes to the Grave Prairie Cultural Landscape may also result in impacts to intangible cultural heritage that have been identified, without further input from the Ktunaxa Nation that details their perspective on what these cultural impacts may mean to the Nation, confidence in the characterization of the determination of severity of adverse cultural impact is rated as low. At this time, due to the lack of information available on specific intangible cultural values, Section 23.11.2.1 does not fully assess the degree of severity of adverse cultural impacts.

Through ongoing engagement and consultation with the Ktunaxa Nation, NWP hopes to gain more insight into the potential for these impacts and to better understand their severity to allow for the development of appropriate impact management measures. It is to be noted that the assessment on impact to the Ktunaxa Nation's rights and interests is not meant to supersede the Crown's formal consultation process to determine adverse impacts to rights addressed in Section 23.11.

23.11.1.2 Assessment Boundaries

Study areas represent the spatial boundaries that encompass the areas, at appropriate scales and spatial extents, in which the Project is anticipated to interact with a VC or VC group (Chapter 5). For the purposes of the assessment of impacts to Ktunaxa Nation Title and Rights and related interests, the three spatial boundaries defined in Section 23.8.2.2 were considered in the assessment: the Project footprint, the KNRI LSA, and the KNRI RSA.

23.11.2 Potential Impact on Ktunaxa Nation Rights and Interests

As noted in Section 23.5.4, IAAC indicated their preliminary understanding of potential impacts of the Project on Ktunaxa Nation's Aboriginal rights (IAAC, 2015a) to include:

- Fishing;
- Hunting and Trapping;
- Harvesting and Gathering; and
- Archaeological sites (i.e., Physical and Cultural Heritage).

In the assessment of potential impacts on Ktunaxa Nation's rights and interests, determining the severity of potential impacts has considered historic and current (including future) use of water and lands and resources for traditional purposes, physical and cultural heritage, and social, health, and economic conditions. Based on the assessment of the potential environmental effects of the Project, that consider Project-related residual effects and residual cumulative effects for the applicable VC of interest (e.g., Wildlife and Wildlife Habitat VCs) and anticipated effects to non-VC groups (i.e., broad ecosystem types), and after implementation of the mitigation measures outlined in the Indigenous Impact Management Plan (Section 23.10) as well as additional information (certain intermediate and receptor VCs) included in the assessment; the potential adverse impacts on Ktunaxa Nation's rights and interests that may remain are organized into the relevant Ktunaxa Nation Sectors.

Non-site specific values that are based in Ktunaxa Traditional Ecological Knowledge are included within the Land and Resources and the Traditional Knowledge and Language Sectors where applicable. Sectors that are not addressed separately may have VCs that are cross-listed in corresponding Sectors and may have potential impacts to Ktunaxa Nation's rights and interests that are expected to have been mitigated. The Education and Employment Sector is assessed within the applicable Social and Health and the Economic Investment Sectors due to cross section areas of interest where potential effects have been assessed. Thus, the evaluation of potential impacts on Ktunaxa Nation's rights and interests are as follows:

- Water Sector: Change to use of water for traditional purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional fishing purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional hunting and trapping purposes;
- Lands and Resources Sector: Change to use of lands and resources for traditional harvesting and gathering purposes;
- Traditional Knowledge and Language Sector: Change to physical and cultural heritage and change to a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; and

- Social and Health Sector and Economic Investment Sectors: Change to social, health conditions; and economic conditions.

As outlined in Table 23.11-1, the potential impact on Ktunaxa Nation's rights and interests related to Physical and Cultural Heritage as well as any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance are combined for the purposes of the impact assessment.

Based on the EIS guidelines, the assessment of the potential impacts of the Project components and activities, in all phases, are in consideration of the existing and potential future use of the Project footprint, the KNRI LSA, and the KNRI RSA by the Ktunaxa Nation to exercise their rights and interests with and without the Project. This section includes a comparison based on Ktunaxa Nation's rights and interests organized by corresponding Sectors of the impact on potential future conditions with the Project and the potential future use of the Project footprint without the Project. Potential future use of lands and resources for traditional purposes as they correspond to the Ktunaxa Nation's rights and interests without the Project are addressed in Section 23.11.2.1 under their respective potential impact on the Ktunaxa Nation's rights and interest for each identified Sector.

23.11.2.1 Characterization of Severity of Adverse Impacts on Ktunaxa Nation's Rights and Interests

The assessment of severity of adverse impacts on Ktunaxa Nation Title and Rights and related interests involves the consideration and evaluation of specific impact assessment criteria based on the degree (i.e., 'level') of severity for adverse impacts on the rights of Ktunaxa Nation. Criteria used to characterize the degree of severity for adverse impacts on rights are defined in Table 23.11-1. The Agency's (IAAC) proposed suite of criteria (IAAC, 2022b) has been utilized to evaluate the severity of a wide range of adverse impacts on the rights of Indigenous Communities. This suite of criteria has been used as an inventory from which the set of criteria considered for the assessment of impacts on the Ktunaxa Nation's rights and interests has been determined, based on consultation conducted to date with Ktunaxa Nation (Appendix 23-A, Tables 23.A-1 and 23.A-2) and the methods and VCs that have been identified.

The set of severity assessment criteria included in Table 23.11-1 is adapted from the *Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples*, updated 2022 (IAAC, 2022b) for the Project. The characterization for the severity of impacts (low, moderate, and high) have been customized for this assessment. The criteria included for this assessment are likelihood, geographic extent, frequency, duration, and reversibility, cultural well-being, health, and cumulative impacts. As a result of Ktunaxa information (the identification of HHRA and sensory receptor locations and characteristics related to the current land and resource use and rights-based land and resource use), publicly available information, and consultation activities with Ktunaxa Nation (Appendix 23-A, Table 23.A-1 and 23.A-2), the two criteria proposed in the suite that have not been carried forward are governance and impact inequity.

As previously noted, the Ktunaxa Nation have yet to produce their Section C for the Project, nor have they provided a Project-specific Traditional Knowledge/Traditional Land and Resource Use study within the Project footprint and the KNRI LSA for the Project. As such the severity assessment of the impact on Ktunaxa Nation's rights and interests is based on the set of criteria noted in Table 23.11-1, HHRA and sensory receptor locations and characteristics related to the current land and resource use and rights-based land and resource use, and on NWP's current understanding of the Ktunaxa Nation's rights and

Table 23.11-1: Criteria for Assessing the Level of Severity of the Impacts of the Project on the Exercise of Rights (IAAC, 2022b)[31]

Impact Criteria	Characteristics	Severity of Impact Levels
Likelihood	The full lifecycle of the Project, including its various stages and lifespan, is considered in determining the likelihood of an effect occurring. The likelihood of an impact on rights occurring considers the certainty of the potential change to environmental conditions as a result of the Project and available information on the extent to which the rights holder uses the Project area to exercise their rights.	Low – A potential impact is unlikely but could occur. The land/water resource is not known to be used by the rights holder to exercise their rights. Moderate – A potential impact is likely to occur. The land/water resource is known to be used but infrequently by the rights holder to exercise their rights. High – An impact is highly likely to occur. The land/water resource is known to be used frequently by the rights holder to exercise their rights.
Geographic Extent	Geographic extent refers to the spatial area over which the impact is to occur. The qualitative scales for characterizing geographic extent include the Project footprint, the KNRI LSA, and the KNRI RSA. The extent of an impact is described in terms of how much of the traditional territory would be impacted. Key information required for this criterion includes the location of each Indigenous Community's traditional or treaty territory and interactions with the Project's effects.	Low – The impact could occur over a small spatial extent (e.g., Project footprint) relating to the exercise of rights. Impacts are not expected within areas of preferred or exclusive use. Moderate – The impact could occur over a moderate spatial extent (e.g., the LSA) relating to the exercise of rights. Impacts may occur within areas of preferred use. High – The impact could occur over a large spatial extent (e.g., the RSA) relating to the exercise of rights. Impacts expected within areas of preferred use or high value.
Frequency, Duration, and Reversibility	Frequency describes how often an impact could occur within a given time period. Duration refers to the length of time that an impact on a right is discernible. A reversible impact is one where the exercise of rights is expected to recover from the impact caused by the Project.	Low – The impact lasts less than 5 years. The impact would be confined to one discrete period during the life of the Project. The impact may be reversed in the short term. Moderate – The impact may last up to one generation. The impact would occur at sporadic, intermittent intervals, and throughout the operation and decommissioning of the Project. The impact may be reversed within one generation.

[31] Based on the criteria identified by IAAC in the Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples, updated 2022.

Impact Criteria	Characteristics	Severity of Impact Levels
		High – The impact is likely to persist over multiple generations. The impact would occur constantly during, and potentially beyond, the life of the Project. The impact cannot be reversed either in whole or in part.
Cultural Well-being	Cultural well-being can be considered as the ability of an Indigenous community to continue customs, traditions, and practices integral to the community's distinct culture. Many rights are based on a unique relationship to the landscape that cannot be replicated elsewhere. The assessment considers impacts on the following types of areas that could hold cultural importance within an Indigenous community's territory. It is noted that the values associated with the different areas may overlap with one another: Physical heritage areas and structure, site, or item that is of historical, archaeological, paleontological, or architectural significance with certain tangible resources, such as notable densities of archaeological sites or burial grounds. Areas where traditional lifestyles are practiced through activities such as fishing, hunting and trapping, and harvesting and gathering. Ceremonial/sacred sites of particular spiritual importance. Cultural landscapes with interconnected access, including the travel routes and spaces between them.	Low – No or little indication that there would be any impact on areas of cultural importance. The impact is not likely to impeded peaceful access to practice cultural activities. The Indigenous community has only minor concerns about impacts from the Project or activity on health or integrity of resources and/or places used to practice rights. Moderate – There may be an impact on areas and/or practices of cultural importance. The impact may impede or alter access to practice cultural activities. There may be loss of habitat or availability of culturally important species. The disturbance may be of a physical or sensory nature. High – There would likely be an impact on areas and/or practices of cultural importance. Multiple impacts could occur to one area of high importance. There would likely be loss of habitat or availability and quality of culturally important species. Access to areas required to practice cultural activities would Kiley be disrupted or limited. The disturbance may be of a physical or sensory nature or may affect laws, knowledge, customs, and/or spiritual practices.
Health	Utilizing health as dimension for analysis of severity for all impacts on rights is to capture the inter-relatedness of impacts on rights and impacts on the health conditions of the Indigenous community.	Low – The Indigenous community has minor to no concerns about impacts from the Project or activity on health, the Project is not likely to pose environmental effects to health, including effects to country foods. Moderate – There may be an impact on the physical, mental, emotional, and/or spiritual aspects of health on an individual and/or broader community basis. The Project has the potential to result in effects on

Impact Criteria	Characteristics	Severity of Impact Levels
	For the purposes of this assessment, "health" includes considerations of physical, mental, emotional, and spiritual health, including Indigenous views of health.	food sources or cultural species of importance to traditional diets, and to food security. The exercise of rights is altered due to quantifiable and/or perceived effects from the Project. High – There are significant effects from the Project on food sources or cultural species and to food security. The community has serious concerns about impacts to holistic and/or traditional models of health. Perception of effects to health interferes with, alters, and/or stops the exercise of Indigenous rights, the Project is likely to impact health on a community-wide level.
Cumulative Impacts	Cumulative impacts on a right may result from the Project in combination with impacts of past, existing, and future projects or activities. Cumulative impacts may have a regional or historic context and may extend to aspects of rights related to socio- economic conditions, health, culture, heritage, and other matters tied to an Indigenous community's history and connection to the landscape. While the outcomes of the cumulative effects assessment, are included under this criterion, cumulative impacts consider a broader range of impacts and are not limited to a consideration of impacts from projects and activities.	Low – The Project or activity has no to limited impacts on environmental components relevant to rights and/or is in an area with few past/ongoing developments that cause environmental effects. Cumulative effects are not expected to results from the development of the Project. Moderate – There are other land use activities, including existing or proposed Projects in the community's territory that impact the practice of rights. The development of the Project may cause environmental effects that could combine with the ongoing or future environmental effects of other Projects that may contribute to addition impacts on rights. High –There are many historic, current, or proposed Projects in the area and there is a high level of disturbance on the environment that is impacting the excise of rights. The development of the Project is likely to result in additional environmental effects that are likely to combine with the ongoing or future environmental effects that may contribute to addition impacts on rights.

Source: Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples, updated 2022 (IAAC, 2022b).

interests according to publicly available information in relation to the Project. As noted in Section 23.7.1, the HHRA and sensory receptor locations are within the KNRI LSA with some dwellings (permanent and seasonal), habitation and subsistence use, subsistence use (full and upland seasonal) and transportation use (upland seasonal) overlapping with the Project footprint.

As previously noted, the Ktunaxa Nation have yet to produce their Section C for the Project, nor have they provided a Project-specific Traditional Knowledge/Traditional Land and Resource Use study within the Project footprint and the KNRI LSA for the Project. As such the severity assessment of the impact on Ktunaxa Nation's rights and interests is based on the set of criteria noted in Table 23.11-1, HHRA and sensory receptor locations and characteristics related to the current land and resource use and rights-based land and resource use, and on NWP's current understanding of the Ktunaxa Nation's rights and interests according to publicly available information in relation to the Project. As noted in Section 23.7.1, the HHRA and sensory receptor locations are within the KNRI LSA with some dwellings (permanent and seasonal), habitation and subsistence use, subsistence use (full and upland seasonal) and transportation use (upland seasonal) overlapping with the Project footprint.

Confidence in the assessment results considers the reliability of data and analytical methods used in the assessment of impact on rights. The confidence in the characterization of the severity of adverse impacts to Ktunaxa Nation's rights and interests is considered to be moderate due to the level of information provided by the Ktunaxa Nation. Due to the preliminary nature of the understanding of the Ktunaxa Nation's rights and interests (Section 23.5.4) and based on feedback from the Ktunaxa Nation Appendix 23-A, Table 23.A-1 and 23.A-2), it is expected that the Crown consultation process will confirm the contents of the assessment on impact on Ktunaxa Nation's rights and interests described in this section.

23.11.2.1.1 Impact on Use of Water for Traditional Purposes

The Project has the potential to impact on Ktunaxa Nation's rights and interests through the following:

- The potential for temporary restrictions on access to sections of Alexander Creek due to Project activities (e.g., during blasting activities).
- The potential for change in water quality and aquatic habitat due to the resulting influence on the downstream reaches of Alexander Creek with the potential to impact Ktunaxa Nation's rights to access and use water.
- The potential for the permanent alienation of Ktunaxa Nation from water access locations within the Project footprint (with the removal of approximately 5.5 km of West Alexander Creek).
- The Project residual effects to the surface water quality and quantity VCs indicate the potential for an impact on Ktunaxa Nation's opportunity to access healthy aquatic systems for traditional purposes.
- The potential for the permanent alienation of the Ktunaxa Nation from locations for water usage within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.

It is to be noted that the results of the effects assessment on surface water quantity also indicate that the potential impacts of future climate change will have a substantial influence on surface water quantity (i.e., magnitude and timing of streamflows) along the downstream watercourses in the Aquatic RSA.

The impact on the right to use water for traditional purposes due to the Project are characterized as follows:

- Likelihood: *Moderate*, there is potential for an impact to water rights to occur due to the identification of HHRA and sensory receptors located along and near the Alexandra Creek. While the Ktunaxa Nation have not provided details regarding their form and frequency of use of the Alexander Creek within the Project footprint, it is acknowledged that the Ktunaxa Nation has the potential to use Alexander Creek in the KNRI LSA to support water use and access to healthy aquatic systems.
- Geographic Extent: *Low*, as the impact on the exercise on rights will occur over a small spatial extent (West Alexander Creek that is to be removed and parts of Alexandra Creek that may be impacted). Ktunaxa Nation has not provided any specific information to date regarding their current use of West Alexander Creek or Alexander Creek within the Project footprint or whether they have an interest in using the creek in the future.
- Frequency, Duration, and Reversibility: *Low to Moderate,* as while the impact (removal) to West Alexander Creek will be permanent, impacts to Alexander Creek are expected to be infrequent, during the life of the Project only, and largely reversible. The implementation of the Erosion and Sediment Control Management Plan (Chapter 33, Section 33.4.1.4 and the Site Water Management Plan (Chapter 33, Section 33.4.1.8) along with regular inspections to ensure drainage, erosion, and sediment control are effective and functioning properly, and timely repairs and adjustments as required will minimize effects to the creek.
- Cultural Well-being: *Moderate*, as there is potential for the Alexander Creek to be culturally important to the Ktunaxa Nation, as during conformity review, KNC noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa Nation cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Table 23.A-2). It is acknowledged that Ktunaxa Nation has the potential to use watercourses such as Alexander Creek that support water use and access to healthy aquatic systems given the importance of water quality within the KNRI LSA and RSA based on preliminary consultation with Ktunaxa Nation (Appendix 23-A, Table 23.A-1), the identification of HHRA and sensory receptor locations related to the current or rights-based use by Ktunaxa Nation within the Project footprint and the KNRI LSA, and those uses expected to occur in the KNRI LSA based on publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).
- Health: *Low*, as the Project is not likely to pose environmental effects to health, including effects to water use. Surface water quality is not expected to be altered significantly due to mitigation measures identified (Site Water Management Plan) and continued monitoring will help improve adaptive management measures. The low rating also reflects that while HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint have been included in the assessment, the Ktunaxa Nation has not provided any specific information to date regarding their current use of Alexandra Creek or whether they have an interest in using the creek in the future.
- Cumulative Impacts: *Moderate to High*, as the Project, in combination with other reasonably foreseeable future projects and activities, is not anticipated to result in measurable residual cumulative effects for surface water quality and quantity beyond limited areas within the KNRI LSA. Furthermore, the residual effects of the Project on surface water quality and quantity were

found to vary with respect to magnitude and were generally limited to the upper reaches of the receiving watercourses. Accordingly, no measurable residual effects for surface water quality and quantity are predicted beyond the Aquatic LSA boundary. The Project's contribution to residual cumulative effects on access to healthy aquatic systems is not anticipated to reduce the ability and opportunity of Ktunaxa Nation to practice their rights and interests related to water use within the KNRI RSA. Due to the on-going impacts of past and present projects and activities in combination with other reasonably foreseeable future projects and activities, on watercourses in the Elk Valley, the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, and the uncertainty regarding the implications of regional climatic changes that may impact water quality, the cumulative impacts have been assessed as moderate to high. As noted in Table 23.7-8, Ktunaxa Nation perspectives regarding impacts to water quality in the Elk Valley note that as a result of industrial open pit coal mining, these impacts became apparent in the time period from 1931 and 1980. Industrial effects in the Elk Valley, including coal dust and impacts to water, accumulated to the point where some Ktunaxa users were discouraged from practicing rights in the Elk Valley, especially given other constraints and obstacles starting in 1981. As such, the Ktunaxa Nation took a stronger role in the formal management of impacts to water as increasing concerns regarding habitat destruction became more prominent as a result of mining (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a). The cumulative impact is also determined as moderate to high considering available Ktunaxa perspectives on the Elk Valley and the limited nature of information that has been provided to date by the Ktunaxa Nation regarding their level of use and interest to conduct traditional activities related to water use within the Project footprint. It is expected that their ability to know and teach the Ktunaxa way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's rights for the use of water for traditional purposes is rated as moderate to high based on the criteria noted above. The potential impacts to water quality and access to healthy aquatic systems are predicted to be small in spatial extent. Mitigation and the Project's design to reduce impacts to water quality, access to healthy aquatic systems, and the provision of the listed mitigation measures, should allow for access to healthy aquatic to continue in the Elk Valley (other than the upper sections of West Alexander Creek) including those for traditional purposes. There is potential for the Project to result in the permanent alienation of Ktunaxa Nation from water access locations within the Project footprint, for which there is no current mitigation identified (Appendix 23-A, Table 23.A-1; KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice related traditional activities (e.g., water use) may also have impacts on intangible cultural heritage. Due to the lack of current information available on their use of the Project footprint for traditional purposes, understanding and characterizing these potential related impacts to their intangible cultural heritage requires further input from the Ktunaxa Nation.

The residual Project effects on surface water quality and quantity are limited to West Alexander Creek and no measurable residual effect on surface water quality and quantity is predicted beyond the Aquatic LSA boundary; and cumulative effects are not expected to be detectable in the Elk River at Sparwood or further downstream in the Elk River or Lake Koocanusa. It should be noted that there is existing potential for water use access available in the KNRI LSA and RSA with respect to watercourses outside of the Project footprint. In consideration of the relatively small impact area of the Project, the anticipated effectiveness of the proposed mitigation and the availability of watercourses in the KNRI RSA, the Project is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their rights and interests related to water use within the KNRI RSA.

Baseline data was sufficient to evaluate effects for the surface water quality and quantity VCs. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to water use. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. Based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, the assessment determined that the degree of severity to Ktunaxa Nation's rights and interests are rated as moderate to high.

Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up are expected to improve the confidence rating in the severity assessment of impact on Ktunaxa Nation's rights and interests.

Ktunaxa Perspectives

As noted in Section 23.7.1.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access water in sufficient quantity and quality, in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water according to the Ktunaxa law, ʔaknumu¢tiɬiɬ (KLR et al., 2011).

From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaʕa'k ɖapiqapsin (all living things). Over time this may lead to significant impacts on Ktunaxa stewardship responsibilities (ʔaknumu¢tiɬiɬ) and compromises the transmission of knowledge and practices related to those water systems for future Ktunaxa generations (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on water quality, spatial disturbance, and other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a). During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley

watersheds providing Ktunaxa cultural opportunities that are relatively free from impacts of industrial coal mining (Appendix 23-A, Table 23.A-2).

Potential Future Use of Water for Traditional Purposes without the Project

This section describes the potential future use of water for traditional purposes in the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future use of water for traditional purposes as it relates to the potential impact on the Ktunaxa Nation's ability to exercise this right. As previously noted, the Ktunaxa Nation has not provided any information to date regarding their current use of water in the Project footprint or whether they have an interest in using the waterways in the Project footprint in the future. It is acknowledged that Ktunaxa Nation has the potential to use watercourses in the KNRI LSA such as Alexander Creek that support water use and access to healthy aquatic systems given the importance of healthy waterways within the KNRI LSA and RSA. It is noted that Ktunaxa citizens have previously expressed elevated concern regarding industrial contaminants in the area (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

Past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting the real or perceived quality and quantity of water use available for Ktunaxa Nation in preferred locations to exercise Ktunaxa Nation's rights and interests. As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapters 9, 10, and 11, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on watercourses (water quality and quantity).

There is a potential for cumulative surface water quality and quantity effects without the Project as the rivers and streams of the KNRI RSA including multiple reaches have potentially experienced industrial effects and contaminant loading due to the impact on related ecosystems by forestry, mining, recreational development, and associated road networks. The Elk River system has been noted to be affected by sport fishing, transportation infrastructure, mining related impacts, and forestry activities which are anticipated to continue without the Project. The Elk River Valley has also seen substantial residential development and associated municipal water use and waste effluent deposition which are anticipated to continue without the Project.

While past, present, and the reasonably foreseeable future projects and activities in the KNRI RSA have the potential for impact on Ktunaxa Nation's rights for the potential future use of water for traditional purposes, the total footprint of the potential future use without the Project in the Elk Valley represents a relatively small proportion of the overall Elk River watershed area. It is anticipated that the potential impact on Ktunaxa Nation's rights for the potential future use of water for traditional purposes that could result from the reasonably foreseeable future projects and activities in the KNRI RSA will be minor in comparison to the impacts of climate change on the timing and magnitude of streamflows within the receiving watercourses in the KNRI RSA. Table 23.11-2 presents a summary of the potential impacts of the Project on the Ktunaxa Nation's rights and interests related to water use in comparison to a future scenario without the Project.

Table 23.11-2: Summary of Impact on Ktunaxa Nation's Water Rights and related Interests based on Potential Future Use with and without the Project

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impacts on Ktunaxa Nation's Rights related to the Use of Water for Traditional Purposes	Construction and Pre-Production	Potential loss of the use of water and impact on rights due to potential interactions with: • Project activities such as on-site transportation of personnel, construction material resulting in elevated total suspended solids (TSS) concentrations in nearby waterbodies through atmospheric deposition with the potential to impact on Ktunaxa Nation's opportunity to access healthy aquatic systems for traditional purposes. • Through non-contact surface runoff/erosion where bare soils are exposed during logging, grubbing, excavation and sedimentation of bare soils with the potential to impact on the use of clean water. • Potential ceremonial/sacred areas around water impacted by changes in water levels and water quality with the potential to impact on Ktunaxa Nation's opportunity to use water access locations. • Change in the value of place as a result of the change in accessibility to water within the Project footprint and the KNRI LSA, and the loss of waterbodies within the Project footprint during all Project phases. • The potential for the permanent alienation of the Ktunaxa Nation from locations for water usage within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	Potential impact on rights without the Project: • The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to water use. There is potential for the use of watercourses by the Ktunaxa Nation citizens in the KNRI LSA (e.g., Alexander Creek) and in the RSA (e.g., Elk River). • Past and current development activity in the KNRI LSA and RSA has resulted in changes to watercourses and water quality such as in the Elk River. This includes for example other mines, forestry activity, housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and continue to have influence on watercourses (water quality and quantity). • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting real or perceived quality and quantity of water available for Ktunaxa Nation in preferred locations. These past and ongoing activities may be impacting the ability of
	Operations	Potential loss of the use of water and impact on rights due to potential interactions with: • Through the release of nitrogen compounds and other contaminants from storage areas and wash facilities with the potential to impact on the use of clean water.	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• Loss of West Alexander Creek as a result of mine development and the storage of mine rock with the potential to impact on Ktunaxa Nation's opportunity to access healthy aquatic systems for traditional purposes. • Surface water quality and quantity changes in Alexandra Creek through mining activities (sedimentation, erosion, spills, contact runoff, nitrate, selenium, sulphate contamination from broken rock and dust) with the potential to impact on the use of clean water. • Potential reduction of flows in Grave Creek through use as a secondary source of process make-up water, with potential to impact on surface water quality and quantity with the potential to impact on the use of and accessibility to clean water. • Potential reduction in flow of West Alexander Creek during coal reject disposal, hauling and dumping or mine rock, with potential to impact to surface water quality and quantity with the potential to impact on the use of and accessibility to clean water. • Potential for loss of downstream aquatic habitat in Alexandra Creek and interaction with surface water through sedimentation or changes in water quantity through the management (discharge) of the Main Sediment Pond with the potential to impact on the use of and accessibility to clean water. • The potential for the permanent alienation of the Ktunaxa Nation from locations for water usage within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	the Ktunaxa Nation to exercise their rights related to water in the KNRI LSA and RSA. • Related to the local study area changes described above, the Elk River valley has also seen substantial residential development and associated municipal water use and waste effluent deposition which may potentially impact fish and fishing opportunities that are anticipated to continue without the Project.
	Reclamation and Closure	Potential loss of use of water and impact on rights due to potential interactions with:	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• Surface water quality through erosion and sedimentation of bare soils with the potential to impact on the use of clean water. • Potential change to the interconnection throughout the ecosystem due to the interaction of ecological features (e.g., healthy aquatic systems and wildlife VCs) with the potential to impact on the use of clean water. • Potential for reduction of the quality and accessibility of water resources should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa Nation from locations for water usage within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	
	Post-Closure	Potential loss of use of water and impact on rights due to potential interactions with: • Surface water through erosion and sedimentation or changes in water levels through the decommissioning of the Main Sediment Pond and due to permanent rail line with the potential to impact on the use of and accessibility to clean water. • Potential for reduction of the quality and accessibility of water resources should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa Nation from locations for water usage within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

23.11.2.1.2 Lands and Resources Sector

Impact on Use of Lands and Resources for Traditional Fishing Purposes

The Project has the potential to impact on Ktunaxa Nation's rights and interests in relation to fish through the following:

- The potential for reduction in populations of fish species of interest (e.g., Westslope Cutthroat Trout) due to impacts on fish habitat from the removal of West Alexander Creek (though recognizing that habitat loss will be offset through the *Fisheries Act* required fish habitat compensation measures included in Chapter 12, Section 12.5.3).
- The potential for temporary restrictions on access to Alexander Creek due to Project activities (e.g., during blasting activities) resulting in impacts on fishing rights.
- The potential for change in water quality in Alexander Creek that could result in impacts to abundance and quality of fish species of interest and potential resulting in impact on traditional fishing activities.

The potential changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods.

- The potential for the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.

The Project residual effects to the fish and fish habitat VCs, including Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, and Bull Trout indicate the potential for an impact on Ktunaxa Nation's opportunity to fish and access healthy aquatic systems for future fishing opportunities.

The impact on the opportunity to fish and the use of fish species for traditional purposes due to the Project are characterized as follows:

- Likelihood: *Moderate*, as there is the potential for this impact to occur, the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to fishing. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. It is acknowledged that Ktunaxa Nation has the potential to use watercourses that support fish and fish habitat VCs, including Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, and Bull Trout given their interest in these species within the KNRI LSA based on the identification of HHRA and sensory receptor locations and publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).
- Geographic Extent: *Low*, as the impact on the exercise on rights will occur over a small spatial extent (West Alexander Creek). The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to fishing. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. Impacts on rights and interests within areas of Ktunaxa Nation's preferred or exclusive use are based on

consultation with Ktunaxa Nation (Appendix 23-A, Tables 23.A-1 to A-3) and as identified by IAAC (IAAC, 2015a).

- Frequency, Duration, and Reversibility: *Low to Moderate,* as while the impact (removal) to West Alexander Creek will be permanent, impacts to the remaining sections of Alexander Creek are expected to be infrequent, during the life of the Project only and largely reversible. Ktunaxa Nation has not provided any specific information to date regarding their current use of Alexandra Creek for fish or fishing opportunities or whether they have an interest in using the creek in the future, and while the removal of sections of West Alexander Creek, is expected to affect fish and fish opportunities, the opportunity to fish by Ktunaxa Nation is not expected to be affected in the long term. The main branch of Alexander Creek which has the potential for fish and fishing opportunity, will not be physically altered by the Project. Impacts to fish habitat, such as the loss of instream habitat, will be compensated for through the Fish and Fish Habitat Management Plan resulting in no net loss of instream habitat as a result of the Project.
- Cultural Well-being: *Moderate*, as there is potential for the Alexander Creek to be culturally important to the Ktunaxa Nation, the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to fishing. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the Ktunaxa Nation to utilize these watercourses for traditional purposes as well as other watercourses in the KNRI LSA. It is acknowledged that Ktunaxa Nation has the potential to use watercourses that support Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, and Bull Trout given their interest in these species within the KNRI LSA based on the identification of HHRA and sensory receptor locations and publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).
- Health: *Low*, as the Project is not likely to pose environmental effects to health, including effects to country foods related to fish species harvested by Ktunaxa Nation as surface water quality is not expected to be altered significantly due to mitigation measures identified (Site Water Management Plan) and continued monitoring will help improve adaptive management measures. The low rating also reflects that the Ktunaxa Nation has not provided any specific information to date regarding their current use of Alexandra Creek for fish and fishing opportunity or whether they have an interest in using the Creek in the future.
- Cumulative Impacts: *Moderate to High*, as the Project in combination with other reasonably foreseeable future projects and activities is not anticipated to result in measurable residual Project effects that reduce the ability and opportunity of Ktunaxa Nation to practice their rights and interests related to fishing within the KNRI RSA. Due to on-going impacts of past and present projects and activities in combination with other reasonably foreseeable future projects and activities, on watercourses in the Elk Valley, the limited information currently available on the current and potential use of lands and resources within the KNRI RSA, and the uncertainty regarding the implications of regional climatic changes that may impact fish habitat availability, the cumulative impacts have been assessed as moderate to high. As noted in Table 23.7-8, Ktunaxa Nation perspectives regarding impacts to fishing in the Elk Valley note that as a result of industrial open pit coal mining, these impacts became apparent in the time period from 1931 and 1980. Industrial effects in the Elk Valley, including coal dust and impacts to fishing as a result of the effects to water quality, accumulated to the point where some Ktunaxa users were

discouraged from practicing fishing rights in the Elk Valley, especially given other constraints and obstacles starting in 1981. As such, the Ktunaxa Nation took a stronger role in the formal management of impacts to water quality and fish as increasing concerns regarding fish habitat destruction became more prominent as a result of mining (KNC et al., 2014; KNC & the Firelight Group, 2015; KNC et al., 2015; EV-CEMF, 2018; BC EAO, 2020b, KNC, 2020a; KNC, 2021a). The cumulative impact is also determined as moderate to high considering available Ktunaxa perspectives on the Elk Valley and the limited nature of information that has been provided to date by the Ktunaxa Nation regarding their level of use and interest to conduct traditional fishing within the Project footprint. It is expected that their ability to know and teach the Ktunaxa way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's rights for the use of lands and resources for fishing and fish opportunities is rated as moderate to high. The potential impacts to fish and fish habitat are predicted to be small in spatial extent. Mitigation and the Project's design to reduce impacts to fish and fish habitat VCs and the provision of fish habitat compensation, should allow for fishing opportunities to continue in the Elk Valley (other than the upper sections of West Alexander Creek) including those for traditional purposes. There is potential for the Project to result in the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint, for which there is no current mitigation identified (Appendix 23-A, Table 23.A-1). It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice related traditional activities (e.g., fishing) may also have impacts on intangible cultural heritage. Due to the lack of current information available on their use of the Project footprint for traditional purposes, understanding and characterizing these potential related impacts to their intangible cultural heritage requires further input from the Ktunaxa Nation.

The residual effects on fish and fish habitat VCs (including keystone species such as Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, Bull Trout that might be present in the Project-impacted watercourses) are limited to the upper reaches of Alexander Creek. Cumulative effects are not anticipated to be detectable in the Elk River at Sparwood or further downstream in the Elk River or Lake Koocanusa and it should be noted that there is existing potential for fishing and access available in the KNRI LSA and RSA with respect to watercourses outside of the Project footprint. In consideration of the relatively small impact area of the Project, the anticipated effectiveness of the proposed mitigation, the availability of other watercourses in the KNRI RSA, and existing potential for the harvesting of keystone species listed above that have been identified as species of importance to the Ktunaxa Nation based on preliminary feedback, HHRA and sensory receptor locations, publicly available information, and as identified by IAAC; the Project is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their fishing rights and interests within the KNRI RSA.

Baseline data was sufficient to evaluate effects for the fish and fish habitat VCs and the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to fishing. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC for but there is potential for the Ktunaxa Nation to utilize these

watercourses for traditional fishing purposes as well as other watercourses in the KNRI LSA. Based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, the assessment determined that the degree of severity to Ktunaxa Nation's rights and interests are rated as moderate to high. It should be noted that there is existing potential for fish and fishing opportunity available in the KNRI LSA and RSA with respect to watercourses outside of the Project footprint. Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures regarding fish and fish habitat are expected to improve the confidence rating and the severity assessment of impact on Ktunaxa Nation's rights and interests.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, waterbodies and watercourses continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation (KNC, 2016a). Fishing (i.e., access to wild meat) is a popular and valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Fish and fish habitat are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice fishing, the Ktunaxa Nation require access to healthy streams and rivers within their traditional territory (KNC, 2016a).

During conformity review, KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds sustaining healthy Westslope Cutthroat Trout populations, and providing Ktunaxa cultural opportunities that are relatively free from impacts of industrial coal mining (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to fish and fishing opportunities in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in fish populations, reduced access to waterways, water quality concerns in the Elk Valley), the possible future use of these areas for fishing without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future fishing activities in the KNRI LSA and RSA) (KNC, 2021m; 2022c).

Potential Future Use without the Project of Lands and Resources for Traditional Fishing Purposes

This section describes the potential future use of lands and resources related to fishing for traditional purposes in the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future use of lands and resources related to fishing as it relates to the potential impact on the Ktunaxa Nation's ability to exercise this right. As previously noted, the Ktunaxa Nation has not provided any information to date regarding their current use of lands and resources related to fishing in the Project footprint or whether they have an interest in using the waterways in the Project footprint for fish and fish opportunity in the future. It is acknowledged that Ktunaxa Nation has the potential to use watercourses in the KNRI LSA such as Alexander Creek that support fish and fish opportunity given the importance of healthy waterways within the KNRI LSA and

RSA. It is noted that Ktunaxa citizens have previously expressed elevated concern regarding industrial contaminants in the area (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

Past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting the real or perceived quality and quantity of fish and fishing opportunities available for Ktunaxa Nation in preferred locations to exercise Ktunaxa Nation's rights and interests. As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapter 12, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on watercourses (water quality and quantity) and possibly fishing activity.

There is a potential for cumulative effects without the Project as the rivers and streams of the KNRI RSA including multiple reaches have experienced industrial effects and contaminant loading due to the impact on related ecosystems by forestry, mining, recreational development, and associated road networks. The Elk River system has been noted to be affected by sport fishing, transportation infrastructure, mining related impacts, and forestry activities which are anticipated to continue without the Project. The Elk River valley has also seen substantial residential development and associated municipal water use and waste effluent deposition which are anticipated to continue without the Project.

While past, present, and the reasonably foreseeable future projects and activities in the KNRI RSA have the potential for impact on Ktunaxa Nation's rights for fishing for traditional purposes, the total footprint of the potential future use related to fishing without the Project in the Elk Valley represents a relatively small proportion of the overall Elk River watershed area. Potential effects on fish or fish habitat due to past and ongoing projects and activities in the KNRI RSA will interact with foreseeable development, and with changes in the environment, and are expected to continue to have an adverse effect on Ktunaxa Nation's rights and interests without the Project. Table 23.11-3 presents a summary of the potential impacts of the Project on the Ktunaxa Nation's rights and interests related to fishing opportunities in comparison to a future scenario without the Project.

Impact on Use of Lands and Resources for Traditional Hunting and Trapping Purposes

The Project has the potential to impact on Ktunaxa Nation's hunting and trapping rights and interests through the following:

- The potential localized changes in accessibility to wildlife associated with riparian vegetation/habitat.
- The potential for changes to accessibility to aquatic wildlife species of interest (e.g., waterfowl) with the change or loss of aquatic habitats.
- The potential for changes in wildlife food sources through changes to ecosystems/vegetation communities resulting in changes to wildlife species of interest movements/migrations.
- The potential stressor on wildlife species of interest populations (including grizzly bear, elk, and bighorn sheep) with increased access roads potentially attracting hunters, vehicle collisions, and increased road densities.
- The potential for reduction of the quality and accessibility of wildlife species of interest for traditional/cultural purposes or country foods.

Table 23.11-3: Summary of Impact on Ktunaxa Nation's Fishing Rights and related Interests based on Potential Future Use with and without the Project

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impacts on Ktunaxa Nation's Fishing Rights	Construction and Pre-Production	Potential loss of fishing opportunities and the potential to impact on fishing rights due to potential interactions with: • The loss of West Alexander Creek as a result of mine development and the storage of mine rock with the potential to impact on traditional fishing due to the potential reduction of populations of fish species of interest. • Non-contact surface runoff/erosion where bare soils are exposed during logging, grubbing, and sedimentation of bare soils with the potential to impact on traditional fishing due to potential for changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods. • Potential localized changes in accessibility to fishing areas and the riparian habitat including temporary restrictions on access to Alexander Creek (e.g., during blasting activities). • The installation of water supply pipelines from Grave Creek and West Alexander Creek to result in potential changes in water level and erosion and sedimentation with the potential to impact on traditional fishing due to potential for changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods. • The potential for the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	Potential impact on rights without the Project: • The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to water use. Project-impacted watercourses within the Project area of influence have not been specifically identified as being used by the KNC but there is potential for the use of watercourses for fishing by the Ktunaxa Nation citizens in the KNRI LSA (e.g., Alexander Creek) and in the RSA (e.g., Elk River). • Past and current development activity in the KNRI LSA and RSA has resulted in changes to watercourses and fish

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
	Operations	Potential loss of fishing opportunities and the potential impact on fishing rights due to potential interactions with: • The release of nitrogen compounds and other contaminants from storage areas and wash facilities with the potential to impact traditional fishing due to the potential for change in water quality in Alexander Creek that could result in impacts to abundance and quality of fish species of interest. • Mining activities (sedimentation, erosion, spills, contact runoff, nitrate, selenium, sulphate contamination from broken rock and dust) with the potential to impact on traditional fishing due to potential for changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods. • Potential changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural interest/use for country foods due to mining activities. • Sensory disturbances to potential fish species of interest due to detonation of explosives and other mine activities. • Potential reduction of flows in Grave Creek through use as a secondary source of process make-up water, with potential to impact on surface water quality and quantity resulting in the potential for the permanent alienation of the Ktunaxa Nation from fishing locations within the Project footprint and their ability to know and teach the Ktunaxa way of living. • Potential reduction in the flow of Alexander Creek during coal reject disposal, hauling and dumping or mine rock, with the potential to impact fish species of interest and their habitat may potentially impact on traditional fishing (due to the removal of portions of West Alexander Creek) due to the potential reduction of populations of fish species of interest. • Potential for loss of downstream aquatic habitat resulting in the change or loss of access to traditionally/culturally important fish species or access to fish as country foods.	populations. This includes for example other mines, forestry activity (including logging), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and continue to have influence on watercourses (water quality and quantity) and possibly fishing activity. • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting real or perceived quality and quantity of fish and fishing opportunities available for Ktunaxa Nation in preferred locations. These past and ongoing activities may be impacting the ability of the Ktunaxa Nation to exercise their rights related to fishing in the KNRI LSA and RSA. • Related to local area changes described above, the Elk River valley has also seen substantial residential development and associated municipal water use and waste effluent deposition which may potentially impact

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• Potential interaction with fish species of interest and their habitat through sedimentation or changes in water levels through the management (discharge) of the Main Sediment Pond may potentially impact on traditional fishing due to the potential reduction of populations of fish species of interest. • The potential for the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	fish and fishing opportunities that are anticipated to continue without the Project.
	Reclamation and Closure	Potential loss of fishing opportunities and the potential impact on fishing rights due to potential interactions with: • Fish species of interest and their habitat through erosion and sedimentation of bare soils may potentially impact on traditional fishing due to the potential reduction of populations of fish species of interest. • Potential change to the interconnection throughout the ecosystem due to interaction of ecological features may potentially impact on traditional fishing resulting in the potential for the permanent alienation of the Ktunaxa Nation from fishing locations within the Project footprint and their ability to know and teach the Ktunaxa way of living. • Potential for reduction of the quality and accessibility of fish species of interest for traditional/cultural purposes or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
	Post-Closure	Potential loss of fishing opportunities and the potential impact on fishing rights due to potential interactions with: • Fish species of interest and their habitat through erosion and sedimentation or changes in water levels through the decommissioning of the Main Sediment Pond and due to permanent rail line may potentially impact on traditional fishing due to the potential reduction of populations of fish species of interest. • Potential for access within the Project footprint through the use of Branch C Road, which will remain as a permanent access road for future traditional activities such as traditional fishing in the Post-Closure phase. • Potential for reduction of the quality and accessibility of fish species of interest for traditional/cultural purposes or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of Ktunaxa Nation from fishing locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

- The potential for the permanent alienation of the Ktunaxa from hunting and trapping locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.

Though residual effects to wildlife VCs may occur as result of the Project, no significant adverse effects are anticipated, and the potential impacts included will result in a temporary decline in the wildlife species available for use by Ktunaxa Nation in hunting and trapping practices as well as the temporary impact to the accessibility of areas used to hunt and trap in the Project footprint and the KNRI LSA.

In terms of specific wildlife VCs, grizzly bear has important significance within Ktunaxa Nation's spiritual and ceremonial teachings, songs, ceremonies, medicines, and stories as currently outlined in Sections 23.5.4, 23.7.1.2.2, and 23.8.2.2.2 and as identified by IAAC (IAAC, 2015a). Other culturally importance species highlighted in Sections 23.7.1.2.2 and 23.8.2.2.2 include ungulate VCs (e.g., elk and bighorn sheep).
The impact on the opportunity to hunt and trap for traditional purposes due to the Project are characterized as follows:

- Likelihood: *Moderate*, as while there is potential for an impact to occur due to the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, based on the information available, the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint for hunting and trapping. It is acknowledged that the Ktunaxa Nation has the potential to hunt and trap within the KNRI LSA and KNRI RSA based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). These areas of Project influence may potentially be affected by wildlife habitat loss, and within the Project footprint these areas will be reclaimed through reclamation and post-closure activities. Pathways of increased risk of mortality that are unlikely to be fully mitigated are collisions with Project-related traffic on access or mine roads, collisions with trains, and increased hunter access after closure.
- Geographic Extent: *Moderate*, as the potential impact to opportunities for hunting and trapping are restricted to the Project footprint and the KNRI LSA. While there is potential for an impact to occur due to the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, based on the information available, the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint for hunting and trapping. Ktunaxa Nation has not provided any specific information to date regarding their interest in using the area in the future, and the impacts on rights within areas of Ktunaxa Nation's preferred or exclusive use are based on preliminary consultation with Ktunaxa Nation (Appendix 23-A, Table 23.A-1) and as identified by IAAC (IAAC, 2015a).
- Frequency, Duration, and Reversibility: *Low to Moderate,* as the potential for impacts to changes to Ktunaxa Nation's accessibility to opportunities for hunting and trapping are expected during the Project phases due to the wildlife VCs identified for traditional purposes and based on preliminary consultation with Ktunaxa Nation (Appendix 23-A, Table 23.A-1), the HHRA and sensory receptor locations, publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a), and as identified by IAAC (IAAC, 2015a). These

potential impacts are balanced with the anticipated renewed access and availability of these resources following the completion of the Project, site reclamation, ecosystems re-establishment, and the lack of specific information provided by Ktunaxa Nation regarding the use of the Project footprint.

- Cultural Well-being: *Moderate*, as while there is potential for the Project footprint to be culturally important to the Ktunaxa Nation due to the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, based on the information available, the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint for hunting and trapping. It is acknowledged that the Ktunaxa Nation has the potential to hunt and trap within the KNRI LSA and KNRI RSA based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to hunting and trapping within the Project footprint or VC study areas due to the importance of these traditional activities to Ktunaxa Nation cultural and traditional identity, and the potential importance of the available lands for traditional practices.
- Health: *Low*, as the Project is not likely to pose environmental effects to health, based on the Human Health and Ecological Risk Assessment (HHERA; Chapter 22), which encompasses changes in air quality, the overall Project-related risk to terrestrial and aquatic wildlife health, except for a few localized receptors within the Project footprint. This assessment includes effects to country foods related to ungulate, carnivore, and bird species harvested by Ktunaxa Nation and is assessed as low due to the sensitivity and resilience of the terrestrial wildlife health due to the low exposures/risk that are unlikely to adversely perturb local populations. The low rating also reflects that while there is potential for an impact to occur due to the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, based on the information available, the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint for hunting and trapping. It is acknowledged that the Ktunaxa Nation has the potential to hunt and trap within the KNRI LSA and KNRI RSA based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).
- Cumulative Impacts: *Moderate to High*, as the Project, in combination with other reasonably foreseeable future projects and activities is not anticipated to reduce the ability and opportunity of Ktunaxa Nation to practice Title and Rights and related interests related to hunting and trapping within the KNRI RSA. The wildlife and wildlife habitat conditions within the regional study areas of relevant wildlife species of interests (e.g., grizzly bear, elk, and bighorn sheep), including their ecology, habitat availability, and distribution, and occurrence and abundance, are well understood at the scale of the VC regional study areas (e.g., Grizzly Bear RSA, Terrestrial RSA). The moderate to high rating also reflects that while there is potential for an impact to occur due to the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, based on the information available, the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project

footprint for hunting and trapping. It is acknowledged that the Ktunaxa Nation has the potential to hunt and trap within the KNRI LSA and KNRI RSA based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). Ktunaxa Nation has not provided any specific information to date regarding their interest in using the area in the future, and the impacts on rights within areas of Ktunaxa Nation's preferred or exclusive use are based on preliminary consultation with Ktunaxa Nation (Appendix 23-A, Table 23.A-1) and as identified by IAAC (IAAC, 2015a). Based on past work in the Elk Valley, KNC has determined that cumulative effects on Ktunaxa Nation's rights and interests stemming from impacts to lands and waters within the Elk Valley drainage have already exceeded a threshold of significance, and that without substantial mitigations and other measures, adverse impacts from other projects in the region will act cumulatively to increase the magnitude and duration of significant effects. It is expected that the Ktunaxa ability to know and teach their way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities. Uncertainty also exists regarding the implications of regional climatic changes that may impact wildlife habitat availability.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's rights and interests for the use of lands and resources for hunting and trapping is rated as moderate. The potential impacts are likely to be small in spatial extent, reversible in the long term, and with few effects to health and/or country foods. Mitigation and the Project's design to reduce impacts to wildlife VCs (including grizzly bear, elk, and bighorn sheep) and the implementation of management, monitoring, and reclamation plans, should allow for hunting and trapping activities to continue within the KNRI LSA including those for traditional purposes.

As grizzly bear has been identified as a species of cultural significance (Section 23.8.2.2.2), based on the recent trends in local grizzly bear population levels, the Project is unlikely to contribute to limiting the ability of grizzly bear to recover from past declines and maintain a stable population in the Terrestrial LSA. Direct habitat loss as a result of the Project is of low magnitude and is partly reversible, though the quality of reclaimed areas to grizzly bear will be variable. The indirect habitat loss and degradation from potential impact to the avalanche chutes on the east side of Crown Mountain (if it occurs) may be much more important to grizzly bear. Sensory disturbance has the potential to further degrade habitat in the West Alexander Creek valley. The West Alexander Creek valley will be partially blocked to grizzly bear movements (by the pits and Mine Rock Storage Facility before they are reclaimed); other portions of the Project footprint will represent a semi-permeable barrier. As part of the Project Reclamation and Closure phase, wildlife habitat will be reclaimed within the disturbance footprint, and result in a variety of wildlife habitat types for use by grizzly bear. The combined residual effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk on grizzly bear are therefore considered not significant.

With specific regard to Ktunaxa hunting rights and interests in relation to elk, as identified in Section 23.8.2.2.2, the elk population has a relatively stable trend and while the Project will result in loss of only a small amount of high-quality winter habitat when elk habitat availability is most limited, sensory

disturbance has the potential to further displace elk. Given that elk frequently habituate to human disturbance and are known to occur in close proximity to active mine sites, the effect of sensory disturbance is likely to be small. The reclaimed mine landscape will provide high-quality elk habitat. Based on the characterization of the residual effects and local and regional elk population levels, the Project would not limit the ability of elk to persist and maintain self-sustaining populations in the Terrestrial LSA. The residual effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk on elk arising from the Project during all phases are therefore considered not significant.

In relation to Ktunaxa Nation's hunting rights and interests with specific regard to bighorn sheep, as identified in Section 23.8.2.2.2, the population of bighorn sheep has a relatively stable trend and while the Project will result in loss of a relatively small amount of year-round high-quality habitat, none of which has been mapped as bighorn sheep winter range. Sensory disturbance has the potential to displace bighorn sheep in high-quality annual habitat, though it does not overlap with mapped winter range. Post-closure, the reclaimed mine landscape will provide abundant forage for bighorn sheep. Based on the characterization of the residual effects as identified above and the local and regional bighorn sheep population levels, the Project would not limit the ability of bighorn sheep to persist and maintain self-sustaining populations in the ATRI LSA. The residual effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality on bighorn sheep arising from the Project during all phases are therefore considered not significant.

Baseline data was sufficient to evaluate effects for identified wildlife VCs, and the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to hunting and trapping. There is potential for the Ktunaxa Nation to utilize the Project footprint for traditional hunting and trapping purposes as well as other areas in the KNRI LSA. Based on the identification of HHRA and sensory receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, coupled with the lack of significant adverse effects to wildlife VCs that are potentially used for hunting and trapping purposes, the assessment determined that the degree of severity to Ktunaxa Nation's rights and interests are rated as moderate. The mitigation measures proposed for the species as well as the characterization of the residual effects and recent trends in local grizzly bear, elk, and bighorn sheep population levels, the Project is unlikely to contribute to limiting the ability of these species to recover from past declines and maintain a stable population in the Terrestrial LSA. Follow-up monitoring will include monitoring wildlife movement across Grave Creek Road at Grave Creek Canyon, monitoring of use of the overland conveyor wildlife underpasses, and footprint and facility monitoring.

There is potential for the Project to result in the permanent alienation of Ktunaxa Nation from hunting and trapping locations within the Project footprint, for which there is no current mitigation identified (Appendix 23-A, Table 23.A-1). It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice related traditional activities (e.g., hunting and trapping) may also have impacts on intangible cultural heritage. Due to the lack of current information available on their use of the Project footprint for traditional purposes, understanding and characterizing these potential related impacts to their intangible cultural heritage requires further input from the Ktunaxa Nation.

The Project, in combination with other reasonably foreseeable future projects and activities, is not anticipated to limit the ability of ungulates, carnivores, and birds to persist and maintain self-sustaining populations in the VC-specific regional study areas (i.e., Terrestrial RSA, Grizzly Bear RSA). No measurable residual effect on wildlife and wildlife habitat VCs are predicted beyond the KNRI LSA. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional hunting and trapping within the Project footprint or the KNRI RSA. In consideration of the relatively small impact area of the Project, the anticipated effectiveness of the proposed mitigation, the availability of areas for traditional hunting and trapping use within the KNRI RSA, and existing potential for the use of wildlife such as grizzly bear, elk, moose, mountain (bighorn) sheep, mountain goat, American badger, Canada lynx, American marten, waterfowl (ducks and geese), other migratory birds, and raptors, which have been identified as species of importance to the Ktunaxa Nation based on preliminary feedback, publicly available information, and as identified by IAAC; the Project is not anticipated to significantly reduce the ability and opportunity of Ktunaxa Nation to practice their rights and interests related to hunting and trapping within the KNRI RSA.

Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures regarding wildlife VCs are expected to improve the confidence rating and the severity of impact on Ktunaxa Nation's rights and interests.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.2 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, Project-related disturbances may also impair habitat for species the Ktunaxa rely on for the exercise of spiritual, cultural, and harvesting practices, including grizzly bear, elk, bighorn sheep, mountain goat, and moose, and reduce Ktunaxa access to the area for the exercise of Ktunaxa hunting and trapping rights. The Ktunaxa have previously shared perspectives on concerns about the potential negative health impacts to grizzly bears, elk, and bighorn sheep from consuming contaminated vegetation, drinking contaminated water, and/or consuming contaminated animals. Monitoring contaminants levels on plants for possible impacts to grizzly bears, elk, bighorn sheep, and other wildlife is suggested to understand more about this pathway (KNC et al., 2015). Ktunaxa's shared perspective also include concerns that activities in the Elk Valley will further reduce the habitat available to support future reintroduction of bison, a species that the Ktunaxa are working to restore to its historic range in Qukin ʔamakʔis (KNC, 2020a).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round include the seasonality of sheep and elk harvest, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Table 23.A-2). As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's rights and interests related to hunting and trapping in the KNRI LSA and RSA are impacted by past and ongoing development activity (e.g., reduction in wildlife populations, reduced access to areas for traditional activities), the potential future use of these areas for hunting and trapping without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future hunting and trapping activities in the KNRI LSA and RSA) (KNC, 2021m; 2022c).

Potential Future Use without the Project of Lands and Resources for Traditional Hunting and Trapping Purposes

This section describes the potential future use of lands and resources for traditional hunting and trapping in the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future use of lands and resources for traditional hunting and trapping related to the potential impact on the Ktunaxa Nation's ability to exercise these rights. As previously noted, the Ktunaxa Nation has not provided any information to date regarding their current use of lands and resources for traditional hunting and trapping in the Project footprint or whether they have an interest in using the Project footprint in the future. It is acknowledged that Ktunaxa Nation has the potential to use lands and resources for traditional hunting and trapping in the KNRI LSA given the importance of wildlife VCs such as grizzly bear, elk, and bighorn sheep within the local study area and the KNRI RSA. It is noted that Ktunaxa citizens have previously expressed elevated concern regarding industrial contaminants in the area (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a) with the potential for impact on hunting and trapping.

Past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting the real or perceived quality and quantity of country foods available in relation to hunting and trapping for Ktunaxa Nation in preferred locations to exercise Ktunaxa Nation's rights and interests. As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapter 15, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on lands and resources for traditional hunting and trapping in the KNRI LSA.

There is a potential for cumulative impacts due to the spatial distribution of historical disturbance as a result of mining in the Elk Valley which has followed economic coal resources to form a long north-south band of potential mining-related disturbance. In the KNRI LSA, this north-south running band is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of animals and Ktunaxa land users. This general trend of north-south oriented mining and potentially related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges. Without the Project footprint, other impairments to wildlife movement from highway and transportation corridors, as well as other disturbance is likely to create and maintain important barriers to animal movement, and potentially influence Ktunaxa use of ancestral east-west trails. Past disturbance has also potentially affected the quantity and quality of certain ecosystems available for the practice of Ktunaxa Nation's rights and interests in the Elk Valley. Within the KNRI RSA, these ecosystems are also important for maintaining biodiversity across the landscape, a critically important Ktunaxa cultural value. This also emphasizes the cumulative effect of past developments on Ktunaxa practice of rights and interests. Table 23.11-4 presents a summary of the potential impacts of the Project on the Ktunaxa Nation's rights and interests related to hunting and trapping in comparison to a future scenario without the Project.

Table 23.11-4: Summary of Impact on Ktunaxa Nation's Hunting and Trapping Rights and related Interests based on Potential Future Use with and without the Project

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impacts on Ktunaxa Nation's Hunting and Trapping Rights	Construction and Pre-Production	Potential for decreased hunting and trapping opportunities and impact on rights due to potential interactions with: • Impact to wildlife species of interest through transportation of materials and personnel to site (e.g., vehicle collisions and increased traffic) and potential direct mortality from vehicle strikes may potentially impact on traditional hunting and trapping due to potential localized changes in accessibility to wildlife. • Potential change of wildlife food sources and movements as a result of changes in vegetation communities and terrestrial ecosystems (i.e., degradation of wildlife habitat). • Potential sensory disturbance to wildlife (i.e., noise and vibration) may potentially impact on traditional hunting and trapping. • Potential change in landscape and terrestrial ecosystem types resulting in the change of wildlife food sources and movements may potentially impact on traditional hunting and trapping. • Potential localized changes in accessibility to wildlife associated with riparian areas due to changes to surface water quality, fish and fish habitat, and riparian vegetation/habitat may potentially impact on traditional hunting and trapping. • Potential loss of wildlife habitat within road and infrastructure footprint and potential change in localized wildlife species of interest movement/accessibility may potentially impact on traditional hunting and trapping. • Potential stressor on wildlife population with increased access roads potentially attracting hunters and increased road densities may potentially impact on traditional hunting and trapping.	Potential impact on rights Potential impact on rights without the Project: • The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to hunting and trapping use. There is potential for the use of lands and resources for traditional hunting and trapping in the KNRI LSA given the importance of wildlife VCs such as grizzly bear, elk, and bighorn sheep within the KNRI LSA and RSA. • Past and current development activity in the KNRI LSA and RSA has resulted in forming a long north-south band of potential mining-related disturbance which is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of animals and Ktunaxa land users. This includes for example other mines, forestry activity, housing

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• The potential for the permanent alienation of the Ktunaxa from hunting and trapping locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and continue to have influence on traditional hunting and trapping activities. • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting real or perceived quality and quantity of country foods available in relation to hunting and trapping for Ktunaxa Nation in preferred locations. These past and ongoing activities may be impacting the ability of the Ktunaxa Nation to exercise their rights related to hunting and trapping in the KNRI LSA and RSA. • Related to the local study area changes described above, the Elk River valley has also seen substantial residential development that has potentially affected the quantity and quality of certain ecosystems available for the practice of Ktunaxa Nation rights and interests in the region that are anticipated to continue without the Project.
	Operations	Potential for decreased hunting and trapping opportunities and impact on rights due to potential interactions with: • The release of nitrogen compounds and other contaminants from storage areas and wash facilities that may potentially affect wildlife species of interest may potentially impact on traditional hunting and trapping. • Potential change of wildlife species of interest food sources and movements as a result of changes in vegetation communities and terrestrial ecosystems (i.e., degradation of wildlife habitat, dust deposition) or sensory disturbances may potentially impact on traditional hunting and trapping. • Changes in wildlife species of interest movements/accessibility to these wildlife species due to the presence of the mine may potentially impact on traditional hunting and trapping. • Potential for changes to accessibility to aquatic wildlife species of interest (e.g., waterfowl) with the change or loss of aquatic habitats may potentially impact on traditional hunting and trapping. • Sensory disturbances to wildlife species of interest due to detonation of explosives and other mine activities may potentially impact on traditional hunting and trapping. • Potential for changes in wildlife food sources through changes to ecosystems/vegetation communities resulting in changes to wildlife species of interest movements/migrations may potentially impact on traditional hunting and trapping. • The potential for the permanent alienation of the Ktunaxa from hunting and trapping locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
	Reclamation and Closure	Potential for decreased hunting and trapping opportunities and impact on rights due to potential interactions with: • Potential sensory disturbance to wildlife species of interest (i.e., noise and vibration). • Potential for reestablishment of wildlife habitat and food sources in the development footprint for species of interest through reestablishment of habitat/vegetation communities. • Potential for the reestablishment of hunting activities. • Potential for reduction of the quality and accessibility of wildlife species of interest for traditional/cultural purposes or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa from hunting and trapping locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	
	Post-Closure	Potential for decreased hunting and trapping opportunities and impact on rights due to potential interactions with: • Potential for changes in water levels resulting in potential impacts to riparian vegetation communities and wildlife habitats of interest. • Potential for changes to accessibility to aquatic wildlife VC species of interest (e.g., waterfowl) with the change or loss of aquatic habitat. • Potential for access within the Project footprint through the use of Branch C Road, which will remain as a permanent access road for future traditional activities such as hunting and trapping. • Potential for collisions with wildlife and disruption to wildlife movements resulting in changes to accessibility to wildlife species of interest.	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• Potential stressor on wildlife population with increased access roads potentially attracting hunters and increased road densities. • Potential for reduction of the quality and accessibility of wildlife species of interest for traditional/cultural purposes or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa from hunting and trapping locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

Impact on Use of Lands and Resources for Traditional Harvesting and Gathering Purposes

The Project has the potential to impact Ktunaxa Nation's harvesting and gathering rights and interests through the following:

- The potential for reduction in the quality and accessibility of vegetation species of interest for traditional/cultural purposes or country foods.
- The residual effects on landscapes and ecosystems within the Project footprint due to the Rail Loadout, the road, and the Project infrastructure footprint may remove areas currently or potentially used by the Ktunaxa Nation to harvest and gather plants.
- The potential changes in vegetation communities/terrestrial ecosystems and introduction and colonization of invasive vegetation species that outcompete species of interest resulting in a loss of potentially traditionally/culturally important vegetation communities.
- The potential for the permanent alienation of the Ktunaxa from harvesting and gathering locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.

The impact on the opportunity to harvest and gather for traditional purposes due to the Project are characterized as follows:

- Likelihood: *Moderate*, as there is the potential for this impact to occur, the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to harvesting and gathering. Based on the culturally significant plant species in the Project footprint there is potential for the Ktunaxa Nation to utilize these areas for traditional purposes as well as other areas in the KNRI LSA. It is acknowledged that Ktunaxa Nation has the potential to use the Project footprint that support harvesting and gathering activities that relate to the exercise of their rights and interests based on the identification of HHRA and sensory receptor locations and publicly-available information (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a). While the loss of vegetation communities and plant species of interest within those communities, as well as access to vegetation communities, will be impacted over the long-term; site reclamation activities will likely restore impacted vegetation communities.
- Geographic Extent: *Low*, as the potential impact to opportunities for harvesting and gathering are restricted to the Project footprint and will be reclaimed during Reclamation and Closure phases of the Project. The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to harvesting and gathering. Based on the identification of culturally significant plants, there is potential for the Ktunaxa Nation to utilize the Project footprint for traditional purposes as well as other areas in the KNRI LSA. Impacts on rights and interests within areas of Ktunaxa Nation's preferred or exclusive use are based on consultation with Ktunaxa Nation (Appendix 23-A, Tables 23.A-1 to A-3) and as identified by IAAC (IAAC, 2015a). Ktunaxa Nation has not provided any specific information to date whether they have an interest in using the area in the future.
- Frequency, Duration, and Reversibility: *Moderate to High,* while the impact to the Project footprint will be long-term to permanent, Ktunaxa Nation's accessibility to opportunities for harvesting and gathering in vegetated areas of importance within the Project footprint are likely to be impacted mainly during the Construction and Operations phases, and ecological reclamation

activities will reclaim impacted vegetation communities. It is noted that reclaimed areas, such as forested sites, will take many years to support mature forests that may support plant species of interest used for harvesting and gathering, and as Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint or whether they have an interest in using the area in the future, the level of potential for impact is rated as moderate to high.

- Cultural Well-being: *Moderate*, as while there is potential for the Project footprint to be culturally important to the Ktunaxa Nation, information to date regarding the importance of the Project footprint as it relates to harvesting and gathering for traditional purposes is based on some HHRA and sensory receptor locations, publicly available information, and preliminary consultation with Ktunaxa Nation (KNC, 2018; Appendix 23-A, Table 23.A-1). No traditional land use information specific to the cultural values associated with culturally significant plants and species in the Project footprint has been provided by Ktunaxa Nation. The level of impact on cultural well-being is rated as moderate as the Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to the harvesting and gathering within the Project footprint balanced with the anticipated potential impact on culturally important plants and species as a result of the Project.
- Health: *Low*, as the Project is not likely to pose environmental effects to health, including potential effects to country foods used for harvesting and gathering by Ktunaxa Nation in the Project footprint due to the mitigation measures identified (Ecological Restoration Plan, Chapter 33, Section 33.4.1.3) and the continued monitoring to help improve adaptive management measures. The low rating also reflects that the Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use but has not provided any specific information to date regarding their current use of the Project footprint or whether they have an interest in using the area in the future.
- Cumulative Impacts: *Moderate to High*, as the Project, in combination with other reasonably foreseeable future projects and activities, is not anticipated to result in measurable residual Project effects to reduce the ability and opportunity for Ktunaxa Nation to practice their rights and interests related to harvesting and gathering within the KNRI RSA. The opportunity to harvest and gather within the KNRI RSA is dependent on the location of ecosystems and plant species of interest as well as the access to these areas. Due to on-going impacts of past and present projects and activities in combination with other reasonably foreseeable future projects and activities, on the Elk Valley, the limited information currently available on the current and potential use of lands and resources within the KNRI RSA, the uncertainty regarding the implications of regional climatic changes that may impact terrestrial ecosystems and vegetation communities, the changes in the accessibility to harvest and gather in the KNRI RSA that may potentially impact the ability to undertake cultural and traditional practices for Ktunaxa citizens, and the importance of available lands for traditional practices, the cumulative impacts have been assessed as moderate to high. Based on past work in the Elk Valley, KNC has determined that cumulative effects on Ktunaxa rights and interests stemming from impacts to lands and waters within the Elk Valley drainage have already exceeded a threshold of significance, and that without substantial mitigations and other measures, adverse impacts from other projects in the region will act cumulatively to increase the magnitude and duration of significant effects. The cumulative impact is also determined as moderate to high considering available Ktunaxa perspectives on the Elk Valley and

the limited nature of information that has been provided to date by the Ktunaxa Nation regarding their level of use and interest to conduct traditional harvesting and gathering activities within the Project footprint. It is expected that their ability to know and teach the Ktunaxa way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's rights and interests for the use of lands and resources for harvesting and gathering is rated as moderate to high as potential impacts are likely to be small in spatial extent, reversible long-term, with few effects to health and/or country foods while there is potential for the Project to result in the permanent alienation of Ktunaxa Nation from harvesting and gathering locations within the Project footprint (Appendix 23-A, Table 23.A-1). It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice related traditional activities (e.g., harvesting and gathering) may also have impacts on intangible cultural heritage. Due to the lack of current information available on their use of the Project footprint for traditional purposes, understanding and characterizing these potential related impacts to their intangible cultural heritage requires further input from the Ktunaxa Nation. The currently identified level of use by Ktunaxa within the Project footprint indicates the degree of severity of adverse impact on the change in lands and resources for traditional harvesting and gathering.

The Project is anticipated to result in a reduction in the abundance and distribution of culturally significant plants and ecosystems, including the potential alteration of the respective composition and structure through a reduction in vigor and alteration of nutritional value. The Project's contribution to residual cumulative effects on changes in landscapes and ecosystems and relevant vegetation VCs is not anticipated to reduce the ability and opportunity for Ktunaxa Nation to practice their harvesting and gathering rights and interests within the KNRI RSA. In consideration of the impact area of the Project, the anticipated effectiveness of the proposed mitigation, the availability of areas for traditional harvesting and gathering hunting and trapping use within the KNRI RSA, the loss of terrestrial ecosystems that may be accessed and used for harvesting and gathering will be limited to the respective footprints of the Project and those of other reasonably foreseeable future developments within the KNRI RSA.

Though baseline data was sufficient to evaluate effects on vegetation VCs and plant species, a few critical receptor locations related to the current or rights-based use by Ktunaxa Nation within the Project footprint and the KNRI LSA were utilized along with the publicly available Ktunaxa perspectives on the Elk Valley, to determine that the degree of severity of impact to Ktunaxa Nation's rights and interests. It should be noted that there is existing potential for harvesting and gathering for traditional purposes available in the KNRI LSA and RSA outside of the Project footprint.

Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on Ktunaxa Nation's rights and interests.

Ktunaxa Perspectives

As noted in Section 23.7.1.2.3 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, the Ktunaxa Nation has previously identified the importance of wetland, riparian and floodplains ecosystems, avalanche path ecosystems, karst ecosystems, old growth forests and mature forests, grassland and brushland ecosystems and all listed ecological communities as they relate to biodiversity in the KNRI LSA in general (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access culturally significant plants and the related harvesting and gathering activities may potentially be impacted by the alteration or loss of vegetation and increased potential dust loading (IAAC, 2015a). In previous Section C submissions for EIS/Applications in the Elk Valley, Ktunaxa knowledge holders have highlighted the importance of plants and vegetation for human use, and as habitat for other living things within qukin ʔamakʔis (KLR et al., 2011). Beyond use, all indigenous plant species are understood to have inherent value as part of biodiversity and as part of the unique ecosystems that sustain Ktunaxa people and rights. The knowledge of how to use certain plants may not currently be held, or may not be reported by Ktunaxa citizens, but may become known, or be reported, in the future.

Ktunaxa Traditional Knowledge shared in previous EIS/Applications indicates that the old growth forests were and continue to be heavily used for the collection of culturally important plants (KNC et al., 2015). Based on Ktunaxa Traditional Knowledge holders, certain culturally important plants are only found in wet or very wet sites (wetlands or wet forests) and high elevation grasslands (KNC et al., 2015). From a Ktunaxa perspective, natural geological and terrain features provide a connection to ongoing creation and are often associated with special meaning and cultural importance within the context of Ktunaxa knowledge and especially the Ktunaxa creation stories (KNC et al., 2015).

During conformity review, KNC also noted that the key elements of the Ktunaxa seasonal round include the seasonality of berry collection, which may be potentially affected by the Project lifecycle, specifically where construction timing correlates to the seasonality of the VCs identified, and therefore the timing of Ktunaxa traditional practices (Appendix 23-A, Table 23.A-2). There is also potential for Ktunaxa Nation to utilize the KNRI RSA for undertaking traditional and ceremonial activities (IAAC, 2015a). As shared by Ktunaxa Nation, it is also noted that the exercise of Ktunaxa Nation's rights and interests related to harvesting and gathering sites in the KNRI LSA and RSA has been impacted by past and ongoing development activity (e.g., reduced access to areas for traditional activities) and the potential future use of these areas for harvesting and gathering opportunities without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact potential future harvesting and gathering activities in the KNRI LSA and RSA) (KNC, 2021m; 2022c).

Potential Future Use without the Project of Lands and Resources for Traditional Harvesting and Gathering Purposes

This section describes the potential future use of lands and resources for harvesting and gathering for traditional purposes in the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future use of sites for harvesting and gathering for traditional purposes as it relates to the potential impact on the Ktunaxa Nation's ability to exercise these rights. As previously noted, the Ktunaxa Nation has not provided any information to date regarding their current use of lands and resources for harvesting and gathering for traditional purposes in the Project footprint or whether they have an interest in using sites within the Project footprint in the

future. It is acknowledged that Ktunaxa Nation has the potential to use the KNRI LSA given the importance of culturally important plants and species that the Ktunaxa rely on for foods, medicines, and spiritual uses within the KNRI LSA and RSA. It is noted that Ktunaxa citizens have previously expressed elevated concern regarding industrial contaminants in the area (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a) with the potential for impact on harvesting and gathering.

Past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting the real or perceived quality and quantity of country foods available for Ktunaxa harvesting and gathering in preferred locations to exercise Ktunaxa Nation's rights and interests. As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapters 13 and 14, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on lands and resources for traditional harvesting and gathering in the KNRI LSA.

There is a potential for cumulative impacts due to the spatial distribution of historical disturbance as a result of mining in the Elk Valley which has followed economic coal resources to form a long north-south band of potential mining-related disturbance. In places, including the KNRI LSA, this north-south running band is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of Ktunaxa land users. This general trend of north-south oriented mining and potentially related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges. Without the Project footprint, past disturbance has affected the quantity and quality of certain ecosystems available for the practice of Ktunaxa Nation rights and interests in the Elk Valley. Within the KNRI RSA, these ecosystems are also important for maintaining biodiversity across the landscape, a critically important Ktunaxa cultural value. Mature and old growth forests potentially being impacted within the Elk Valley have the potential to affect Ktunaxa rights and interests. This also emphasizes the cumulative effect of past developments on Ktunaxa practice of rights and interests. Table 23.11-5 presents a summary of the potential impacts of the Project on the Ktunaxa Nation's rights and interests related to harvesting and gathering in comparison to a future scenario without the Project.

23.11.2.1.3 Traditional Knowledge and Language Sector

Impact on Physical and Cultural Heritage and Change to a Structure, Site, or Item that is of Historical, Archaeological, Paleontological, or Architectural Significance

The Project has the potential to impact on Ktunaxa Nation's physical and cultural heritage through the following:

- The potential loss of pre-contact archaeological artifacts (if present) and tree throws related to physical and cultural heritage.
- The potential loss/disconnection of historic and present-day travel routes and trail if present within or crossing new roads and infrastructure footprint.
- The potential changes to or loss of places that may be important for ceremonial or sacred areas through changes in landscape/ecosystems within the Project footprint.

Table 23.11-5: Summary of Impact on Ktunaxa Nation's Harvesting and Gathering Rights and related Interests based on Potential Future Use with and without the Project

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impacts on Ktunaxa Nation's Harvesting and Gathering Rights	Construction and Pre-Production	Potential impact on the opportunity for harvesting and gathering activities and impact on rights due to potential interactions with: • Potential for introduction of invasive species around development areas reducing the quality of vegetation communities/terrestrial ecosystems/ habitats for vegetation species of interest and resulting in change in terrestrial ecosystems. • Potential changes to vegetation that may potentially impact the ability to harvest and gather for traditional purposes. • Potential change in landscape and terrestrial ecosystem types resulting in the change of wildlife food sources and movements. • Potential loss of riparian habitat may potentially impact the ability to harvest and gather for traditional purposes. • Potential loss of vegetation species of interest within road and infrastructure footprint may potentially impact the ability to harvest and gather for traditional purposes. • Potential loss of grassland habitat, and therefore, potential loss of species of interest within footprint of Rail Loadout and as a result of the workshop/mine dry footprint may potentially impact the ability to harvest and gather for traditional purposes. • The potential for the permanent alienation of the Ktunaxa from harvesting and gathering locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	Potential impact on rights without the Project: • The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to harvesting and gathering use. There is potential for Ktunaxa Nation to use the KNRI LSA given the importance of culturally important plants and species that the Ktunaxa rely on for foods, medicines, and spiritual uses within the KNRI LSA and RSA. • Past and current development activity in the KNRI LSA and RSA has resulted in forming a long north-south band of potential mining-related disturbance which is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of Ktunaxa land

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
	Operations	Potential impact on the opportunity for harvesting and gathering activities and impact on rights due to potential interactions with: • Terrestrial ecosystems and vegetation through the release of nitrogen compounds and other contaminants from storage areas and wash facilities may potentially impact the ability to harvest and gather for traditional purposes. • Potential changes in vegetation communities/terrestrial ecosystems and introduction and colonization of invasive vegetation species that outcompete species of interest resulting in a loss of traditionally/culturally important vegetation communities may potentially impact the ability to harvest and gather for traditional purposes. • Potential interaction with vegetation health through particulate matter and dust deposition may potentially impact the ability to harvest and gather for traditional purposes. • The potential for the permanent alienation of the Ktunaxa from harvesting and gathering locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	users. This includes for example other mines, forestry activity, housing development, transportation facilities (roads), and recreation activities. Mature and old growth forests potentially being impacted within the Elk Valley have the potential to affect Ktunaxa rights and interests. It is anticipated that these activities will continue in the future without the Project and continue to have influence on site for traditional harvesting and gathering. • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting real or perceived quality and quantity of country foods available for Ktunaxa harvesting and gathering in preferred locations. These past and ongoing activities may be impacting the ability of the Ktunaxa Nation to exercise their rights related to harvesting and gathering in the LSA and RSA. • Related to the local study area changes described above, the Elk River valley has also seen substantial residential development that has potentially affected the quantity and quality of certain ecosystems available for the practice of Ktunaxa Nation rights and interests in the
	Reclamation and Closure	Potential impact on the opportunity for harvesting and gathering activities and impact on rights due to potential interactions with: • Potential for introduction of invasive species around development areas reducing the quality of vegetation communities/terrestrial ecosystems/habitats for species of interest may potentially impact the ability to harvest and gather for traditional purposes. • Potential for reclamation of ecosystems and related species of interest and areas used for harvesting and gathering may potentially impact the ability to harvest and gather for traditional purposes. • Potential for reestablishment of plant harvesting activities. • Potential for reduction of the quality and accessibility of vegetation species of interest for traditional/cultural purposes	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa from harvesting and gathering locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	region that are anticipated to continue without the Project.
	Post-Closure	Potential impact on the opportunity for harvesting and gathering activities and impact on rights due to potential interactions with: • Potential for changes in water levels resulting in potential impacts to riparian vegetation communities and wildlife habitats of interest may potentially impact the ability to harvest and gather for traditional purposes. • Potential for access within the Project footprint through the use of Branch C Road, which will remain as a permanent access road for future traditional activities such as harvesting and gathering in the Post-Closure phase. • Potential for the introduction of weeds and invasive vegetation species in disturbed areas around the rail line resulting in a change of localized vegetation communities/loss of species of interest may potentially impact the ability to harvest and gather for traditional purposes. • Potential for reduction of the quality and accessibility of vegetation species of interest for traditional/cultural purposes or country foods should insufficient effects monitoring take place that affects the mitigation measures utilized. • The potential for the permanent alienation of the Ktunaxa from harvesting and gathering locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	

- The potential for change in access to places that may be important for ceremonial or sacred areas, and the potential loss of pre-contact archaeological artifacts (if present) during Project phases.
- From the Ktunaxa Nation's perspective, the Project will impact on Ktunaxa Nation's rights and interests as a result of the potential change to a culturally significant site due to the location of the Grave Prairie Cultural Landscape within the Project footprint.
- From Ktunaxa Nation's perspective, the Project will impact on Ktunaxa Nation's rights and interests as a result of the potential change due to a significant historic area located near the Project's roads: Grave Lake, Grave Creek, and Grave Prairie.
- The potential for changes to ceremonial or sacred areas associated with Grave Creek and West Alexander Creek.
- The potential discovery of pre-contact archaeological resources (if present) in unconsolidated material or during progressive clearing activities.
- The potential for the permanent alienation of the Ktunaxa Nation from their cultural heritage due to the intangible value associated with a sense of place within the Project footprint.

The potential impact on physical and cultural heritage and a structure, site, or item that is of historical, archaeological, paleontological, or architectural significance due to the Project footprint are characterized as follows:

- Likelihood: *High*, as there are 15 pre-contact archaeological sites anticipated to be directly impacted by the Project and while none are known to contain ancestral or historical burial sites, due to the cultural significance of the Grave Prairie Cultural Landscape, the likelihood of impact is considered high. These heritage resources may be of interest to the Ktunaxa Nation based on their linkage to Ktunaxa Nation ancestry though none other than the Grave Prairie Cultural Landscape have been currently identified based on preliminary consultation with Ktunaxa Nation (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1) and as identified by IAAC (IAAC, 2015a).
- Geographic Extent: *Low*, as only heritage resources that exist within the Project footprint will be directly impacted. Ktunaxa Nation has not provided any specific information to date regarding their current use of the Project footprint other than the Grave Prairie Cultural Landscape and the HHRA and sensory receptor locations (that do not include information regarding cultural heritage values), impacts on rights within areas of Ktunaxa Nation's preferred or exclusive use are based on preliminary consultation with Ktunaxa Nation (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1) and as identified by IAAC (IAAC, 2015a).
- Frequency, Duration, and Reversibility: *High,* as the direct loss of heritage resources related to physical and cultural heritage that exist within the Project footprint at the Grave Prairie Cultural Landscape and relevant to the Ktunaxa Nation once retrieved from the Project footprint cannot be returned/reburied within the Project footprint in the same geographical context. While linkage to Ktunaxa Nation ancestry other than the Grave Prairie Cultural Landscape have not been currently identified based on preliminary consultation with Ktunaxa Nation (KNC, 2022b), change of an archaeological site is irreversible.
- Cultural Well-being: *High*, heritage resources of interest related to physical and cultural heritage are considered to be very important cultural resources to the Ktunaxa Nation that link Ktunaxa Nation citizens to their ancestors and cultural identities. These heritage resources have a low resilience to change as alterations to areas or sites of interest and significance may not adapt to effects that alter their presence or existence. While linkage to Ktunaxa Nation ancestry other than the Grave Prairie Cultural Landscape have not been currently identified based on preliminary

consultation with Ktunaxa Nation (KNC, 2018; 2022b), change of an archaeological site is has the potential for a high level of impact on cultural well-being due to irreversibility.

- Health: *Low*, as the Project is not likely to pose environmental effects to health as a result of the physical and cultural heritage and a structure, site, or item that is of historical, archaeological, paleontological, or architectural significance. The low rating also reflects that the Ktunaxa Nation has not provided any specific information to date regarding their current use of the Project footprint other than the Grave Prairie Cultural Landscape and the HHRA and sensory receptor locations (that do not include information regarding cultural heritage values), or whether they have an interest in using the area in the future.
- Cumulative Impacts: *Moderate to High*, as there is potential for physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance to be located with the KNRI RSA and as such, a potential for development of reasonably foreseeable future projects and activities to overlap with these resources and sites. At this time, the locations of these resources and sites require further consultation with the Indigenous Communities within the KNRI RSA, other than those documented as part of the Project Archaeological Baseline Assessment within the Project footprint and the Archaeological Resources LSA (Chapter 16). It is anticipated that mitigation measures to identify heritage resources will be implemented as part of current and reasonably foreseeable future projects and activities prior to development. Within the KNRI RSA, the location of physical and cultural heritage and of structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance currently outside of the Project footprint and the Archaeological Resources LSA include Crowsnest Mountain and Crowsnest Lake. Should reasonable foreseeable future projects and activities be carried out within the KNRI RSA and mitigation measures be implemented to protect and avoid physical and cultural heritage and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (i.e., no permanent loss), the residual cumulative effects to physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are anticipated to be moderate to high. The cumulative impact is also determined as moderate to high considering available Ktunaxa perspectives on the Elk Valley and the limited nature of information that has been provided to date by the Ktunaxa Nation regarding their level of use and interest to conduct traditional activities within the Project footprint. It is expected that their ability to know and teach the Ktunaxa way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's rights and interests related to physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance is rated as moderate to high. Based on information provided by Ktunaxa Nation Council, Grave Prairie is a landscape containing extremely important cultural values to the Ktunaxa and part of the Project footprint (rail loadout facility) is at the time of the writing of this chapter located within this area. The KNC Lands Advisory Working Group have determined that the area of Grave Prairie has cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout,

is not compatible with this cultural landscape. Based on the direction from Ktunaxa Knowledge Holders, the area currently known as the "Grave Prairie Cultural Landscape" contains two "zones"; a "Culturally Significant Area" where no new activities or infrastructure will be accepted and a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to Ktunaxa contemplating additional development. Based on Ktunaxa perspectives, the impacts to this site for any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility at the proposed location.

Though baseline data was sufficient to evaluate effects for known heritage resources, the lack of regional information on Ktunaxa Nation's physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance increases the degree of severity of adverse impacts. It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice related traditional activities (e.g., ceremonies in areas of physical and cultural heritage) may also have impacts on intangible cultural heritage. The understanding and characterizing of these potential related impacts to Ktunaxa Nation's intangible cultural heritage requires further input from the Ktunaxa Nation.

Impacts on physical and cultural heritage related to the Grave Prairie Cultural Landscape may be addressed through continued collaboration with the Ktunaxa Nation to consult on alternative means of access to the proposed rail loadout facility including utilization of the proposed road access that may be situated in the previously disturbed footprint of a current road which may require further assessment. During conformity review, KNC has indicated that cultural impacts to the Grave Prairie Cultural Landscape are not mitigable. Measures to reduce the impacts of the rail loadout on the Grave Prairie Cultural Landscape include consideration to avoid the site through a longer truck haul route to a less sensitive load out location, the extension of the rail line to the Alexander Valley section of the facility, or agreements with the owners of an existing rail load out facility. As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the Ktunaxa Nation to address these concerns and explore options.

Within the KNRI RSA, the location of physical and cultural heritage currently outside of the Project footprint and the Archaeological Resources LSA include Crowsnest Mountain and Crowsnest Lake. These heritage resources may be of interest to the Ktunaxa Nation based on their potential linkage to Ktunaxa Nation ancestry though none other than the Grave Prairie Cultural Landscape, have been identified based on preliminary consultation with Ktunaxa Nation (KNC, 2018; 2022b; Appendix 23-A, Tables 23.A-1 and 23.A-2) and as identified by IAAC (IAAC, 2020b).

Though baseline data was sufficient to evaluate effects on physical and cultural heritage, Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past development activity which has removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley outside of the Project footprint. The consideration of Ktunaxa information has determined the degree in severity of impact on Ktunaxa Nation's rights and interests related to physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance as being rated as moderate to high. Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and

adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on Ktunaxa Nation's rights and interests.

Ktunaxa Perspectives

Ktunaxa oral history and worldview recognizes the lands and waters of the Ktunaxa Territory as alive, evolving, and as the home of powerful sacred beings whose travels, battles and lives have left marks and remains across the Ktunaxa landscape, including the Elk Valley (KLR et al., 2011). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities and the potential impact on the long-term or permanent displacement of access to lands may impact unknown historical or archaeological sites. There is potential for Ktunaxa Nation utilizing the KNRI LSA for undertaking traditional and ceremonial activities (IAAC, 2015a). It is noted that Ktunaxa citizens have previously expressed elevated concern regarding impact on physical and cultural heritage due to past disturbance which has removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a; 2022c).

It is noted that the exercise of Ktunaxa Nation's rights and interests related to physical and cultural heritage in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduced access to cultural sites and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users). This general trend of north-south oriented mining and potential related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges (KNC et al., 2015). Ktunaxa perspectives include acknowledging that the potential future use of these areas without the Project is expected to be similar to existing conditions (i.e., past and ongoing development activities that may impact ceremonial practices and use of sacred areas and access and travel through the KNRI LSA and RSA) (KNC, 2021m; 2022c).

With respect to the Grave Prairie Cultural Landscape, it is a landscape containing extremely important Ktunaxa cultural values and is located within the Project footprint (KNC, 2022b). The KNC Lands Advisory Working Group have determined that the area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout, is not compatible with this cultural landscape. Based on the direction from Ktunaxa Knowledge Holders, the area currently known as the "Grave Prairie Cultural Landscape" contains two "zones"; a "Culturally Significant Area" and a "Culturally Sensitive Area". The impacts to this site of any proposed development cannot be mitigated, and simply avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility as stated by Ktunaxa Nation (KNC, 2022b). During conformity review, KNC indicated that the cultural impacts to the Grave Prairie Cultural Landscape cannot be mitigated and that it is unique as a sacred cultural landscape within the larger Elk Valley in relation to the industrial and cumulative effects that have already seriously impacted other cultural and stewardship values. KNC suggested the evaluation for all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape including the adequate consideration to avoidance impact through alternative means that may include longer truck haul to a less sensitive load out location, extension of rail to the Alexander Valley side of the facility, and agreement with existing operators to share already existing rail load out infrastructure. NWP is committed to continuing disucssions and assessing alternatives for the siting of the rail loadout facility.

Potential Future Use without the Project of Physical and Cultural Heritage and Impact to a Structure, Site, or Item that is of Historical, Archaeological, Paleontological, or Architectural Significance

This section describes the potential future use of physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for ceremonies and cultural activities in the Project footprint, the KNRI LSA, and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future use of physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for ceremonies and cultural activities as it relates to the potential impact on the Ktunaxa Nation's ability to exercise their rights and interests. As previously noted, the Ktunaxa Nation has not provided any information to date regarding physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance to them for ceremonies and cultural activities other than on the Grave Prairie Cultural Landscape in the KNRI LSA or whether they have an interest in using KNRI LSA for ceremonies and cultural activities in the future (KNC, 2018; 2022b; Appendix 23-A, Tables 23.A-1 and 23.A-2). It is noted that Ktunaxa citizens have previously expressed elevated concern regarding the potential impact on physical and cultural heritage due to past disturbance which has potentially removed areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a).

As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapter 16, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to potentially impact physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance in the KNRI LSA. There is a potential for cumulative impacts due to the spatial distribution of historical disturbance as a result of mining in the Elk Valley which has followed economic coal resources to form a long north-south band of potential mining-related disturbance. In the KNRI LSA, this north-south running band is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of Ktunaxa land users. This general trend of north-south oriented mining and potentially related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges.

The cumulative effect of past developments on Ktunaxa practice of rights and interests has influenced Ktunaxa Nation's use of ancestral east-west trails. The Elk River valley has seen substantial residential development which may have impacted physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance. Additional residential development is anticipated to continue in the Elk Valley without the Project. Past disturbance may have also potentially affected the real or perceived change in accessibility to physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for Ktunaxa Nation and will likely continue to impact Ktunaxa Nation's rights and interests without the Project in place. Table 23.11-6 presents a summary of the potential impacts of the Project on

the Ktunaxa Nation's rights and interests related to physical and cultural heritage in comparison to a future scenario without the Project.

23.11.2.1.4 Social and Health and Economic Investment Sectors

Impact on Social, Health, and Economic Conditions

While not specifically an impact on rights, the Project has the potential to have an impact on Ktunaxa Nation's social, health, and economic conditions through the following:

- The potential Project nuisance effects to residents and provided receptor locations due to noise and vibration.
- The potential change in availability/reliance on country food.
- The loss of potential access to species for traditional purposes due to loss of West Alexander Creek.
- The potential for the permanent alienation of the Ktunaxa Nation from traditional use locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.
- The potential for public safety risks due to physical hazards.
- The potential change in population and demographics.
- The potential change in community health and well-being.
- The potential change due to the influx of new employees to the region that could potentially contribute to social impacts, including safety risks.

Based on the Human Health and Ecological Risk Assessment (HHERA; Chapter 22), which encompasses changes in surface water and air quality, and was estimated in consideration of current use and rights-based Indigenous traditional use lifestyle scenarios[32], the overall Project-related risk to human health is considered to be low. Though the risk to human health is identified as low, there is the potential for community members to perceive that the quality of fish and wildlife resources to be impacted (e.g., fish in Alexandra Creek). As such there is potential for less reliance on country foods because of this perceived impact to their quality.

Based on the background information research and the consultation activities with Ktunaxa Nation to date, there are no anticipated interactions between the Project and the Ktunaxa Nation housing, transportation, or social services and education, and therefore, no unmitigated Project effects on these aspects of social, health, and economic conditions are anticipated.

There is also potential for positive change including the potential for economic benefit to the Ktunaxa Nation related to employment including for example the opportunity to take part in monitoring activities as outlined in the Indigenous Impact Management Plan (Section 23.10). The Project is anticipated to result in positive economic outcomes for employment, income, and local and regional economies (detailed in Chapter 17).

[32] Indigenous communities represent the maximally exposed receptor, largely because of their increased presence on and use of traditional land, as well as increased consumption of country foods, as compared to non-Indigenous persons; as such, risk estimates calculated for Indigenous receptors are sufficiently conservative to infer maximal potential risk to non-Indigenous peoples also frequenting the HHERA LSA. Moreover, the rights-based use receptor lifestyle is inherently more engaged with land use and therefore offers the more conservative Indigenous risk scenario.

Table 23.11-6: Summary of Impact on Ktunaxa Nation's Physical and Cultural Heritage Rights and related interests based on Potential Future Use with and without the Project

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impacts on Ktunaxa Nation's Rights related to Physical and Cultural Heritage and Change to any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Construction and Pre-Production	Potential impact on physical and cultural rights due to potential interactions with: • Potential loss of pre-contact archaeological artifacts (if present) and tree throws during Project activities including quarrying. • Potential loss/disconnection of historic and present-day travel routes and trails including those potentially present within or crossing new roads and infrastructure footprint. • Potential loss of ceremonial or sacred areas within the Project footprint (including road and infrastructure construction footprint. • Potential loss of archaeological artifacts (if present) within road and infrastructure construction footprint, during construction of building foundations. • Potential loss/change of culturally significant site due to the location of the Grave Prairie Cultural Landscape within the Project footprint. • Potential change due to a significant historic area located near the project's roads: Grave Prairie Cultural Landscape, Grave Lake, and Grave Creek. • Potential for the permanent alienation of the Ktunaxa Nation from their cultural heritage due to the intangible value associated with a sense of place within the Project footprint.	Potential impact on rights without the Project: • The Ktunaxa Nation has not to date provided information regarding physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance other than the Grave Prairie Cultural Landscape in the Project footprint. There is potential for physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance in the KNRI LSA and RSA. • Past and current development activity has resulted in the removal areas of particular Ktunaxa cultural value, including trails, habitation areas, and harvesting areas within the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley. This includes for example other mines, forestry activity, housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
	Operations	Potential impact on physical and cultural rights due to potential interactions with: • Potential discovery of pre-contact archaeological resources (if present) in unconsolidated material or during progressive clearing activities. • Potential loss or change of ceremonial/sacred areas associated with West Alexander Creek, Grave Creek, or downstream habitats. • Potential for change in access to places that may be important for ceremonial or sacred areas. • Potential changes to or loss of places that may be important for ceremonial or sacred areas through changes in landscape/ecosystems should reclamation activities not be effective. • Potential for the permanent alienation of the Ktunaxa Nation from their cultural heritage due to the intangible value associated with a sense of place within the Project footprint.	potentially impact physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance in the KNRI LSA. • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting the real or perceived change in accessibility to physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for Ktunaxa Nation and will likely continue to impact Ktunaxa Nation's rights and interests without the Project in place. These past and ongoing activities may be impacting the ability of the Ktunaxa Nation to exercise their rights related to physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance in the KNRI LSA and RSA. • Related to the local study area changes described above, the Elk River valley has also seen substantial residential development which may potentially impact physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance that are anticipated to continue without the Project.

The impact on the social, health, and economic conditions due to the Project are characterized as follows:

- Likelihood: *Low to Moderate*, as the predicted residual effects to wildlife and human health and the potential change in country foods is only associated with the Project footprint or close to the haul road, areas which will be reclaimed during Reclamation and Closure. This low to moderate rating is based on Ktunaxa Nation's HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to their current use of the Project footprint for country food or activities that may be affected by Project nuisance effects (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1). Project nuisance effects to residents and provided receptor locations due to noise and vibration are rated as low while the potential for permanent alienation of the Ktunaxa Nation from traditional locations within the Project footprint is rated as moderate due to perceived or actual disturbances to the area.
- Geographic Extent: *Low*, as while the potential impact on social, health, and economic conditions are will extend into the KNRI RSA (e.g., on or adjacent to the haul road), the level of use by Ktunaxa Nation, in particular of the Project footprint for traditional purposes is anticipated to be low based on preliminary feedback from Ktunaxa Nation (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1) and as identified by IAAC (IAAC, 2020b).
- Frequency, Duration, and Reversibility: *Low,* as the potential for impacts to social and health for Ktunaxa Nation includes the potential low to no risk to country foods possible during all the phases of Project. The proposed Project and associated activities are considered to present a low risk to wildlife and human health. The low rating also reflects that the Ktunaxa Nation has identified HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to their current use of the Project footprint for country food or activities that may be affected by Project nuisance effects but no specific information to date has been provided other than those related to the Grave Prairie Cultural Landscape (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1).
- Cultural Well-being: *Moderate*, as the level of use by Ktunaxa Nation of the Project footprint other than the Grave Prairie Cultural Landscape, for traditional purposes has been based on Ktunaxa Nation's HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to their current use of the Project footprint for country food or activities that may be affected by Project nuisance effects. The Project is anticipated to result in low exposure risk and is unlikely to adversely affect individuals or local populations and therefore cause an unlikely disruption to country food quality. The moderate rating also reflects that cultural well-being affected by Project nuisance effects is not expected other than those related to the Grave Prairie Cultural Landscape (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1).
- Health: *Low*, as the Project is not likely to pose environmental effects to health, including effects to country foods related to aquatic and terrestrial ecosystems and vegetation communities potentially accessed and used for traditional purposes by Ktunaxa Nation. The HHERA undertaken (Chapter 22) for the Project determined that no significant residual effect is associated with the Project using various exposure and food-chain models that utilized Indigenous receptors (including those provided by the Ktunaxa Nation). The low rating also reflects that the Ktunaxa Nation has not provided specific information to date regarding their current use of the Project footprint for country food or activities affected by Project nuisance effects other than those

related to the Grave Prairie Cultural Landscape and the HHRA and sensitive receptor locations (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1).

- Cumulative Impacts: *Moderate*, as the assessment of residual cumulative effects of the Project in combination with those of past, present, and reasonably foreseeable future projects and activities on wildlife and human health concluded no significant adverse cumulative effects on terrestrial, aquatic, and human health. Additionally, no adverse residual effects on social, health, and economic conditions were predicted, therefore no cumulative impact to social, health, and economic conditions are expected to occur. The residual cumulative effects on social, health, and economic conditions arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are also considered not significant. Based on past work in the Elk Valley, KNC has determined that cumulative effects on Ktunaxa rights and interests in relation to social, health, and economic conditions stemming from impacts to lands and waters within the Elk Valley drainage have already exceeded a threshold of significance, and that without substantial mitigations and other measures, adverse impacts from other projects in the region will act cumulatively to increase the magnitude and duration of significant effects. The cumulative impact is also determined as moderate considering available Ktunaxa perspectives on the Elk Valley and the limited nature of information that has been provided to date by the Ktunaxa Nation regarding their level of use and interest to conduct traditional activities related to country food consumption within the Project footprint. It is expected that their ability to know and teach the Ktunaxa way of living can continue within their Traditional Territory while recognizing their perspectives on the cumulative effects of the past and current development projects that have impacted the opportunities for these activities.

Degree of Severity for Adverse Impacts

The degree in severity of impact on Ktunaxa Nation's social, health, and economic conditions is rated as low to moderate as potential impacts are likely to be small in spatial extent, reversible long-term, and with few effects to health and/or country foods. The currently identified low level of use by Ktunaxa within the Project footprint other than the Grave Prairie Cultural Landscape indicates the low to moderate level of impact on the change in social, health, and economic conditions. It should be noted that through this assessment it has been determined that there is potential for the Project to result in the permanent alienation of Ktunaxa Nation from locations within the Project footprint (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1). It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa Nation to practice their related traditional activities (e.g., consumption of country food) may also have impacts on intangible cultural heritage. The understanding and characterizing of these potential related impacts to Ktunaxa's intangible cultural heritage requires further input from the Ktunaxa Nation.

Though baseline data was sufficient to evaluate effects for socio-community, human health, and economic VCs, the level of use by Ktunaxa Nation of the Project footprint other than the Grave Prairie Cultural Landscape, for traditional purposes has been based on Ktunaxa Nation's HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to their current use of the Project footprint for country food or activities that may be affected by Project nuisance effects (KNC, 2018; 2022b; Appendix 23-A, Table 23.A-1).

The residual effects of the Project on aquatic and terrestrial wildlife health and human health during all Project phases are based on the wildlife and human health risk estimates and their magnitude considered through the predictive modelling of water quality, air quality, and secondarily food via transport, fate, and food chain modelling. Given the conservative nature of the exposure/risks and proposed mitigation in Reclamation and Closure phase, the Project is not anticipated to result in significance adverse effects to aquatic and terrestrial wildlife or Indigenous persons. The Project is not anticipated to act cumulatively with other future projects or activities to contribute significantly to a change in the health of terrestrial and aquatic country foods and Indigenous health. Specific to the assessment of the impacts on rights, Ktunaxa Nation information that was included from other applications to define the degree of severity on impacts to health conditions, referred to the overall health of Ktunaxa citizens having improved as a result of increased access to health services, but lagged well behind non-Ktunaxa in the region. This information was also used to assess the future potential health conditions without the Project.

There are no anticipated interactions between the Project and Ktunaxa Nation housing, transportation, or social services and education, and therefore, no unmitigated Project effects on these aspects of social, health, and economic conditions are anticipated, and all anticipated residual socio-community effects are considered to be negligible. This determination was based on the background information research and the preliminary consultation activities with Ktunaxa Nation to date. Therefore, residual adverse cumulative effects on the socio-community and economic conditions are not expected. As such, there is no spatial or temporal overlap of Project effects in combination with those of past, present, or reasonably foreseeable future projects or activities.

It must be noted that due to the potential for change to the opportunity for access to country foods within the KNRI LSA, and the potential for the development of other reasonably foreseeable future projects and activities to overlap with these resources and sites, there is the potential for cumulative socio-community impacts. These potential cumulative effects will be confirmed through further consultation with Ktunaxa Nation.

The Project can be generally expected to result in positive economic outcomes as included in Section 23.8.2.2.5 for employment, income, the regional and local economies, and government finances within the KNRI RSA (Chapter 17). There is also potential for positive change in the potential availability of community services, the potential for Ktunaxa Nation to take part in monitoring activities as outlined in the Indigenous Impact Management Plan, and the potential economic benefit for Ktunaxa Nation members related to employment and economic investment during the Project phases.

Continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up and monitoring and adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on Ktunaxa Nation's interests.

Ktunaxa Perspectives

As noted in Section 23.7.1 and included in Appendix 23.A-1, Tables 23.A-1 and 23.A-2, based on a review of publicly available information and the HHRA and sensory receptor locations related to current and rights-based use, as per Ktunaxa Nation, waterbodies and watercourses within the Elk Valley continue to be viewed as the basis of all life and these places carry spiritual and cultural significance and strong sentimental connections for the Ktunaxa Nation. Access to wild meat (i.e., country foods) is a popular and

valuable aspect of Ktunaxa culture and vital for maintaining their connection to their ancestors. Access to these waters and lands for species and resources are critical to the maintenance of Ktunaxa Nation rights and interests as well as practices for ecological, cultural subsistence, and commercial values. Based on Ktunaxa perspective, to practice their rights, the Ktunaxa Nation require access to healthy habitats free from disturbances within their traditional territory (KNC, 2016a). The rights and interests of current and future Ktunaxa citizens with respect to access to water and lands and resources used for subsistence harvesting and country foods include the perspectives that these resources will be in sufficient quantity and quality and in preferred locations, to maintain the continuity of Ktunaxa practice throughout Ktunaxa lands and across generations (KNC et al., 2015). Along with the usage and access rights, Ktunaxa have a right to maintain governance and stewardship obligations related to water and lands and resources according to the Ktunaxa law, ʔaknumu¢tiɬiɬ (KLR et al., 2011).

From a Ktunaxa perspective, once connectivity/function within water systems is impaired (either physically, chemically, or biologically), impacts within the water system accumulate for ʔa'kxaṁa'k q̓apiqapsin (all living things) (KNC et al., 2015). As noted by Ktunaxa Nation, the Project is in a region that is in their view already nearing or past thresholds of significant impact on air and water quality, spatial disturbance, and other factors that impact Ktunaxa rights and interests as they related to the use of water for traditional purposes (KNC, 2020a). Ktunaxa citizens have already expressed elevated concern regarding industrial contaminants in the area, and psychosocial effects of contaminants consistent are being experienced. Levels of contaminants, particularly selenium, are already at levels that may cause abnormalities in fish resulting in changes in reproduction of some species and ongoing impacts to the real or perceived quality and quantity of wild foods available for Ktunaxa harvest in preferred locations, including fish in the Elk River and Michel Creek, and Lake Koocanusa, are anticipated by the KNC. As per Ktunaxa Nation, this Project in combination with other past, present, and reasonably foreseeable projects and activities will potentially exacerbate these effects on country food access and quality (at least in the short term), suggesting that existing impacts to Ktunaxa rights and interests related to country foods in the Elk Valley will get worse before they get better.

During conformity review, the KNC also noted the critical importance of the West Alexander and Alexander Creek watersheds and stated that based on Ktunaxa perspective, these two watersheds represent two of the last, and largest, remaining Elk Valley watersheds providing Ktunaxa cultural opportunities that are relatively free from the impacts of industrial coal mining (Appendix 23-A, Table 23.A-2).

As noted in Section 23.7.1.5 and included in Appendix 23.A-1, Table 23.A-2, the KNC determined that the priorities of a desired future social economy in relation to traditional lands required a balanced approach. This "balanced" vision of development and the understanding that, for the majority of Ktunaxa citizens, both protection and growth are important, but that when the two principles are in conflict, stewardship (land protection) should be treated as a priority over economic growth (KNC et al., 2015). From Ktunaxa perspective, a set of priorities for their preferred economic future as it relates to economic investment including sustainability, impact equity, economic self-sufficiency and development of business acumen, avoidance whenever possible of "futures foregone", diversification, economic growth in Ktunaxa ʔamakʔis, and social support have been identified (KNC et al., 2015). With respect to social support, the economy strengthens and reinforces culture, the rights-based economy, and engagement in cultural practices and identity. These principles for a preferred Ktunaxa future economy form key elements against which future development, including the proposed Project, can be evaluated (KNC et al., 2015).

From Ktunaxa perspective, resource extraction in the Ktunaxa ʔamakʔis without agreement by the Ktunaxa exacerbates the colonial legacy of exclusion and non-recognition of Ktunaxa rights. As noted by KNC, the Project has the potential to have an impact on the rights-based economy through the pathways of impacts on the land (e.g., the removal of a valuable resource from the Ktunaxa ʔamakʔis without adequate recognition of and compensation for Ktunaxa rights undermines the current and future economic value). Additionally, the Project footprint and temporal expansion of the mine operation removes land from access and increases access by non-Ktunaxa recreational and hunting users, deterring Ktunaxa citizens from access and reducing harvests (i.e., less economic and food security for citizens who rely on that harvested food and potentially less income from any furs that would have been sold) in (KNC et al., 2015; Appendix 23.A-1, Table 23.A-2).

From Ktunaxa perspective, avoidance whenever possible of "futures foregone" – economic activities that constrain the ability to practice others in the same area now or in the future (e.g., visibly scarring mining practices may reduce the value of lands for guiding, trapping, hunting or tourism) (KNC et al., 2015). As per Ktunaxa Nation, all current and future Ktunaxa citizens have the right to access their traditional lands used to carry out activities (e.g., fishing, hunting and trapping, harvesting and gathering for country foods) and the potential impact on the long-term or permanent displacement of access to lands may impact the ability to carry out traditional use activities.

As shared by Ktunaxa Nation, the exercise of Ktunaxa Nation's interests related to social, health, and economic conditions (e.g., country foods to support the rights-based economy) in the KNRI LSA and RSA have been impacted by past and ongoing development activity (e.g., reduction in fish and wildlife populations, reduced access to waterways and areas for traditional activities, water quality concerns in the Elk Valley, reduced access to cultural sites, and the few relatively undisturbed east-west corridors that provide "gaps" in the Elk Valley mining region for the movement of Ktunaxa land users), the possible future use of these areas for access to and usage of country foods without the Project is expected to be similar to the existing conditions (i.e., past and ongoing development activities that may impact potential future traditional activities in and access and travel through the KNRI LSA and RSA) (KNC, 2021m; 2022c).

Potential Future Use without the Project of Social, Health, and Economic Conditions

This section describes the potential future social, health, and economic conditions in the KNRI LSA and the KNRI RSA without the Project in place. This is in consideration of the certain past, present, and reasonably foreseeable future projects and activities within the KNRI RSA that could impact the potential future social, health, and economic conditions as they relate to the potential impact on the Ktunaxa Nation's ability to exercise their rights. As previously noted, the Ktunaxa Nation has not provided any information to date regarding their current social, health, and economic conditions in the KNRI LSA and the KNRI RSA. It is noted that Ktunaxa citizens have previously expressed elevated concern regarding industrial contaminants in the area as well as the related social determinants of health (KNC et al., 2014; KNC and Firelight Group, 2015; KNC et al., 2015, KNC, 2021a), and resulting in ongoing impacts to the real or perceived quality and quantity of country foods available for Ktunaxa harvesting in preferred locations and the potential human health risks associated with consumption.

As outlined in Section 23.7.1, food insecurity has been increasing in recent years and in the coming years, the reasonably foreseeable future projects and activities in the Elk Valley and climate change, as well as other factors will likely influence food security in terms of potentially affecting traditional food systems, risking further serious consequences for livelihoods and health. The impact of food insecurity on health extends beyond diet and nutrition. In addition to income growth, housing tenure is an economic risk factor for food insecurity and is linked with other factors such as population growth, urbanization, industrialization, land use shifts, water scarcity, and trends in global energy supply and food trade. As noted in Sections 23.8.3.2 and 23.8.3.3 and in Chapter 22, with respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to potentially impact social, health, and economic conditions in the KNRI LSA.

There is a potential for cumulative impacts due to past mining in the Elk Valley which has followed economic coal resources to form a long north-south band of mining-related disturbance. In the KNRI LSA, this north-south running band is interrupted by a few relatively undisturbed east-west corridors that provide "gaps" in the mining region for the movement of Ktunaxa land users. This general trend of north-south oriented mining and potential related disturbance along valley bottoms and some ridges potentially limits the east-west connectivity between alpine ranges.

The economic conditions without the Project are expected to be impacted as anticipated positive economic outcomes will diminish due to the lack of availability of economic opportunities related to the Project. Without the Project, there would be less opportunity for economic benefits to the Nation as the Project related employment opportunities would not be present.

Without the Project, impacts on social and health conditions are expected to continue as a result of industrial activities in the Elk Valley as well as those outside of the Elk Valley. These activities have the potential to impact country food availability and related Ktunaxa Nation rights. Table 23.11-7 presents a summary of the potential impacts of the Project on the Ktunaxa Nation's interests related to social, health, and economic conditions in comparison to a future scenario without the Project.

23.11.2.2 Summary of Impact on Ktunaxa Nation's Rights and Interests Assessment

Impact on Ktunaxa Nation's Title and Rights and related interests may occur where potential changes to the environment as a result of potential Project related residual effects and residual cumulative effects have the potential to impact the exercise of rights and interests. These rights and interests are related to traditional activities such as water use, fishing, hunting and trapping, harvesting and gathering. These rights and interests are also related to physical activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, and physical and cultural heritage areas and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and social, health, and economic conditions.

As summarized in Section 23.8, an assessment of the Project effects on the Sectors that relate to our understanding of Ktunaxa Nation's rights and interests and traditional land and resource use activities was undertaken. Considering the results of this assessment, as described in Section 23.11, an assessment

Table 23.11-7: Summary of Impact on Ktunaxa Nation's Rights and related interests based on Potential Future Use with and without the Project on Social, Health, and Economic Conditions

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
Potential Impact on Ktunaxa Nation's Interests related to Social, Health, and Economic Conditions	Construction and Pre-Production	Potential impact on social, health, and economic conditions and related interests due to potential interactions with: • Potential Project nuisance effects to land users due to noise and vibration. • Potential change in availability/reliance on country food. • Potential public safety due to physical hazards. • The potential for the permanent alienation of the Ktunaxa Nation from traditional use locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	Potential impact on rights due to potential interactions with: • The Ktunaxa Nation have identified some HHRA and sensory receptor locations within the Project footprint and the KNRI LSA that relate to current and rights-based use. Some of these receptor locations are understood to be related to their current use of the Project footprint for country food or activities that may be affected by Project nuisance effects. There is potential for the use of the KNRI LSA and RSA for rights-based activities by the Ktunaxa Nation citizens with respect to social, health, and economic conditions that support their rights and interests. • Past and current development activity in the KNRI LSA and RSA has resulted in potential impacts to food security and the social determinants of health related to country food consumption. This includes for example other mines, forestry activity, housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and continue to have influence on food security concerns as well as human health risk factors related to income growth, housing tenure, population growth, urbanization, industrialization, land use shifts, water scarcity, and trends in global energy supply and food trade. • These past and ongoing projects and activities located in the KNRI LSA and RSA have likely been impacting real or perceived quality and quantity of country foods
	Operations	Potential impact on social, health, and economic conditions and related interests due to potential interactions with: • Potential modest economic benefit for Ktunaxa Nation citizens that could be hired for the mine, CHPP operations administration, and coal haul. • Potential modest positive change in potential availability of community services. • Potential change due to the influx of new employees to the region that could potentially contribute to social impacts, including safety risks. • Potential Project nuisance effects to land users due to noise and vibration. • Potential change in availability/reliance on country food (e.g., loss of potential access to fish and resources in West Alexander Creek).	

Impact on Rights and Interests	Project Phase(s)	Potential Future Use with Project	Potential Future Use without Project
		• The potential for the permanent alienation of the Ktunaxa Nation from traditional use locations within the Project footprint resulting in impacts to their ability to know and teach the Ktunaxa way of living.	available for Ktunaxa harvesting in preferred locations and the potential human health risks associated with consumption. • The economic conditions without the Project are expected to be impacted as anticipated positive economic outcomes for employment, income, and local and regional economies will diminish due to the lack of availability of economic opportunities related to the Project. • Without the Project, potential future use may potentially be negatively impacted due to the lack of the residual positive economic effects of the Project. • Without the Project, impacts on Ktunaxa Nation's interests related to social and health conditions are expected to continue as a result of activities within the Elk Valley and those outside of the Elk Valley that have the potential to impact food systems. • These past and ongoing activities have likely been impacting the ability of the Ktunaxa Nation to exercise their rights related to the social, health, and economic conditions of their traditional territory. These activities will likely continue to impact Ktunaxa Nation's interests without the Project.
	Reclamation and Closure	Potential for positive impact on social, health, and economic conditions and related interests due to potential interactions with: • Potential for Ktunaxa Nation to take part in progressive reclamation opportunities and in monitoring activities, in particular: aquatic effects monitoring. • Potential change in community well-being. • Potential change in availability/reliance on country food.	

was undertaken of the potential for Project-related impacts on Ktunaxa Nation's rights and interests including their ability to exercise their rights. This assessment of potential impacts on rights and interests also considered that the Ktunaxa Nation did not author a Section C submission and additionally did not provide a Traditional Land-Use Study (TLU) to NWP. Where Indigenous Knowledge was provided by Ktunaxa Nation (during the review of Project Planning and Design documents and during Pre-Application Engagement) it has been incorporated into the impact assessment in relation to the Project. As such, limitations of the information sources considered include those publicly available (e.g., other development project EA/IA applications) and those activities and correspondence that detail Project-specific information validated by Ktunaxa Nation to be shared publicly. The severity of impacts to Ktunaxa Nation rights and interest has been identified to be generally in the range of moderate to high with higher severity for those impacts related to the Grave Prairie Cultural Landscape. The impact on Ktunaxa Nation rights and related interests are summarized in Table 23.11-8.

Ktunaxa use and occupancy mapping based on a desktop review of publicly available information, HHRA and sensory receptor locations related to Ktunaxa Nation's current and rights-based use (Figure 23.7-1 and Table 23.7-1) and feedback from Ktunaxa Nation (Appendix 23-A, Tables 23.A-1 and 23.A-2) within the Project footprint and the KNRI LSA shows that as per Ktunaxa Nation's perspective, the remaining, relatively intact high elevation slopes and ridges that would be impacted by the Project are uniquely important to Ktunaxa cultural practice in the area, including use of trails, preferred habitation areas, and preferred harvesting areas in one of the only intact drainages in the region where Ktunaxa can still follow the footsteps of their ancestors (KNC, 2022c). Ktunaxa cultural rights, including knowledge transmission and stewardship, have already been displaced by more than 50 years (two generations) of mining in the Elk Valley and resulting impacts to Ktunaxa rights and cultural practice, particularly as exercised by Yaq̓it ʔa·knuqƛi 'it, are already high magnitude and permanent. The Project will potentially expand the area of displacement and extend operations to more generations, meaning that the chain of Ktunaxa knowledge transmission regarding the area could potentially be severed entirely based on Ktunaxa perspective (KNC, 2022c). Based on Ktunaxa perspective, efforts to mitigate impacts to Ktunaxa rights, including knowledge and use, are partial and have had limited success (KNC, 2022c; 2023). As a result, based on Ktunaxa perspective, the majority of Project impacts to Ktunaxa Nation's rights and interests, in particular as they relate to Yaq̓it ʔa·knuqƛi 'it, must be considered permanent and immitigable (KNC, 2022c). Results of engagement with the KNC have informed the view that the Ktunaxa believe that the Project will worsen existing negative impacts that Yaq̓it ʔa·knuqƛi 'it has already been facing for many years.

It should be noted that through this assessment it has been determined that there is potential for the Project to result in the permanent alienation of Ktunaxa Nation from locations within the Project footprint. It is further noted that that this physical alteration and potential change in the opportunity of the Ktunaxa to practice related traditional activities may also have impacts on intangible cultural heritage. These impacts to intangible cultural heritage may include those related to traditional activities such as fishing for various species of interest including Westslope Cutthroat Trout, the hunting of elk and bighorn sheep and the trapping of species of interest to the Ktunaxa Nation, the harvesting of whitebark pine and the gathering of culturally significant plant and vegetation species, access to areas of traditional activities including the Grave Prairie Cultural Landscape, and the ceremonies and rituals tied to a sense of place within the Project footprint. The understanding and characterizing of these potential related impacts to Ktunaxa Nation's intangible cultural heritage requires further input from the Ktunaxa Nation.

Table 23.11-8: Summary of Impact on Ktunaxa Nation's Title, Rights, and related Interests

Impact on Rights and Interests	Project Phase(s)	Summary of Impact on Rights and Interests Characterization	Degree of Severity for Adverse Impacts (High, Moderate, Low)
Potential Impacts on Ktunaxa Nation's Rights related to the Use of Water for Traditional Purposes	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	Likelihood: Moderate Geographic Extent: Low Frequency, Duration, and Reversibility: Low to Moderate Cultural Well-being: Moderate Health: Low Cumulative Impacts: Moderate to High	Moderate to High
Potential Impacts on Ktunaxa Nation's Fishing Rights	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	Likelihood: Moderate Geographic Extent: Low Frequency, Duration, and Reversibility: Low to Moderate Cultural Well-being: Moderate Health: Low Cumulative Impacts: Moderate to High	Moderate to High
Potential Impacts on Ktunaxa Nation's Hunting and Trapping Rights	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	Likelihood: Moderate Geographic Extent: Moderate Frequency, Duration, and Reversibility: Low to Moderate Cultural Well-being: Moderate Health: Low Cumulative Impacts: Moderate to High	Moderate
Potential Impacts on Ktunaxa Nation's Harvesting and Gathering Rights	• Construction and Pre-Production • Operations • Reclamation and Closure • Post-Closure	Likelihood: Moderate Geographic Extent: Low Frequency, Duration, and Reversibility: Moderate to High Cultural Well-being: Moderate Health: Low Cumulative Impacts: Moderate to High	Moderate to High

Impact on Rights and Interests	Project Phase(s)	Summary of Impact on Rights and Interests Characterization	Degree of Severity for Adverse Impacts (High, Moderate, Low)
Potential Impacts on Ktunaxa Nation's Rights related to Physical and Cultural Heritage and Change to any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	• Construction and Pre-Production • Operations	Likelihood: High Geographic Extent: Low Frequency, Duration, and Reversibility: High Cultural Well-being: High Health: Low Cumulative Impacts: Moderate to High	Moderate to High
Potential Impact on Ktunaxa Nation's Interests related to Social, Health, and Economic Conditions	• Construction and Pre-Production • Operations • Reclamation and Closure	Likelihood: Low to Moderate Geographic Extent: Low Frequency, Duration, and Reversibility: Low Cultural Well-being: Moderate Health: Low Cumulative Impacts: Moderate	Low to Moderate

Mitigation measures detailed in the Indigenous Impact Management Plan (Section 23.10) have been proposed to reduce or eliminate impacts on Ktunaxa Nation's rights and interests which were developed in response to the concerns raised by the Ktunaxa Nation and the identified Indigenous Communities. The suitability of these mitigation measures and potential for effectiveness has not been confirmed by the Ktunaxa Nation to date due to the pause in engagement as noted in Section 23.5. While the understanding of whether lands in the vicinity of the Project are actively used for traditional purposes by the Ktunaxa Nation is currently restricted to information from Ktunaxa Nation's HHRA and sensory receptor locations, preliminary consultation, and publicly available sources, it is anticipated that traditional land and resource use activities will be able to continue undeterred, except where restricted for safety purposes (e.g., in the Project footprint during Construction and Operation phases). It is also anticipated that activities related to the exercise of Ktunaxa Nation's rights and interests will be able to continue by citizens of the Ktunaxa Nation in the KNRI LSA and RSA. As identified throughout the Application/EIS, engagement is ongoing, and the Ktunaxa Nation may provide additional information about the potential effects of the Project on Ktunaxa Nation and their impact on Ktunaxa Nation's rights and interests which could influence the results of the assessment presented here.

Beyond the potential Project effects and impact on Ktunaxa Nation's rights and interests summarized in the previous sections, it is important to consider the nature of these effects within the context of changes from other Project activities that have resulted in the KNRI LSA and KNRI RSA and the resulting adverse impacts on Ktunaxa Nation's rights and interests:

- In the case of the Elk Valley, as a result of past mining activity, a long north-south band of mining-related disturbances has occurred as identified by Ktunaxa Nation. The Project footprint will temporally add to existing disturbances that may act in combination with other potential impairments to wildlife movement including from highway and transportation corridors, as well as other potential effects. The combination of the Project effects with the past disturbances may potentially influence Ktunaxa activity in the larger area including the use of ancestral east-west trails.
- Past disturbance of the lands in the KNRI LSA and RSA has affected the quantity and quality of certain ecosystems (e.g., old growth forests) available for the practice of Ktunaxa rights and interests. These areas are also important for maintaining biodiversity across the landscape, which is understood to be a critically important Ktunaxa cultural value. These cumulative changes to the environment could impact Ktunaxa Nation's rights and interests.
- Past disturbance from historic activities in the Elk Valley has removed areas that are understood to be of Ktunaxa cultural value, including trails, habitation areas, and harvesting areas the KNRI RSA, and culturally and spiritually important sites elsewhere in the Elk Valley as identified by Ktunaxa Nation. This also emphasizes the cumulative effect of past developments on Ktunaxa practice of rights and interests. The Project footprint, in particular the Rail Loadout area in the Grave Prairie Cultural Landscape, will add to the past removal of areas of Ktunaxa cultural value.
- Past disturbance has, and continues to have, impacts on air and water quality in the Elk Valley which is expected to have impacted various streams, rivers, and receiving waters. Ongoing impacts to the real or perceived quality and quantity of country foods (e.g., fish and wildlife) available for the Ktunaxa Nation to harvest may be potentially exacerbated by the Project (in the short term), suggesting that Ktunaxa Nation rights and interests in the Elk Valley may be impacted temporarily during the Project Construction and Operations phases which could contribute to food insecurity. The Ktunaxa Nation have indicated that the land and waters projected to be

impacted by the Project are potentially actively used by Ktunaxa citizens for food harvesting activities, therefore, the potential for impact on their rights and interests related to those locations exists.

- Finally, the intangible aspects of cultural heritage that may or may not be tied to a sense of place, have not been confirmed by the Ktunaxa Nation and no mitigation measures have been identified for the impact on rights and interests associated with the alienation of Ktunaxa Nation from areas within the Project's influence.

Based on existing available information, and uncertainties related to the effectiveness of proposed mitigation, impacts on Ktunaxa Nation's rights and interests have the potential to occur, though as previously noted, are assessed to be of moderate to high severity. It is noted that there is potential for impacts to Ktunaxa Nation rights and interests to be further articulated through continued engagement with Ktunaxa Nation. On-going programs of environmental and socio-economic monitoring activities undertaken in collaboration with the Ktunaxa Nation and the co-development of offsets and/or mitigation measures to address where applicable the concerns noted above have been further identified through, the Indigenous Impact Management Plan (Section 23.10) and Chapter 33. As noted above, the NWP is committed to continued engagement with the Ktunaxa Nation on the impact on their rights and interests in relation to the Project.

23.12 Follow-up Strategy

The purpose of the follow-up strategy is to verify the accuracy of the effects assessment and to determine the effectiveness of mitigation measures including those identified in the Indigenous Impact Management Plan. Follow-up strategies related to the Ktunaxa Nation[33] and its member Bands' rights and interests are proposed where the effects assessment determines that uncertainty exists in the predictions of effects or in the effectiveness of mitigation proposed. Follow-up programs are relevant due to the uncertainty in the prediction of effects on changes to the use of lands and resources for traditional purposes by Ktunaxa Nation. In terms of the interaction of Ktunaxa Nation's rights and interests to the selected receptor and intermediate VCs, follow-up programs will also serve to improve the level of confidence in the predictions of Project-related effects on various VCs (i.e., monitoring plans for wildlife VCs such as ungulates and carnivores) in this assessment process.

As noted in Section 23.10 and based on the assessment of potential impacts on the rights and interests of the Ktunaxa Nation, the change in use of lands and resources for traditional activities such as the use of water, fishing, hunting and trapping, harvesting and gathering, or on activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, and on physical and cultural heritage areas will require follow-up monitoring. Follow-up monitoring will also enable response to new and developing issues of concern during the Project implementation hence ensuring that Project-related activities comply with and adhere to Environmental Assessment Certificate (EAC) conditions and include provisions for community-based monitoring where applicable. The proposed approach for managing the corrective actions that may potentially be required will involve monitoring compliance with regulations,

[33] For simplicity, Ktunaxa Nation or Ktunaxa Nation Council will be used as inclusive terms that incorporate the Yaq̓it ʔa·knuqƛi 'it First Nation (ʔakink'um‡asnuq‡iʔit or Tobacco Plains Band), akisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), unless there is information specific to the perspective of one group.

managing worksites, executing specific environmental and social works and seeking solutions to emerging environmental problems.

Communication of the results of the follow-up strategies and/or monitoring programs to the Ktunaxa Nation is an essential component that will be undertaken through the Indigenous Engagement and Reporting Plan (Chapter 33, Section 33.4.3). Not only does this maintain communication with all parties and keep them informed of the Project activities and their associated environmental effects, but it also offers the opportunity to incorporate input from Ktunaxa Nation into the design of the Indigenous Impact Management Plan and related monitoring programs and any consequential adaptive management, where applicable. NWP is available to explore the possibilities of having monitoring programs incorporate traditional knowledge or similar study methodologies as they can contribute to achieving defined monitoring program objectives.

Using an adaptive management plan, the follow-up strategies and the monitoring programs will be periodically evaluated for effectiveness and the appropriateness of their elements, and the parameters being measured and reported. This evaluation will be done in consultation with the appropriate regulatory agencies and the results of these strategies and programs will be analyzed. If any elements of the follow-up strategies and the monitoring programs warrant adjustment to meet the aim and intent, then in consultation with regulatory agencies, the strategies and the programs may be adjusted.

It is anticipated that as a condition of the approval of the Project, the results of the follow-up strategies, and the monitoring programs or measures being conducted must be reported to the appropriate regulatory agencies, both federal and provincial. All data and information gathered as part of each management plan, follow-up strategy and/or monitoring program will be documented using the protocols established for each parameter. These protocols were established during the collection of the baseline information and the manner in which they were recorded at that time will be used during the adaptive management plans, follow-up strategies and/or monitoring programs to allow for a proper comparison of the results. Reporting will continue so long as there are follow-up and monitoring activities in place. Once these activities have verified the environmental effects predictions and/or the effectiveness of the mitigation measures, and compliance with required mitigation, the follow-up strategies and the monitoring programs will cease, and reporting will no longer be required. Monitoring for compliance with regulatory permits will continue for as long as is required by the responsible permitting authority.

23.13 References

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