NWP Coal Canada Ltd

Chapter 18 - Socio-Community Assessment

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

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18. Socio-Community Assessment

18.1 Introduction

Socio-community valued components (VCs) are key components to consider due to the nature of the Project and its potential effects on social conditions, as well community health and well-being. The socio-community assessment is critical to understanding how local and regional communities function and how these communities may be affected by Project-related effects; as such, housing, community services, and infrastructure and community health and well-being were identified as VCs in the Application Information Requirements (AIR; Environmental Assessment Office [EAO], 2018).

Chapter 18 defines the scope of the assessment on socio-community effects through the presentation of the VCs, and provides an overview of existing conditions related to: population and demographics; education facilities and attainment; housing and accommodation; community services; community health and well-being; community infrastructure; and transportation. The effects assessment on the socio-community VCs includes an overview of the Project's interactions, potential effects, mitigation and benefit enhancement measures, characterization of residual effects, and a cumulative effects assessment.

An understanding of the potential effects to the socio-community VCs with respect to the Project is critical to the Project design, engineering, operations, and assessment and mitigation of potential environmental effects. The Project may contribute to local population growth, increase economic activity, and change environmental conditions, which could influence the socio-community VCs. The assessment of effects on the socio-community VCs has linkages with other VCs; these effects are primarily assessed in the following chapters:

- Chapter 6: Atmospheric Environment Assessment;
- Chapter 7: Acoustic Environment Assessment;
- Chapter 11: Surface Water Quality Assessment;
- Chapter 17: Economic Conditions Assessment;
- Chapter 19: Land Use Assessment;
- Chapter 22: Human and Ecological Health Assessment; and

- Indigenous Communities discussed in Chapters 23 through 31.

18.1.1 Regulatory and Policy Setting

The socio-community assessment has been prepared in accordance with the requirements in the provincial AIR (EAO, 2018) and the Guidelines for the Preparation of an Environmental Impact Statement for the Crown Mountain Coking Coal Project (EIS Guidelines; Canadian Environmental Assessment Agency, 2015).

The socio-community assessment has considered the guidance outlined in Guidelines for Assessing Social, Economic, Cultural and Health Effects in EAs in BC (2020), which provides guidance to help identify, understand and manage potential social, economic, health and cultural effects of projects.

As stated in Chapter 1, the Project is subject to and is being prepared to meet the requirements of the Canadian Environmental Assessment Act (CEA Act, 2012) and the British Columbia Environmental Assessment Act (B.C. EAA, 2002). As previously noted in this Application/EIS, the CEA Act, 2012 was replaced by the Impact Assessment Act (IAA) in 2019 and the B.C. EAA was updated in 2018. As recommended by provincial and federal regulatory agencies, some elements of the new/updated EA/IA processes have been considered in this EA process. One of these elements is the consideration of gender through a Gender Based Analysis Plus (GBA+). The IAA, 2019 includes a requirement to consider "the intersection of sex and gender with other identity factors" in federal impact assessments (section 22(1)(s)), otherwise known as the gender-based analysis-plus (GBA+) provision. On May 3, 2023, the Project was transitioned to the EAA (2018) through a Transition Order under Section 78(7) of the 2018 Act. The B.C. EAA, 2018 requires assessments to consider "the disproportionate effects on distinct human populations, including populations identified by gender" (B.C. EAA, 2018).

A GBA+ assessment considers the potential for disproportionate effects for diverse or potentially vulnerable population groups or subgroups (e.g., youth, women, and Indigenous people). NWP has chosen to include GBA+ considerations in this Application/EIS to meet emerging expectations of the IAA and B.C. EAA, 2018. While the GBA+ study undertaken for this Project incorporated elements of the GBA+ approach; it was not intended to represent a full GBA+ assessment as this Project follows the legislative requirements of CEA Act, 2012 and B.C. EAA, 2018. This study has included the consideration of various issues, for example: the potential for increased violence to women, changes in housing and health care accessibility, mental health, and employment barriers. A focus of this work is on the recommendation of measures that NWP could undertake to reduce any ongoing or potentially additional disproportionate impacts to more vulnerable sub groups.

The findings and recommendations resulting from the completed gender assessment are included in this chapter (socio-community assessment) and in Chapter 17, which summarizes economic conditions in British Columbia and the Regional District of East Kootenay (RDEK) and the potential for impact on these conditions as a result of the Project. Chapter 19 provides an overview of land use at the regional and local level and the potential for impacts on land and resource use as a result of the Project.

18.2 Scope of the Assessment

18.2.1 Valued Components and Measurement Indicators

Two socio-community VCs were identified as receptor VCs for the Project in the provincial Application Information Requirements (AIR; EAO, 2018): housing, community services, and infrastructure; and community health and well-being. Housing, community services, and infrastructure was selected as a VC as an increase or influx of employees (and their families) for Project construction and operation may increase demand on local services such as housing, emergency services, and local infrastructure.

Community health and well-being was selected due to the potential for human health to be impacted through direct and indirect sources. For employees of the Project, parameters of the position (e.g., shift work, working conditions) may impact employee health and well-being. Employees and residents may also be impacted by contaminated local water sources associated with the Project, such as seepage from the Mine Rock Storage Facility or discharges to local watercourses that are used for recreational purposes (e.g., recreational fisheries), as well as through the accumulation of dust on plants which are consumed by people. Local residents, employees, and visitors may be affected by changes in public safety as a result of the Project. Public safety is a concern over the course of the Project as the public may be impacted if exposed to physical hazards or emissions at the Project site (e.g., blasting activities during active mining and other industrial activities, dust generation on haul routes, noise and vibration, increased traffic on roads and highways).

Measurement indicators for the socio-community VCs are summarized in Table 18.2-1.

Table 18.2-1: Measurement Indicators and Effects Pathways for Socio-Community VCs

Valued Component	Measurement Indicators	Potential Effects Pathways
Housing, Community Services, and Infrastructure	• Population and demographics of communities • Housing demand and supply • Availability of community services • Community infrastructure demand and availability (e.g., water, wastewater, and transportation infrastructure)	• As a result of the Project attracting more people to the area because of employment opportunities (influx), there could be: • Change in population and demographics of communities • Change in housing demand and supply • Change in availability of community services • Change in infrastructure demand and availability (e.g., water, wastewater, and transportation infrastructure)
Community Health and Well-Being	• Community well-being (e.g., drug and alcohol abuse, crime rates, perceptions regarding increased outsiders in communities etc.) • Public safety due physical hazards (e.g., truck traffic)	• As a result of the Project attracting more people to the area because of employment opportunities (influx), there could be changes to community well-being • The operation of the Project could impact community safety (e.g., from the

Valued Component	Measurement Indicators	Potential Effects Pathways
	• Nuisance effects to residents (e.g., from noise and change in satisfaction with place and use/enjoyment of property) • Community health conditions (e.g., change in air quality, consumption of contaminated water or food) • Availability/reliance on country foods	operation of mine-related equipment on public roads) • Potential in project nuisance effects to residents (e.g., from noise and change in satisfaction with place and use/enjoyment of property) • Physical changes to the Project including potential impact to air quality, water quality, and noise could impact community health • The Project could result in impacts to wildlife and vegetation that could have an impact on country food availability

18.2.2 Indigenous and Stakeholder Consultation

NWP engaged with Indigenous groups and conducted consultation with public stakeholders and regulators. A summary of all consultation and engagement activities undertaken to date is presented in Chapter 4. A summary of consultation feedback specific to socio-community is presented in Table 18.2-2. Feedback received was used to inform the assessment on community health and well-being.

Table 18.2-2: Summary of Consultation Feedback on Socio-Community

Topic		Feedback Received*:				Consultation Feedback	Feedback Source	Response or Actions Identified
		IG	G	P/S	O			
Public Safety				X		Concerned about collisions on Grave Creek Road due to Project-related traffic and volume of recreational users.	Video Conference Call with Sparwood Fish and Wildlife on March 10, 2021	A traffic control plan will be developed to minimize the potential for incidents with mine related traffic and public use of Grave Creek Road. Use of the road will be monitored and adjustments made as required.

18.2.3 Assessment Boundaries

18.2.3.1 Spatial Boundaries

The study areas were determined based on the proximity of the Project to adjacent communities and the potential for Project effects on the existing socio-community environment. The spatial extent of the socio-community environment study areas were determined considering the following:

- Project activities;

- Project location;
- Physical extent of potential Project and cumulative effects; and
- Provincial, regional, and local government administrative boundaries.

The Project is also in the asserted traditional territory of the Ktunaxa Nation, which is comprised of the following four Ktunaxa member communities:

- ʔAkisq'nuk (Columbia Lake) First Nation;
- ʔAq'am Community (St. Mary's Band);
- Yaqan Nu?kiy (Lower Kootenay Band); and
- ʔakinkum‡asnuq‡iʔit (Tobacco Plains Indian Band).

Additional Indigenous communities may have an interest in the Project and are considered in the assessment of impacts on Indigenous rights and interests, which is described in Chapters 24 to 31:

- Blood Tribe/Kainai;
- Piikani Nation;
- Siksika Nation;
- Tsuut'ina Nation;
- Métis Nation of Alberta – Region 3;
- Shuswap Indian Band;
- Stoney Nakoda Nation; and
- Métis Nation of British Columbia (including Elk Valley Métis Nation).

As detailed in Chapter 5, Table 5.3-2, the spatial boundaries for the socio-community VCs have changed from the study areas presented in the AIR. A discussion on the spatial boundaries used in the assessment is provided below.

18.2.3.1.1 Project Footprint

The Project footprint is the directly affected area and represents the anticipated area of physical disturbance associated with the construction and operation of the Project. This area includes both permanent (e.g., mine site) and temporary (e.g., laydown areas) Project components. The Project footprint covers approximately 1,283 hectares (ha) and is positioned approximately 12 kilometres (km) northeast of Sparwood and approximately 5 km west of the provincial boundary between B.C. and Alberta.

18.2.3.1.2 Local Study Area

The Socio-Community Local Study Area (LSA) represents the areas beyond the Project footprint within which direct and indirect Project effects are measurable or can occur; it can be thought of as the "zone of influence" of the Project on the socio-community VCs. The Socio-Community LSA was determined based on the extent of potential changes as a result of the Project, specific to each VC (Figure 18.2-1). There is potential for communities in the Socio-Community LSA to experience Project-related direct and indirect effects in relation to population change, employment, business opportunities, government revenues, housing, infrastructure, and emergency services.

As shown in Figure 18.2-1, the Socio-Community LSA includes the following areas/communities in proximity to the Project location:

- District Municipality of Sparwood;
- District of Elkford;
- City of Fernie;
- City of Cranbrook;
- Municipality of Crowsnest Pass (Alberta);
- Regional District of East Kootenay Electoral Area A; and
- Ktunaxa Nation:
  - ʔAkisq'nuk (Columbia Lake) First Nation;
  - ʔAq'am Community (St. Mary's Band);
  - Yaqan Nukiy (Lower Kootenay Band); and
  - ʔakinkum‡asnuq‡iʔit (Tobacco Plains Indian Band).

Local communities such as Sparwood, Elkford, Crowsnest Pass, and Fernie provide workers for area mines and are also expected to supply the workforce for the Project. These communities may also experience in-migration of new workers seeking employment opportunities for the Project. Therefore, the socio-community environments of these communities is likely to be impacted by the Construction and Pre-Production, Operations, and Reclamation and Closure phases of the Project.

18.2.3.1.3 Regional Study Area

The Socio-Community Regional Study Area (RSA) is the regional area within which direct and indirect effects[1] would be expected to occur and is the area which will be considered for the assessment of cumulative environmental effects. An example of an indirect effect is the potential change in rental and housing prices and availability due to the increased demand for accommodations in nearby communities by new mine workers moving into the area throughout the Project's lifecycle.

As shown in Figure 18.2-1, the Socio-Community RSA incorporates the RDEK for describing socio-community baseline conditions. It is anticipated that additional human resources, supplies, and services for the Project may be drawn from the RDEK. The RDEK provides local government services to rural residents in unincorporated areas, provides representation for rural residents on regional issues, and works with the local municipalities to provide services within urban areas. The RDEK provides services to areas outside of municipalities, and works with municipalities and electoral areas to ensure the provision of shared services (e.g., land use planning, fire protection, solid waste, and recycling, etc.; RDEK, 2019a). The Socio-Community RSA consists of an area of 2.78 million ha and the communities within the Socio-Community LSA, as well as rural areas within the RDEK.

The City of Cranbrook is considered to be a central hub for services within the RDEK, housing both the East Kootenay Regional Hospital and one of the RDEK's main regional offices. The Municipality of Crowsnest Pass continues to be the residence for workers that commute to British Columbia mines for employment. Additionally, Crowsnest Pass itself is a heavily used thoroughfare linking communities between southeastern B.C. and southwestern Alberta seeking access to services and attributes in both areas (e.g., educational facilities located in Lethbridge, Alberta are accessed by B.C. residents; recreational areas located in Fernie, B.C. are frequented by Alberta residents).

[1] Indirect effects are defined by the Impact Assessment Agency of Canada (IAAC) as secondary environmental effects once removed from the cause-effect pathway that occurs as a result of the Project (IAAC, 2019).

Crown Mountain Coking Coal Project

Figure 18.2-1
Socio-Community Local and Regional Study Areas

LEGEND

- Socio-Community Regional Study Area
- Socio-Community Local Study Area
- Project Footprint
- Highway
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Provincial Park/Protected Area
- National Park
- British Columbia/Alberta Border

0 15 30
Kilometres

Scale 1:850,000

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.

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

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The RDEK Electoral Area A is located on the east side of the Socio-Community LSA, extending south to the United States of America (U.S.A.) border and north of Elkford. The RDEK Electoral Area A includes the unincorporated rural areas located outside of the municipalities of Elkford, Sparwood, and Fernie. The RDEK Electoral Area A may contain workers, community members, or businesses that could be impacted by the development and presence of the Project.

18.2.3.2 Temporal Boundaries

Temporal boundaries include the time periods during which the Project is anticipated to result in potential effects on VCs (EAO, 2013). The temporal boundaries considered in the socio-community assessment include the temporal limits of the Project in terms of its Construction and Pre-Production, Operations, and Reclamation and Closure phases. Since there will no longer be any activity at the site during the Post-Closure phase, this phase is not relevant to the assessment of effects on the socio-community VCs. The temporal boundaries of the Project used in the effects assessment include the timing of Project phases and activities as outlined in Table 18.2-3. Additional details on the Project phases and activities are provided in Chapter 3.

Table 18.2-3: Temporal Boundaries for the Project Effects Assessment

Phase	Project Year	Length of Phase (Years)
Construction and Pre-Production	1 – 2	2
Operations	3 - 17	15
Reclamation and Closure	18 – 19	2

18.2.3.3 Administrative Boundaries

Administrative boundaries represent limitations imposed on the assessment due to political, economic, and social constraints (EAO, 2013). Administrative boundaries influencing the assessment include geographic areas used by Statistics Canada, B.C. Stats, regional districts, and regional and local health authorities. Boundaries of the following administrative entities were considered in the assessment:

- District Municipality of Sparwood;
- District of Elkford;
- City of Fernie;
- City of Cranbrook;
- Municipality of Crowsnest Pass (Alberta);
- Regional District of East Kootenay Electoral Area A; and
- Ktunaxa Nation reserve lands.

18.2.3.4 Technical Boundaries

Technical boundaries are limitations to the ability to predict or quantify changes to the socio-community environment. The socio-community assessment is limited by gaps in the availability of data. The most recent census data available for use is the 2016 Canadian Census. Where available and relevant, historical trend data and information (i.e., 2006 and 2011 Census data) are presented to show changes over time with respect to a specific measurement indicator.

Another key technical boundary to consider is the uncertainty and unpredictability of social outcomes due to the large number of variables and external factors that influence the socio-community environment. Socio-community effects depend on individual, municipal, and regional decisions regarding health and social services, housing, employment, education, training, and so on. While it is not difficult to develop a general understanding of the socio-community environment and potential effects, it is more difficult to establish certainty with respect to these effects.

18.3 Regional and Local Overview

Along with forestry, mining is the core industry in the area of the Project, with Socio-Community LSA communities dependent upon the sector as the primary industry and source of demand for other businesses within the community. Currently, there are four operating mines within the RDEK, with planned mines at various stages of the development process.

The population of the local area includes a variety of small communities in B.C. and Alberta, including Sparwood, Elkford, Fernie, and Crowsnest Pass. Individuals also live in the RDEK, including Electoral Area A. The community of Cranbrook is also considered as a regional service centre for the Project. Local communities such as these are likely to provide workers and house new workers, and potentially their families, either permanently or temporarily. Local communities in the Socio-Community LSA in B.C. can be characterized as having a relatively larger working age population when compared to the RDEK, Cranbrook, and Crowsnest Pass. These communities also have a lower median age. The RDEK also has a large temporary or seasonal population. Temporary and seasonal populations enter the Socio-Community LSA for a variety of reasons, including recreation, tourism, and working in the mining sector.

Housing characteristics in the Socio-Community LSA and RSA are defined by movements in the mining sectors, with values corresponding to the sector's performance. Availability of rental housing was identified as a concern through primary data collection. Near the Project, rental costs are similar to, or have previously exceeded, the costs of ownership. Shift work at the mine sites in the Socio-Community LSA is viewed as the driver of the high costs of rentals and shelter overall. Housing issues are often driven by income inequalities between those in the mining sector and other community members, as mining employees tend to have higher wages and can generally afford to spend additional income on housing. This inflates the price of shelter for other community members, negatively impacting them.

Health services overall are lacking in Socio-Community LSA communities, with local residents known to seek health care services outside of their communities, and in some cases, moving to other communities in order to receive the services they need. Ambulatory, fire and emergency services in the Socio-Community LSA communities were identified as adequate. Despite the large catchment/service area served by the Elkford detachment of the RCMP, policing services are generally sufficient for the communities in the Socio-Community LSA.

There is an overarching lack of sufficient child care in the communities in the Socio-Community LSA, especially with the growing number of families in the area having children. With the exception of aging infrastructure, community indoor recreation facilities and infrastructure are adequate in communities in the Socio-Community LSA. Through the primary research program, key informants indicated that there are no significant capacity issues with existing indoor and municipal recreation facilities and infrastructure.

Within the Socio-Community LSA and RSA, no specific issues related to capacity and performance of community infrastructure were identified; however, some communities are in the process of studying infrastructure capacity. In addition, it was noted that industrial traffic does place a burden on road transportations systems within the Socio-Community LSA. Traffic concerns are enhanced in the summer months with seasonal tourism.

Communities in the Socio-Community LSA tend to be above the median for community well-being. Perceptions of health for community members in the Socio-Community RSA tend to be below the provincial averages; however, community members within the Socio-Community RSA are more likely to perceive a sense of community belonging (69%) compared to provincial averages (65%). Overall, a lower proportion of community members within the Socio-Community RSA are satisfied or very satisfied with their life (87%) compared to provincial averages (92%) (Statistics Canada, 2013).

18.4 Existing Conditions

18.4.1 Data Collection Methods

Data and information collection for the socio-community existing conditions was completed by conducting preliminary desktop (secondary) research, supplemented by conducting key informant interviews and stakeholder engagement (primary research). Secondary research was conducted through 2018 and 2019. Primary research was conducted through 2020; NWP has continued engagement activities throughout 2021.

18.4.1.1 Primary Data Collection

Primary research was conducted as part of the socio-community baseline information collection program to supplement baseline data and information gathered through secondary (desktop) research. Key informant interviews and discussions (via telephone and/or questionnaire) were conducted with stakeholders, including external agencies (i.e., municipal government), community representatives, and key interest groups. Information sources used to prepare existing conditions for Indigenous communities are provided in Chapters 23 to 31.

The purpose of the socio-community primary research program was to:

- Clarify and verify secondary data collected on the Project study areas;
- Acquire additional information to address identified knowledge gaps; and
- Identify concerns related to current and future regional mining activity, including the Project.

Participants were identified based on their ability to support the overall objectives of primary data collection, with a focus on addressing knowledge gaps. Participants included representatives from local government, non-governmental organizations (NGO), recreation and tourism businesses, clubs, educational institutions, service providers, and other organizations relevant to the socio-economy. Each participant was provided a tailored list of questions specific to their area of interest. A list of organizations contacted, as well as copies of the interview guide questions, are provided in Appendix A of Appendix 17-A.

Fifty-three stakeholders were contacted between May 2020 and July 2020. Each stakeholder was contacted a minimum of three times for participation in the program, including by phone and email. Of the stakeholders that were reached, 25 interviews were conducted and 15 stakeholders expressed that they were not willing to participate in the survey.

Primary data collection provided contextual information on the Socio-Community LSA. Information from stakeholders has been integrated throughout the socio-community existing conditions.

In addition to the activities noted above, in 2021, NWP continued to engage with key stakeholders through discussions, meetings, and surveys. This included the administration of an online survey available to the public from December 2021 to January 2022 to received additional input and suggestions on the Project. A total of 154 responses were received. Information from this survey applicable to the socio-community assessment have been considered. A summary of the responses to this survey are available in Appendix 19-B (Summary of Land Use and Access Survey Results). NWP's ongoing outreach efforts have provided additional primary data that are relevant to the socio-community environment; this information has also been integrated into the socio-community existing conditions.

To support the examination of gender related considerations, targeted interviews were conducted with representatives of various sub-groups located in the Elk Valley and/or associated with the mining industry. The purpose of the interviews was to better understand any existing gender, diversity, and identity related issues in the local communities and mining industry and to determine what recommendations could be made to address some of the identified issues in relation to the Project.

Participants were identified based on their knowledge and experience in the local mining industry and/or familiarity with the local communities/Elk Valley. Women employed or formerly employed in mining were specifically selected for interviews as they are underrepresented in the mining industry. The following individuals/organization representatives were interviewed:

- Socio-Community & Economic Effects Advisory Committee (District of Sparwood);
- Women in Mining Canada;
- Women/Indigenous Women employed/formerly employed in mining;
- Fernie Pride Society;
- Alpine Childcare Solutions;
- Elkford Housing Society;
- Elkford Women's Task Force Society;
- Kootenay Employment Services;
- Indigenous-owned business; and
- Elk Valley RCMP Detachment.

To guide the interview, each participant was provided a tailored list of questions related to their specific to their area of interest. The interview questions are provided in Appendix 17-B.

Twenty-two stakeholders were contacted between December 2021 and January 2022. Each stakeholder was contacted by email and/or phone to determine their interest in participating in an interview. As the interviews progressed, key sub-group representatives who did not respond to the initial interview request were emailed/called to fill in any knowledge gaps and/or to provide information for a subgroup that was

underrepresented in the interviews. Several individuals responded and participated as a result of the follow up request. Of the stakeholders that were reached out to, 12 semi-formal interviews were conducted by phone or video call with some email follow-up during the interview period (December 2021 to January 2022). Over the course of the interviews, the interviewees noted their appreciation to participate in the process to collect gender related information, particularly as it relates to the mining industry.

As mentioned in Section 18.1.1, a full GBA+ analysis was not completed as the requirements for GBA+ were through federal and provincial legislation introduced during the course of the EA. The intent of the GBA+ study was to gain a high-level understanding of gender and diverse populations/subgroup issues in the mining industry and the study area in order to address gender considerations for the Project. A limited number of stakeholders were interviewed from a variety of subgroups. These subgroups were identified through local municipal websites and proponent knowledge of the area. Limitations of this study include:

- Small sample size;
- Limited perspectives from different subgroups;
- Potential unintended exclusion of subgroups; and
- Potential bias (interviewer(s)/proponent) for the selection of interviewees.

Primary data collected through the GBA+ interviews were compiled into key themes and points raised by stakeholders. The information from stakeholders has been integrated in the existing conditions, assessment, and recommendations sections of this chapter.

18.4.1.2 Secondary Data Collection

The main source of socio-community baseline information collected through desk-based research is based on information available through Statistics Canada and, in particular, the 2016 Census of Canada and National Household Survey (NHS). These valuable sources provide baseline information on topics such as demographics, education level of the population, and housing, among others. Table 18.4-1 provides a list of areas of interest used for existing conditions characterization, and their sources. Areas of interest provide the basis for defining a robust social community profile for communities and regional areas which may be impacted by the Project. These areas of interest were selected to form the basis for indicators used in the assessment of impacts on socio-community conditions.

Table 18.4-1: Socio-Community Research Sources

Topic	Areas of Interest	Secondary Sources
Change in Housing, Community Services, and Infrastructure		
Population Demographics	• Population • Demographics • Migration	• Canada Census (2006, 2011, 2016) • StatsCan Aboriginal Population Profile (2006, 2011, 2016) • BC Stats • Regional District of East Kootenay • Municipal websites

Topic	Areas of Interest	Secondary Sources
Education	• Facilities • Levels of attainment • Training programs	• Canada Census (2006, 2011, 2016) • Post-secondary facility websites (e.g., College of the Rockies) • School districts • Municipal websites
Housing	• Permanent accommodation • Temporary accommodation • Seasonal accommodation	• Canada Census (2006, 2011, 2016) • Provincial Government websites • Academic literature • Web-based sources
Social and Community Services[1]	• Health services • Ambulance services • Fire and emergency services • Police and protective services • Child care services • Recreation services	• BC Stats • B.C. Ministry of Health • Municipal websites
Community Infrastructure	• Water • Wastewater • Solid waste • Power • Gas	• Municipal websites • Service provider websites • Web-based sources
Transportation	• Airports • Roads • Rail	• B.C. Ministry of Transportation • Web-based sources
Change in Community Health and Well-Being		
Community Health and Well-Being	• Community well-being • Prevalence of substance misuse • Available community and support services and networks • Change in existing environmental conditions	• BC Stats • B.C. Ministry of Health • Interior Health Authority

Note: (1) Information provided in the Health, Community Services, and Infrastructure section will also inform the Community Health and Well-Being section.

18.4.1.3 Data Challenges

Census data considered in the development of socio-community existing conditions was the 2016 Canadian Census. Where available and relevant, historical trend data and information (i.e., 2006 and 2011 Census data) are presented to show changes over time with respect to a specific indicator. While updated census data is becoming available in 2022, the baseline assessment had been completed by the time these data were released.

Some Census and National Household Survey data are limited for smaller communities due to confidentiality concerns related to suppression of data. Population data are suppressed in communities with less than 40 people, while income data are suppressed when a community has less than 250 people, or less than 40 households. Data may also be suppressed when enumeration was incomplete, or data

quality was poor. Gaps were also apparent in the collection of secondary information on Indigenous communities in the Socio-Community LSA. These communities may not have publicly available data on facets of the socio-economy such as community services and infrastructure.

Sensitive data topics related to community well-being and health have limited secondary data available. Efforts were made through the primary research program to gather additional information to further understand the community health and well-being in the Socio-Community LSA; however, in some cases, stakeholders were unable or not willing to participate. Despite gaps, sufficient information is available to understand the current state of health and well-being in the communities in the Socio-Community LSA.

18.4.2 Housing, Community Services, and Infrastructure

18.4.2.1 Population and Demographics

The following describes population and demographic trends for the RDEK and Socio-Community LSA. It is important to understand that baseline condition and the age and distribution of populations can influence community services and infrastructure use, community well-being, as well as other components of the socio-community environment. The Project has the potential to impact local population levels as it could attract workers to the area. It is assumed that the individuals aged 15 to 64 years of age (inclusive) represent the working-age population, while those aged 65 and older represent the retired-age (or senior) population.

18.4.2.1.1 Regional Study Area

In 2016, the total population in the RDEK was 60,439. Between 2006 and 2016, the overall population in the RDEK increased steadily at a rate of approximately 9%. In comparison, during the same period, B.C.'s population growth rate was 13%, or 4% higher than the RDEK (Statistics Canada, 2007a; 2012a, 2013a, 2017ab, 2018a). Overall, the higher rate of population growth for the province is likely driven by urban areas due to the concentration of employment opportunities in finance, technology, and similar industries in urban centres.

In 2016, the total Indigenous population in the RDEK was 4,710. Between 2006 and 2016, this population increased by 37.5%. This rate is well beyond the growth of non-Indigenous populations and is consistent with national trends where Indigenous peoples are Canada's fastest growing demographic (Kirkup, 2017).

Overall, the RDEK and the Province of B.C. have a similar age cohort profile. The majority of both these populations are working age (15 to 64 years old). However, growth in the working age population in the RDEK is slower than in the province. This may be due to trends towards economic opportunities not commonly found in the RDEK such as finance, technology, and other professional services industries; however, the younger population in the RDEK has increased at a higher rate than the province (Statistics Canada, 2017c).

The median age for Indigenous peoples in the RDEK is lower than the median age for non-Indigenous people. This is consistent with the general Indigenous population in Canada, which has a high fertility rate and lower life expectancy than the general population (Kirkup, 2017). Age profile information for the RDEK Indigenous population was not available for the 2006 or the 2011 Census.

Population projections from 2019 through 2028 suggest that overall, population growth will be minimal and over three times less in the RDEK (3.5%) than for B.C. (11.1%) as urbanization becomes the norm (BC Stats, 2018). While it is anticipated that the RDEK will see an overall decline in populations for individuals 64 years of age or younger, the projections suggest a substantial increase in the proportion of seniors (i.e., 65-years of age and older) in the population, increasing by 33.4% from 2019 to 2028. The senior demographic dependency ratio[2] for the RDEK is expected to increase from a ratio of 34.3 seniors to 100 workers (i.e., working-age population) in 2019 to a ratio of 48.3 in 2028, which is much higher than the estimated ratio for the province (from 29.0 in 2019 to 37.7 in 2028) (Statistics Canada, 2019a).

The RDEK has a large temporary or seasonal population. The large temporary and seasonal populations in the Socio-Community LSA are due to a variety of reasons including recreation, tourism, and working in the mining sector, which cycles individuals in and out of the community based on vacation plans and work schedules. Seasonal population is not readily available in the Census data; however, an estimate was prepared for this assessment by considering the number of available dwellings and the average size of a household. It was found that in 2016, the temporary population was anticipated to be approximately 19,200 people based on the 8,334 residences not permanently occupied in 2016, which would be equal to approximately 32% of the population of RDEK. This population uses community services and impacts the overall socio-economy. Aside from the City of Fernie, other communities in the RDEK have indicated that they do not have a prevalent secondary, seasonal, or temporary population.

18.4.2.1.2 Local Study Area

Within the Socio-Community LSA, in 2016, approximately 3,345 people were employed in mining, quarrying, and oil and gas extraction, and 1,865 in construction (Table 18 in Appendix 17-A [Socio-Economic Baseline Report] provides further detail on population and labour force information by industry). The population and age cohorts for the Socio-Community LSA communities are presented in Table 18.4-2.

Table 18.4-2: Local Study Area Communities – Population Profiles, 2006 – 2016

Year	Sparwood	Elkford	Fernie	Cranbrook	Crowsnest Pass	RDEK Electoral Area A*	RDEK
Population							
2016	3,784	2,499	5,249	20,047	5,589	1,943	60,439
2011	3,667	2,523	4,448	19,319	5,565	1,899	56,685
2006	3,618	2,463	4,217	24,138	5,749	1,873	55,485
% Change							
2006 – 2016	4.6%	1.5%	24.5%	-16.9%	-2.3%	3.7%	8.9%
2011 – 2016	3.2%	-1.0%	18.0%	3.8%	0.4%	2.3%	6.6%
2006 – 2011	1.4%	2.4%	5.5%	-20.0%	-3.2%	1.3%	2.2%

Source: Statistics Canada, 2007; a; b; c; d; e; g; f; Statistics Canada, 2012a; b; c; d; e; f; and Statistics Canada, 2017; a; b; c; d; e; f; g.
*Note – Includes rural population in RDEK Electoral Area A outside of the communities located within it.

[2] Calculation of the senior demographic dependency ratio is based on Number of Seniors (age 65 or older) per 100 Workers (working-age population). Note that the working-age population used for this calculation are those aged 15 to 64.

District Municipality of Sparwood

Between 2006 and 2016, the total population of Sparwood increased by 4.6%, growing from 3,667 to 3,784. The working-age population in Sparwood increased by approximately 1% between 2006 and 2011, followed by a decline of nearly 3% over the next 5 years (Statistics Canada, 2007f; Statistics Canada, 2017g). The decline and slowing growth may be attributed to the decline of Asian demand for coal in 2011 and the commodities downturn in 2015 (World Bank, 2016). According to the District Municipality of Sparwood, in recent years, the population appears to have remained static, with no observable or notable change in population (District of Sparwood, pers. comm., 2020). It is important to note that there is a large number of migrant workers associated with the mining industry, which is not reflected in population numbers reported as part of Sparwood's Census counts (District of Sparwood, pers. comm., 2020).

As of 2016, the median age of the population in the District Municipality of Sparwood was 39.8, which was 5.3 years lower than the RDEK (Statistics Canada, 2017d; and Statistics Canada, 2017g). Despite the generally younger population, the older population has continued to rise. The younger population may be due to the in-migration of mining workers from outside of the Socio-Community LSA. The aging population is also common for the mining industry, as the average age of workers is higher than in most sectors. Sparwood has indicated it would like to attract families to live in the community (District of Sparwood, pers. comm., 2020).

District of Elkford

In 2016, the District of Elkford had a total population of 2,499, reflecting a 1.5% increase since 2006. Between 2006 and 2011, the District of Elkford's total population increased by 2.4%. Comparatively, Elkford's population decreased by 1.0% between 2011 and 2016 (Statistics Canada 2012c; and Statistics Canada, 2017e).

In comparison to the other Socio-Community LSA communities in the RDEK, Elkford has an overall younger population demographic characterized by a lower number of individuals over the age of 65 (9.2%) and a higher percentage of working-aged residents (67.5%). Elkford is one of two Socio-Community LSA communities (the other being the City of Fernie) where the median age of the population is decreasing; in 2016, the median age was 38 years, which is 7 years younger than the RDEK median. There was, however, a 35.3% increase in the older population in Elkford, and close to a 3% decrease in the working population between 2011 and 2016 (Statistics Canada 2012c; and Statistics Canada, 2017e)

Despite the small changes in median age, Elkford is experiencing similar trends related to the general decline in working population as Sparwood. Elkford's decrease in working population is likely due to similar events as Sparwood (i.e., reduced mine output and labour demand due to declining coal demand and commodities downturn), as the communities have similar profiles and challenges due to the presence of mining operations.

Recently, it has been noted that there has generally been an influx of young workers (i.e., working-aged individuals fit to work in/support the mine[s]; District of Elkford, pers. comm., 2020). However, a similar age group seems to migrate out of the community when work ends, or seeks other opportunities elsewhere (District of Elkford, pers. comm., 2020).

Elkford was established as a community to support local mines; it is still occupied by businesses and people that directly or indirectly support the mines (District of Elkford, pers. comm., 2020). Construction activities related to the mining sector have led to the need for, and subsequent influx of, temporary workers. The Elk Valley Lodge was established in 2019 as temporary accommodation for close to 500 temporary workers and is at or near capacity (District of Elkford, pers. comm., 2020). The seasonal or temporary population in Elkford is not as apparent or established compared to Fernie (District of Elkford, pers. comm., 2020).

City of Fernie

In 2016, the City of Fernie had a total population of 5,249. Between 2006 and 2016, the City of Fernie experienced substantial population growth (24.5%), the largest population growth of all the communities in the Socio-Community LSA (Statistics Canada, 2007e; Statistics Canada, 2017f). Fernie has been identified as the fastest growing community of its kind in Canada (Black, 2019). It has been speculated that this population growth may be due to the community amenities and previous seasonal residents moving more permanently to the community (Black, 2019). The City of Fernie has indicated that this population growth is supported, as it promotes local businesses and brings disposable income into the community (City of Fernie, pers. comm., 2020). Based on conversations with representatives from the City of Fernie, approximately 30% of housing in the City of Fernie is assumed to be secondary residents (City of Fernie, pers. comm., 2020). This supports the assumption that temporary population in the RDEK is approximately 32%.

Approximately 1,000 employees in the mining industry reside in Fernie – there is a well-established multi-generational population on the operations side (City of Fernie, pers. comm., 2020). Additionally, professionals that supplement the mining industry (e.g., environmental engineers, geologists, etc.) also choose to live in Fernie (City of Fernie, pers. comm., 2020).

According to Census data, Fernie experienced population fluctuations between 2006 and 2016. During this period, the working population increased at a percent change of 17%. The number of individuals over the age of 65 also increased over the same period by a percent change of 22%. Similar to Elkford, the median age of the population in Fernie has steadily decreased since 2006. In 2016, the median age in Fernie was reported as 38 years, which is 7 years lower compared to the RDEK. Between 2006 and 2016, Fernie has experienced a notable increase (percent change of 60%) in individuals under the age of 15 (Statistics Canada, 2007e; Statistics Canada, 2017f). According to the City of Fernie, the average age is below the provincial average, with a notable “baby boom” occurring a few years ago and another one at present (City of Fernie, pers. comm., 2020). Although there is some influx of older individuals (leading active and healthy lifestyles) into Fernie, there also seems to be a noticeable amount of seniors leaving the community, which may be due to lack of and/or issues with accessibility in the winter due to the snow and ice (City of Fernie, pers. comm., 2020).

City of Cranbrook

The City of Cranbrook is the most populated municipality in southeastern B.C., with a total population of 20,047 in 2016. Cranbrook has experienced a notable change in population for the 10-year period of 2006 through 2016, with an apparent upswing in population growth from 2011 to 2016 (3.8% increase) that followed a considerable drop in population that occurred between 2006 and 2011 (20.0% decrease) (Statistics Canada, 2007a; Statistics Canada, 2012b).

The median age for Cranbrook was slighter lower than for RDEK in 2016 (44.5 years of age and 45.1 years of age, respectively), and has been steadily increasing since 2006 for both cohorts (Statistics Canada, 2017; a; c). Similar to the RDEK, Cranbrook's older population has been increasing steadily, with the working age population on the decline since 2006. Cranbrook's position as the regional service centre and as a diversified economy likely explain its similarity to the RDEK and Province.

Municipality of Crowsnest Pass

The Municipality of Crowsnest Pass had a population of 5,589 in 2016. From 2011 to 2016, the Municipality of Crowsnest Pass experienced a 0.4% increase in population from 5,565 to 5,589, following a 3.2% decline in population between 2006 and 2011 (Statistics Canada, 2007a; Statistics Canada, 2012b; Statistics Canada, 2017b).

The working-age population experienced fluctuations between 2006 and 2016, increasing slightly from 2006 through 2011, and declining between 2011 and 2016 (Statistics Canada, 2007a; Statistics Canada, 2012b; Statistics Canada, 2017b). According to the Municipality of Crowsnest Pass, there is a certain proportion of the population that is made up of transient workers who tend to live in the community during shifts and leave right after, and where they stay depending on their shift schedule (Municipality of Crowsnest Pass, pers. comm., 2020). It has been observed that young adults or recent graduates leave to further their post-secondary education or find a career elsewhere. The municipality would like to focus future population growth on the influx of families (Municipality of Crowsnest Pass, pers. comm., 2020).

The median age of the population in Crowsnest Pass was 50.9 in 2016, over 5 years higher than in the RDEK. The aging population has exhibited slow but steady growth since 2006; however, the proportion of older adults in Crowsnest Pass in 2016 was the highest amongst the Socio-Community LSA communities (22.4%), and almost 3% higher than in the RDEK. However, it is noted that more families are coming back to the community, resulting in a decrease in the overall population age (Municipality of Crowsnest Pass, pers. comm., 2020). Second homeowners and part-time residents, estimated to be approximately 1,500 individuals, typically consist of individuals over the age of 50 (Municipality of Crowsnest Pass, pers. comm., 2020).

18.4.2.2 Education Facilities and Attainment

Education within a region is often driven by the economic opportunities and the socio-economic status of residents. Within the socio-community study areas, primary industry and resource development dominate the economic environment, suggesting that levels of education may, in general, be lower than the provincial average. Based on the presence of heavy industry, trades and non-skilled labour jobs are of higher prevalence. This section highlights the educational facilities and attainment within the RDEK. This baseline condition is described as the Project may alter the level of education and access to education facilities within the socio-community study areas.

18.4.2.2.1 Education - Regional Study Area

There are two school districts (SD) within the RDEK – SD5 (Southeast Kootenay) and SD6 (Rocky Mountain) – offering public elementary and secondary school education opportunities (British Columbia School

District, 2019). Twenty-six educational institutions[3] exist in SD5 and 23 in SD6 (British Columbia, 2019a; British Columbia, 2019b). Schools in Crowsnest Pass are managed by Livingston Range School Division No. 68 in Alberta (British Columbia, 2019a; Municipality of Crowsnest Pass, 2019a). Two of the Ktunaxa Nations have independent schools within their communities – ʔaq̓am Community and the Lower Kootenay Band.

There are a number of post-secondary educational facilities in and proximate to the RDEK. The College of the Rockies (COTR) has seven campuses, with the main campus located in Cranbrook. In addition, there are five more regional campuses located within the RDEK. The COTR offers course in a variety of areas such as trades, health care, hospitality, and mountain adventure. There is capacity to accommodate additional students at COTR; however, course availability depends on the program. It is a small college which adapts to the industry needs (i.e., if there is a need identified by, for example, a mine, the college can usually fulfill the need; COTR, pers. comm., 2020). East Kootenay Community College is considering development of a 1-year transfer program within Fernie for locals (e.g., Sparwood, Elkford; SD5, pers. comm., 2020).

There are a number of post-secondary institutions located beyond the Socio-Community RSA in Lethbridge, Alberta, less than 200 km east of the RDEK via Highway 3 (District of Sparwood, 2019a). These include the University of Lethbridge and Lethbridge College. These institutions often attract people from the communities in the Socio-Community RSA to complete post-secondary education. In addition, the Crowsnest Pass campus of Lethbridge College offers courses in business training and development, early childhood education, industrial and technical training, and health care aide programs online (Lethbridge College, 2019). The Crowsnest Pass Adult Education Association (CPAEA) is a group that is dedicated to providing quality lifelong learning for adults in the community (CPAEA, 2019).

A number of key informants in the primary research program noted that many recent graduates and/or young adults (e.g., aged 19 to 22) seek post-secondary education outside of their communities (approximately 75%; COTR, pers. comm., 2020]). Typically, engineering students will go to other post-secondary institutions both in B.C., Alberta, or further east (e.g., McGill; COTR, pers. comm., 2020). Other post-secondary students go to Cranbrook for further education and training (SD5, pers. comm., 2020). The need to travel to attend schools outside the RDEK, financial challenges, and socio-cultural challenges have been identified as potential barriers to education within the RDEK (SD5, pers. comm., 2020). There is currently an annual heavy-duty program offered to youth in Sparwood, Fernie, and Cranbrook with industry representatives getting together once a year to train youth for a week on the equipment (SD5, pers. comm., 2020). Providing more local training opportunities (e.g., apprentice and college programs) could make it easier for post-secondary students to transition/enter into the workforce (SD5, pers. comm., 2020).

The education attainment level distribution of individuals aged 15 years and over (i.e., the working-age population[4]) in private households within the RDEK and B.C. are similar; approximately 16% have not completed high school; 29% have only have their high school diploma (or equivalent); and 55% have completed post-secondary education (Statistics Canada, 2017a; b; c).

[3] Educational institutions categorized by the B.C. Ministry of Education & Training as public or independent schools, or part of the StrongStart Program.

[4] 'Working-age population' as defined by Statistics Canada (Statistics Canada, 2019b).

In 2016, 14.2% of individuals in the RDEK with a post-secondary level of education held a post-secondary certificate, diploma, or degree in apprenticeship or trades, which is approximately 5% higher compared to the provincial average. In comparison, almost 25% of individuals in B.C. who obtained a post-secondary degree did so at or above the Bachelor level, compared with approximately 15% of individuals in the RDEK (Statistics Canada, 2017a).

18.4.2.2.2 Education - Local Study Area

Education Facilities

All elementary and secondary-level educational institutions within the Socio-Community LSA communities are under the jurisdiction of SD5. Enrollment numbers, where provided for SD5, are reflective of September 30, 2018 (British Columbia, 2019a). Information on current capacity, trends, and anticipated demand for educational institutions with the communities in the Socio-Community LSA was validated through primary research.

Two public schools offer elementary and secondary education opportunities to over 600 students within the District Municipality of Sparwood. There is also the Frank J. Mitchell StrongStart Centre, offering a pre-Kindergarten/early learning program in Sparwood (SD5, 2019a; British Columbia, 2019a). Schools within the Municipality can accommodate the current number of students within the community (SD5, pers. comm., 2020), and there is capacity as well as room for expansion at the secondary level (SD5, pers. comm., 2020).

The District of Elkford's public education system accommodates over 450 students from Kindergarten through Grade 12 (British Columbia, 2019a). There is currently room to accommodate more students for both elementary and middle school students in Elkford (SD5, pers. comm., 2020).

There are three public schools in Fernie, which accommodate approximately 628 students from Kindergarten to Grade 12 (SD5, 2019a; British Columbia, 2019a). The Fernie Academy is a private independent school for children in Kindergarten through Grade 12 (287 students). An Early Learning Program is available at the Isabella Dicken StrongStart Centre (pre-Kindergarten), with Continuing Education available at the Kootenay Learning Campus (British Columbia, 2019a). Previous and ongoing "baby booms" that have occurred in the community have put pressure on the school system (City of Fernie, pers. comm., 2020). Recently, there were 256 registrants for the pre-Kindergarten program in Fernie (SD5, pers. comm., 2020). Fernie has also been referred to as the "bedroom community" for Sparwood and Elkford; expansion of currently elementary school capacity is required due to high demand resulting from families choosing to live in Fernie (SD5, pers. comm., 2020).

The City of Cranbrook offers the most elementary, intermediate, and secondary school-level educational opportunities of the communities in the Socio-Community LSA, with 10 public schools (7 elementary, 2 middle, and 1 secondary that accommodate a total of approximately 3,390 students), and 2 private schools all within SD5 that accommodate over 260 students (SD5, 2019a). There are also two institutions that offer StrongStart early learning programs (pre-Kindergarten) available in Cranbrook (British Columbia, 2019a).

The Rocky Mountain International Student Program is coordinated through the Southeast Kootenay International Education office in Cranbrook, for students interested in studying in this community as well as Fernie, Sparwood, and Elkford (SD5, 2019b).

The public schools in the Municipality of Crowsnest Pass are members of the Livingston Range School Division No. 68 in Alberta and include the Horace Allen School (Kindergarten to Grade 3) and Crowsnest Consolidated High School (Grades 7 through 12) in Coleman, and the Isabelle Sellon School in Blairmore (Grades 4 through 6; Municipality of Crowsnest Pass, 2019a). There are currently enough schools in the Municipality to support current demands (Municipality of Crowsnest Pass, pers. comm., 2020).

Education Attainment

Sparwood, Elkford, and Cranbrook have similar education attainment level distributions: approximately 15 to 18% have not completed high school; 33 to 34% have only have their high school diploma (or equivalent); and 49 to 51% have completed post-secondary education (Statistics Canada, 2017a; b; c; d; e; f).

In comparison to other Socio-Community LSA communities, Sparwood and Elkford have the highest percentage of individuals with apprenticeship or trades certification (37.7% and 32.3%, respectively), which is higher than the RDEK (26.1%). The high proportion of trade workers is likely due to the presence of the mining sector, which relies on skilled tradespeople for a variety of construction and operation activities. Overall, RDEK and Socio-Community LSA communities have a consistent percent distribution of the different types of post-secondary education (i.e., trades, college or non-university, and university), with the exception of credentials at or above the Bachelor level. Elkford's percentage of individuals with credentials at or above the Bachelor level is nearly half of the RDEK, whereas the City of Fernie surpassed the RDEK by over 14% in 2016 (Statistics Canada, 2017; d; e; f; g).

The proportion of residents in Fernie with a post-secondary degree or equivalent in 2016 was 66.5%, which was 12% higher than the RDEK, and an increase of over 7% since 2011. Fernie also had the lowest proportion of residents without a secondary school diploma (9.3%), much lower than the RDEK (15.8%). The higher levels of education in Fernie may, in part, be due to the presence of residents retiring in the area, as higher levels of disposable income and secondary properties (of which there are many in Fernie), correlate with higher levels of education (Statistics Canada, 2017; d; e; f ; g).

Cranbrook has a slightly higher percent distribution of college or university educated community members than Sparwood or Elkford, while Sparwood and Elkford have more tradespeople. This may be due to the diversified nature of Cranbrook's economy offering a variety of employment opportunities while Sparwood and Elkford have a larger mining sector presence, which has a higher demand for tradespeople.

The proportion of residents in the Municipality of Crowsnest Pass without a certificate, diploma, or degree rose by almost 3% since 2011, making it the highest when compared to other Socio-Community LSA communities in 2016 at 21%, and over 5% higher than the RDEK. Over half of the population in Crowsnest Pass held a post-secondary credential(s); however, there was a 3.2% decline in this figure from 2011 to 2016 (55.2% and 52.0%, respectively) (Statistics Canada, 2012b; Statistics Canada, 2017b).

18.4.2.3 Housing and Accommodations

Housing is described as part of existing conditions because the Project has the potential to place additional strain on the housing market within the RDEK, particularly the Socio-Community LSA. The presence of additional mine workers may increase the demand for rental housing, while increases in income may increase the price of housing stock. It is further noted that housing in the RDEK faces demand from people external to it, including tourists, seasonal residents, and mine workers. This increases the demand for housing within the RDEK.

18.4.2.3.1 Housing - Regional Study Area

Regional District of East Kootenay

Growth in the number of dwellings in the RDEK has increased at a similar rate as the Province of B.C., 14.9% and 15.4% between 2006 and 2016, respectively (Statistics Canada, 2007c; Statistics Canada, 2017c). Price increases have been approximately 30% below the provincial norm. This may be due to the rapid price increase in the Vancouver housing market, which contains most of B.C.'s housing stock. The cost of the average dwelling in the RDEK is approximately half of the provincial average, as rural areas tend to have lower home prices. In the RDEK, the rental rate is approximately 13% below the provincial average. Shelter costs, often tied to home prices, are also below the provincial average in the RDEK.

The Kootenay Real Estate Board (KREB) is an association of realtors that live and work in the east, west and boundary areas of the Kootenay region (KREB, 2019). According to KREB, home sales decreased by 15.1%, with the average price of $327,848 representing a 9.7% increase during the first quarter of 2019 when compared to the first quarter of 2018. There were 1,797 active residential listings (units) reported at the end of April 2019, an increase of 5.8% from April 2018, but below the 10-year average of over 2,500 listings (The Canadian Real Estate Association [CREA], 2019).

Availability of rental housing was identified as concern during previous EAs in the RDEK (Golder Associates Ltd, 2015). Near the Project, rental costs are similar to or have previously exceeded the costs of ownership. Shift work at the mine sites in the Socio-Community LSA are viewed as the driver of the high costs of rentals and shelter overall. During shifts, mine employees will temporarily reside within the Socio-Community LSA. These workers may undertake the practice of "hot bedding" where workers on different shifts rotate the use of a bed, allowing larger numbers of workers to share an apartment and split the associated costs. In addition, these workers earn higher wages, allowing them to push up the price of rental units (Golder Associates Ltd, 2015).

A housing study was conducted for the RDEK in 2012. The study identified challenges for housing faced by communities in the RDEK. These include affordable rental accommodation, affordable senior accommodation, affordable homeownership for young people and modest income families, and support for contract workers. These housing issues are often driven by income inequalities between those in the mining sector and other community member, as mining employees have higher wages and can afford to spend additional income on housing. This inflates the price of shelter for community members, negatively impacting them (Housing Strategies Inc., 2012).

18.4.2.3.2 Housing - Local Study Area

Within the Socio-Community LSA, there are a variety of users requiring housing, including the local population, seasonal community members, and mine workers. These demographics have different shelter requirements and can often provide drastic influence on the housing market. Housing in the Socio-Community LSA is characterized by high variance in dwelling value across time, in part due to the demand driven by the mining sector. Within the Socio-Community LSA, shelter costs do not vary much for renters and owners. Within the LSA, particularly Elkford and Sparwood, anecdotal information suggests that the boom-bust cycle of mining makes it difficult to secure capital for a new condo building, hotel, or other accommodation due to the uncertainty in the coal market. As such, this may be a factor that is limiting new development to respond to the demand for short-term accommodations.

There are no currently permanent residences in close proximity to the proposed Project site, although there are some residences in proximity to the Project access road and rail loadout facility. Please refer to Figure 19.4-11 in Chapter 19 for mapping that shows locations of known residences in proximity to the Project. The dwelling characteristics for non-Indigenous LSA communities are described in further detail in the following section.

District Municipality of Sparwood

In 2016, there were 2,130 private dwellings in Sparwood, approximately 25% of which were rented. The number of dwellings has increased below the regional rate between 2006 and 2016; however, the rate of housing expansion has outpaced the RDEK by approximately 6.7% between 2011 and 2016. Home values have increased by over 70% in the last 10 years, which is 30% higher than the RDEK. Home prices have declined by approximately 6% between 2011 and 2016 (Statistics Canada, 2007a; b; c; d; e; f; Statistics Canada, 2012a; b; c; d; e; f; Statistics Canada, 2017a; b; c; d; e; f). Teck's expansion projects likely drove the price increase, while the price decrease was likely driven by the coal demand decline and the commodity downturn (Chapter 17). An analysis of housing supply conducted in 2012 found that the existing supply of housing is meeting the population's needs, although more housing for singles, seniors, and empty nesters may be required in the future (Housing Strategies Inc., 2012). A recent report to the District of Sparwood Council noted a 2.3% vacancy rate, but in recent years this rate was 17% (District of Sparwood, pers. comm., 2020).

As of November 2020, there were 37 residential properties listed for sale in the Sparwood area, ranging in price from $51,900 (1 bedroom condominium) to $1.7 million (2.4-acre vacant site). The majority of these properties were categorized as single family residential or vacant land properties (CREA, 2020a). According to the Municipality of Sparwood, realtors have indicated that purchase of homes has remained local (District of Sparwood, pers. comm., 2020)

The District Municipality of Sparwood noted that there is an assumed demand for more affordable housing in the community and a housing needs assessment has been identified as one of council's strategic priorities (District of Sparwood, pers. comm., 2020). It was also noted that there is a large migrant workforce associated with the mining industry, and hot bedding is occurring within the community (District of Sparwood, pers. comm., 2020).

District of Elkford

There are a total of 1,521 private dwellings in Elkford. The increase in private dwellings was approximately 5% below the regional average between 2006 and 2011. Similar to Sparwood, homes rapidly increased in value between 2006 and 2011 (80.2%). The price increases slowed between 2011 and 2016 (3.7%) (Statistics Canada, 2007d; Statistics Canada, 2012c; Statistics Canada, 2017e). As previously noted, these increases may be due to the Teck expansions, while the slowdown was likely caused by the declining demand for coal and the commodity slowdown of 2015. More recently, housing has increased in value over the past year; however, this has not been a year-over-year trend (District of Elkford, pers. comm., 2020). There is a high percentage of ownership of dwellings in Elkford, with only 14.9% of the population renting.

The combination of Elkford's favourable location (i.e., proximity to recreation and tourist destinations and major centres), active and diversifying economy, and changing demographic profile is having an impact on both the demand (e.g., weekend homes), and the availability of housing in Elkford (Housing Strategies Inc., 2012). The higher-than-average incomes offered by the mines contrast with the more modest incomes earned in the retail, service, and tourist sectors. This creates an affordability gap brought on by factors commonly attributed to supply and demand (Housing Strategies Inc., 2012).

As of November 2020, there were 35 residential properties listed for sale in the Elkford area, ranging in price from $23,900 (vacant land property) to $453,000 (less than 1-acre single family residence). Similar to Sparwood, the majority of these listings were categorized as vacant land properties and single-family residential listings (CREA, 2020b). Housing is generally around the mean for affordability in Elkford. There is currently a low vacancy rate, with a high demand for rental housing, which is low in supply. The practice of hot bedding is common in the community but not quantified (District of Elkford, pers. comm., 2020).

Elkford has several hundred vacant and fully serviced residential lots that are privately owned and are being developed over time (District of Elkford, 2009). The updated Official Community Plan designated new areas for residential development. There is a relatively new temporary worker camp in the community, but it is only available to specific workers. The District of Elkford anticipates an increase in and demand for temporary accommodations (District of Elkford, pers. comm., 2020).

City of Fernie

Fernie has seen a consistent increase in private dwellings between 2006 and 2016 similar to the regional average. The number of private dwellings has increased 15.4% in Fernie to 3,032. Prices have increased 53.2% between 2006 and 2016, with the largest increase occurring between 2006 and 2011 (Statistics Canada, 2007e; Statistics Canada, 2012f; Statistics Canada, 2017f). This increase is consistent with Sparwood and Elkford, though the increase was lower (39.4%). Fernie has a higher rate of rentals (27.3%) than the regional average. Rentals may be associated with tourism or tourism employees who require more seasonal accommodation. Fernie has the highest cost of shelter for owners. This may be due to the presence of second homes. The City of Fernie indicated that there is a lack of available market rentals, and that the costly homes being built are not affordable for Fernie's population of young families (City of Fernie, pers. comm., 2020). Although housing stock types are lacking in Fernie, the City is in the process of developing larger multi-family projects (e.g., condos, row housing), with a more diverse supply of housing – affordable and otherwise – anticipated to be available within the next year or so (City of Fernie, pers. comm., 2020). While there has been a sharp increase in the number of multi-family units built in the

last decade, single-family detached homes remain the dominant form of housing in Fernie. As of 2016, over 65% of housing types were categorized as single-family detached homes. Due to the high number of second homeowners in Fernie, almost 30% of all housing units are occupied on a part-time basis. As a result of Alberta's natural resource economy, Fernie has experienced a rise in second home ownership (RDEK, 2014a; Kootenay Business, 2015).

The City of Fernie estimates that approximately 30% of residents in the community are temporary/ secondary residents/homeowners (City of Fernie, pers. comm., 2020). As result of the presence of seasonal residents, Fernie has seen an increase in home ownership and rental costs, beyond what is affordable for many full-time residents. The primary housing concern of residents in 2013 was the cost to buy a house in Fernie, followed by a lack of affordable lots and the increased cost of rental suites. The 2007 Affordable Housing Strategy identified low-income housing, housing for people with disabilities, and seniors' housing as the top priorities for affordable housing in Fernie (City of Fernie, 2007). The 2017 Affordable Housing Strategy Update provides an overview of the current housing needs and gaps in the City of Fernie and West Fernie, including limited housing availability and choices (City of Fernie, 2017).

As of November 2020, there were 65 residential properties listed for sale in the Fernie area, ranging in price from $54,900 (condominium, time share) to $3.3M (vacant property). The majority of these listings were vacant lots, single-family residential listings, and condominiums (CREA, 2020c). Housing prices continue to rise within the community, with the resale of new houses remaining steady (City of Fernie, pers. comm., 2020).

City of Cranbrook

Within Cranbrook, there are 11,637 private dwellings. The number of private dwellings has increased by approximately 11.6% between 2006 and 2016. The cost of the average private dwelling increased 53.6% between 2006 and 2016 (Statistics Canada, 2007a; Statistics Canada, 2017a). The largest price increase occurred between 2006 and 2011, when home prices increased approximately 43.6%. Cranbrook has the lowest median cost of shelter for both renters and owners in the Socio-Community LSA. The higher rate of unemployment and lower median income likely contributes to surpassing shelter prices within the community.

Municipality of Crowsnest Pass

The number of private dwellings in the Municipality of Crowsnest Pass has increased by 7.4% between 2006 and 2016. However, the number of homes has declined between 2011 and 2016. Similar to Sparwood, home prices have increased drastically since 2006, with a large increase between 2006 and 2011 followed by a price decline from 2011 to 2016. The Municipality noted that rentals are difficult to obtain (Municipality of Crowsnest Pass, pers. comm., 2020). The costs of rental housing are higher than the cost of owned housing monthly. Rental prices have also increased by almost $400 between 2006 and 2016. As Crowsnest Pass often provides a residence for mining and resource workers, this may drive up the costs of renting. Housing prices are not increasing (i.e., sale prices on average $10,000 to $15,000 less than the asking price); however, there continues to be a lack of houses that are priced affordably (e.g., very few homes equal to or less than $300,000) (Municipality of Crowsnest Pass, pers. comm., 2020). It is assumed that higher housing prices are a result of lack of local tradespeople, which have to be brought in from outside the community, driving up housing costs (Municipality of Crowsnest Pass, pers. comm., 2020).

According to the Municipality, it was estimated that second homeowners and part-time residents comprise approximately 40% of homeowners in the community (Municipality of Crowsnest Pass, pers. comm., 2020). The Municipality indicated that the option for temporary construction camp(s) are currently being explored (Municipality of Crowsnest Pass, pers. comm., 2020).

RDEK Electoral Area A

The number of homes in the RDEK Electoral Area A changed by one dwelling between 2006 and 2016, with an approximately 8% increase in the number of dwellings between 2006 and 2011, and a similar decrease between 2011 and 2016 (Statistics Canada, 2012a; Statistics Canada, 2013; Statistics Canada, 2017d). Home prices within RDEK Electoral Area A are higher than many other Socio-Community LSA communities and are relatively unchanged between 2006 and 2011. Due to data suppression, it is unknown if they experience similar pricing spikes as other Socio-Community LSA communities. Rental costs within RDEK Electoral Area A far exceed the costs of own shelter on a monthly basis. This may be due to the presence of mine workers, who commonly increase demand, and thus price, for rentals.

18.4.2.4 Community Services

Community services are provided within the Socio-Community LSA by a variety of service providers. These services are provided to community member and have the potential to be strained through additional demand as a result of the Project. Changes in population and demographics or social and economic well-being may change the use and demand of community services.

18.4.2.4.1 Regional and Local Study Areas

Community services for the Socio-Community RSA and LSA are described together in this section as the RDEK works in partnership with municipalities and electoral (rural) areas within the Socio-Community LSA to provide and coordinate services. Some of the services that the RDEK provides include: land use planning, water supply, sewage disposal, fire protection, recreation, street lighting, community parks, emergency management programs, solid waste and recycling, transit, 911, library grants, and regional parks (Trade and Invest British Columbia, 2018). Individual communities in the Socio-Communities LSA provide social services including recreation, emergency medical services (EMS), and child care.

The Ktunaxa Nation also provides a variety of community services to their members, including daycares, elementary schools, after school programs, community health, and recreational activities.

Health Services

The Province of British Columbia is divided into five regional health authorities, each governing health care services within a set geographic area (British Columbia, 2019c). The RDEK is part of the East Kootenay Health Service Delivery Area (HSDA) which falls under the jurisdiction of the Interior Health Authority (IHA) (IHA, 2019a). Specialized health services and provincial health programs are administered in coordination with the Provincial Health Services Authority (PHSA; 2019). The Provincial Ministry of Health also works with the B.C.'s First Nations Health Authority (FNHA) to administer health programs and services to First Nations in B.C. (First Nations Health Authority [FNHA], 2019).

The East Kootenay HSDA serves over 78,400 residents in its 6 Local Health Areas (LHA) comprised of Cranbrook, Fernie, and Windermere (within the RDEK), as well as Creston, Kimberley, and Golden (outside

the RDEK; IHA, 2019b). The East Kootenay HSDA includes the Socio-Community LSA communities of Cranbrook, Elkford, Fernie and Sparwood (IHA, 2019a).

The East Kootenay Regional Hospital located in the City of Cranbrook is the main health care facility in the RDEK, providing health services throughout the East Kootenay HSDA (RDEK, 2014a; IHA, 2019c). In 2016/2017, residents from the East Kootenay HSA visited the East Kootenay Regional Hospital most frequently (52%), with out-of-province hospitals accommodating 11% of visits from residents (IHA, 2019b).

District Municipality of Sparwood

Sparwood Primary Health Care Centre is one of ten Primary Health Care Centres available within Interior Health communities. It has an interdisciplinary health care team that provides a range of services, including emergency services between 8:00 a.m. and 7:00 p.m., 7 days a week, with 6 beds available (after hours are directed to Elk Valley Hospital in Fernie). The Sparwood Primary Health Care Centre includes a variety of on-site facilities, include lab and x-ray, visiting counselling services, diabetic, cardiac and respiratory therapy, physiotherapy and occupational therapy, mental health, nutrition, and pain management counselling (IHA, 2018a; IHA, 2019f). There are four additional health care facilities in the District of Sparwood. These include: the Sparwood Primary Health Care Laboratory, the Sparwood Community Dialysis Clinic, the Sparwood Diabetes Clinic, and Sparwood Mental Health and Substance Use (IHA, 2019f).

District of Elkford

There are two health care facilities in the District of Elkford, including the Elkford Health Care Centre and the Elkford Health Centre Laboratory (IHA, 2019f). The Elkford Health Centre operates Monday to Friday from 8:00 a.m. to 4:30 p.m. and provides emergency services, a medical clinic, ambulatory care, laboratory, home and community care, diagnostic imaging (x-ray), public health, primary care nursing, and visiting counselling services (IHA, 2018b). Elkford has five emergency beds available in the community. After-hour emergencies are handled by the Sparwood Medical Centre or the Elk Valley Hospital (IHA, 2018b). The Elkford Health Centre provides the community with a number of different services including a physician's clinic, lab and x-ray, substance and mental health counselling, and youth outreach, as well as on-site nursing staff and a part time physiotherapist. The community also has a public health nurse, part time optometrist, and full-time dentist (District of Elkford, 2020).

There is currently not enough capacity to fill the health care needs in the District of Elkford. It is difficult to see a doctor (i.e., long wait times), so many residents have to go to Sparwood (if facilities are open), Fernie, or Cranbrook. Most emergency room visits attended tend to be contractors or subcontractors from mine sites. The temporary workforce accommodation in Elkford puts increased pressure on these services. Mental health services are lacking in Elkford (District of Elkford, pers. comm., 2020).

City of Fernie

Fernie has been described as the hub for health care services in the Elk Valley (District of Elkford, pers. comm., 2020). Elk Valley Hospital in Fernie is a Level 1 hospital with 20 beds offering services including inpatient, obstetrics, and 24-hour emergency services (IHA, 2019f). Within the Fernie-Elk Valley sub-region, over half of in-patients received treatment at Elk Valley Hospital in Fernie. Another 25% received

treatment at East Kootenay Regional Hospital in Cranbrook, while 21% of the remaining 21.9% received treatment in Alberta hospitals such as Crowsnest Pass (IHA, 2010).

There are four additional health care facilities in Fernie. The Elk Valley Hospital Laboratory provides outpatient laboratory services, and the Fernie Health Centre is a community health care centre that provides general services. In addition, assisted living and long-term care support services are available at the Rocky Mountain Assisted Living Village and the Rocky Mountain Care Village, respectively (IHA, 2019f).

Health care services in Fernie are currently adequate and meet the needs of residents (i.e., hospital, inventory of doctors, surgeons, general practitioners), with some specialists lacking in the community where residents typically have to access services in Kelowna or Alberta (Lethbridge and Calgary; City of Fernie, pers. comm., 2020).

City of Cranbrook

As noted above, the East Kootenay Regional Hospital in Cranbrook is the main health care facility in the RDEK (RDEK, 2014a; IHA, 2019c). Core health services provided by this facility include but are not limited to: medical and surgical specialty services, physician specialties, 24-hour emergency and trauma, as well as acute and obstetrical care (IHA, 2019c). The East Kootenay Regional Hospital had 77 beds in operation during the 2017/2018 fiscal year: 55 medical/surgical beds, 10 psychiatric beds, 6 ICU/CCU beds, 4 obstetrical beds, and 2 pediatric beds (IHA, 2019d). In 2016/2017, residents from the Cranbrook LHA visited the East Kootenay Regional Hospital most frequently (82%), with out-of-province hospitals accommodating 10% of visits from Cranbrook residents (IHA, 2019e). There are approximately 100 physicians currently practicing in the City of Cranbrook, consisting of both General Practice/Family Physicians and Specialist Physicians (College of Physicians and Surgeons of British Columbia [CPSBC], 2019; City of Cranbrook, 2019a).

In addition to the East Kootenay Regional Hospital, the City of Cranbrook has 13 health and specialty care facilities. These health care facilities provide services related to dialysis, diabetes support, developmental disabilities and mental health support, support services for chronic, palliative, or rehabilitative conditions, respiratory therapy, immunization, social work, wellness, heat issues, tertiary psychiatric services, assisted living, and long-term care.

Municipality of Crowsnest Pass

The Crowsnest Pass Hospital in Alberta is a full-service hospital with 24/7 emergency services, Acute Care, Continuing Care, an Operating Room, and visiting specialists (Alberta Health Services [AHS], 2018). Due to its proximity, it is possible that residents from Sparwood and Elkford use these hospital services. The Municipality currently has broad health care options available to residents (i.e., hospital, general practitioners, dental professionals, and other specialists [optometrist, chiropractor, mental health clinic, etc.]; Municipality of Crowsnest Pass, pers. comm., 2020). Crowsnest Pass is located in the Shock Trauma Air Rescue Service (STARS) southwest zone – they evacuate from British Columbia to Alberta because Cranbrook is the next closest community (Municipality of Crowsnest Pass, pers. comm., 2020).

Ambulance Services

Ambulance service in the RDEK is provided by the BC Ambulance Service (BCAS), with stations based in all of the B.C. communities in the Socio-Community LSA (BCAS, 2019). RDEK provides support to BCAS by

supporting the patient until they can be transported by BCAS (RDEK, pers. comm., 2020). Enhanced 911 service is available throughout the RDEK, with dispatch completed through a call centre located in Kelowna (RDEK, 2014a). Ground ambulance service for Crowsnest Pass has been provided by the Province of Alberta through Alberta Health Services since 2009 (AHS, 2019).

The Shock Trauma Air Rescue Service (STARS) provides emergency air ambulance service to rural areas in Alberta and B.C. including the RDEK, with bases located in Grande Prairie, Edmonton, and Calgary (head office; RDEK, 2014a; STARS, 2019a; STARS, 2019b). According to STARS, there were 13 missions flown to the following LSA communities during the 2017/2018 fiscal year: Cranbrook (4), Fernie (5), Sparwood (2), and Elkford (2) (STARS, 2019c).

Fire and Emergency Services

Fire and emergency services in the RDEK are provided by the Columbia Valley Rural Fire and Rescue Service, and the Elk Valley and South Country Rural Fire and Rescue Service. The RDEK also has contracts with multiple municipalities to provide fire service to the rural areas just outside their municipal boundaries. For example, Fernie, and Sparwood support with the provision of these services in RDEK Electoral Area A, whereas Cranbrook supports with the provision of these services in the RDEK Electoral Area C.

Fernie Fire Rescue also receives support from RDEK with vehicle stabilization and traffic control (RDEK, pers. comm., 2020). The RDEK is experiencing a lack of volunteers, particularly within the Elk Valley, and due to low monetary contributions, funding is through taxation (RDEK, pers. comm., 2020).

The RDEK also has an active Emergency Program to provide support to emergency responders and coordinate activities during a major emergency (i.e., flooding, forest fire, hazardous materials spill, etc.). This program is subdivided into three program areas within the RDEK, with distinct municipal and Indigenous community partners.

Sparwood Fire Department is managed by a Fire Chief and Deputy who supervise firefighters from two stations. Their service area includes the District Municipality of Sparwood and road rescue services within 70 km^2. Sparwood Fire Department responds to emergency incidents, including fires, motor vehicle accidents with injuries, and hazardous material spills (District of Sparwood, 2016a).

Elkford Fire Rescue has a full time Director and Deputy who oversee up to 30 volunteer firefighters from one hall. The service area for Elkford Fire and Emergency Services (EMS) extends from 8 km south of Elkford, 5 km north of Elkford, and 8 km east of Elkford up the Fording Highway (District of Elkford, pers. comm., 2020). Fire and emergency services provided in Elkford include fire suppression, wildland firefighting, first responders, motor vehicle extrication (for motor vehicle incidents [MVIs]; District of Elkford, pers. comm., 2020), while ambulatory services are provided by the BC Ambulance Service (District of Elkford, pers. comm., 2020).

The availability of emergency services in Elkford can be variable and sporadic depending on the time of day (District of Elkford, pers. comm., 2020). Current challenges with the provision of services include an apparent increase in emergency callouts that are more specific to transient populations that do not live in Elkford: there is a notable demand for EMS and health services by non-residents/people that do not

live in Elkford permanently (District of Elkford, pers. comm., 2020). There is an obvious trend in calls related to non-residents (e.g., drinking and driving; District of Elkford, pers. comm., 2020).

The Fernie Fire Department has seven full-time firefighters, including a Director of Fire and Emergency Services, Fire Prevention Officer, Training Officer, two Lieutenants, and two Firefighters. The Road Rescue team is supported by 20 auxiliary firefighters. The Department provides fire suppression for Fernie and surrounding areas (defined by mutual aid agreements) and first responder services (motor vehicle extrication and rescue; City of Fernie, 2013).

The Cranbrook Fire and Emergency Services (FES) functions at both emergency (e.g., firefighting, medical emergencies, rescue) and non-emergency (e.g., emergency program maintenance and management, inspections) levels (City of Cranbrook, 2017). Cranbrook FES consists of over 30 staff members providing emergency services to approximately 24,000 residents situated within the City of Cranbrook, as well as RDEK contract service areas (City of Cranbrook, 2019b; City of Cranbrook, 2019c). In 2017, Cranbrook FES answered approximately 1,800 emergency calls (City of Cranbrook, 2017).

Municipal fire rescue services are provided in the Municipality of Crowsnest Pass (Municipality of Crowsnest Pass, 2018a). The municipal fire service administers open burn permits and assists with highway closures between Crowsnest Pass and Sparwood during the winter months (Municipality of Crowsnest Pass, 2018a). There are also local conservation officers and public land officers available in the community, as well as emergency management for large scale events (Municipality of Crowsnest Pass, pers. comm., 2020).

In terms of Indigenous communities, each member Nation is responsible for providing fire and emergency services on-reserve, with support from Indigenous Services Canada. Fire and emergency services are supported by the First Nations Emergency Services Society of British Columbia (FNESS), who assists the communities to increase their overall level of fire protection (FNESS, 2018). In 2017, the Cranbrook FES entered into a service agreement with the ʔaq̓am to provide emergency response and fire prevention services (City of Cranbrook, 2017).

Police and Protective Services

The Elk Valley Regional RCMP detachment has three locations in Elkford, Sparwood, and Fernie, servicing these locations as well as the communities of Hosmer, Elko, Baynes Lake, Grasmere, Roosville, Galloway and Tobacco Plains (RCMP, 2019b; RCMP, pers. comm., 2020). The Elk Valley RCMP covers an extensive service area: from the Canada – U.S.A. border with Montana, north to the Alberta national park boundary, then east to the Alberta border and west to Jaffray (at the Sand Creek Bridge; RCMP, pers. comm., 2020). The main office for the Elk Valley RCMP is located in Sparwood, which consists of 1 detachment commander, a staff sergeant, a sergeant, 3 corporals (one vacant), 13 constables, and 4 Detachment Service Assistants (DSAs; Elk Valley RCMP, 2017).

Generally, RCMP services are sufficient; however, due to their large catchment area, service may feel lower than expected (District of Elkford, pers. comm., 2020), and getting to all communities can be a challenge in the winter due to road and highway conditions (RCMP, pers. comm., 2020). In the past, it seemed like service was better when there was dedicated presence in Elkford (District of Elkford, pers. comm., 2020).

Police services in the City of Cranbrook are provided by the Cranbrook Detachment of the RCMP, which is comprised of 33 regular staff members (26 municipal, 6 provincial and 1 federal positions), and over 13 support positions (RCMP, 2019a; City of Cranbrook, 2019d). The detachment includes officers in the areas of general duty, serious crime, forensic identification services, crime prevention, and community policing. Additionally, the detachment provides police dog services and victim services (City of Cranbrook, 2019d). The First Nations Policing Unit liaises with and provides support to the Ktunaxa First Nations. In 2017, approximately 8,679 calls were made requesting RCMP services (City of Cranbrook, 2017).

The Municipality of Crowsnest Pass has an RCMP detachment which covers a service area that includes the communities in the surrounding area (RCMP, 2019c). There is a community police officer for Crowsnest Pass providing both bylaw and local traffic enforcement (Municipality of Crowsnest Pass, pers. comm., 2020).

Crime

Crime rates within the Socio-Community LSA have been relatively stable between 2015 and 2017, with the exception of Cranbrook. Within the Elk Valley and Fernie, crime rates are well below the provincial average.

In Cranbrook, crime rates per 1,000 inhabitants in 2017 were 88.9 and 36.1 for within the municipal boundary and outside the municipal boundary, respectively, which is higher than the provincial rate (74.2). There were 1,997 Criminal Code offences that occurred in Cranbrook in 2017, with 515 violent offences, 1,013 property offences, and 103 drug offences reported. In 2017, the RCMP reported a decrease in the number of motor vehicle incidents relating to impairment, as well as a decrease in mental health-related calls and apprehensions. The increase in criminal activity may explain Cranbrook's disproportionate spending on policing as shown in Chapter 17.

Crimes that are most prevalent in the District of Elkford include: assault (sexual, physical, domestic), substance use (drugs, alcohol), overdose (more of these occurring as mining drug tests only screen for alcohol and marijuana, but not barbiturates and cocaine), theft, and drinking and driving (District of Elkford, pers. comm., 2020). There seems to be a notable trend in fentanyl use in communities (note: based on Nelson testing program for drugs that are in the communities; District of Elkford, pers. comm., 2020).

Child Care Services

Affordable and accessible child care is a challenge for all Elk Valley communities (District of Elkford, pers. comm., 2020). Lack of child care has been identified as a potential barrier to female employment in the Elk Valley, particularly for the service sector (Fernie Child Care Society, pers. comm., 2020). Within the Socio-Community LSA, there are varying levels of child care available to community members.

In Sparwood, there is one licensed family child care centre, which offers flexible child care schedules and space sharing options for children ages birth to 12 years (Scotland, 2015). The Sparwood Treehouse Daycare Centre is a full-service certified child care facility offering full time, part time, and drop-in care. It provides 8 full time spaces for infant/toddler care (6 to 36 months), 8 licensed spaces for pre-school care (3 years to 5 years), and an after-school program for children 5 to 12 years of age, which accommodates approximately 17 children. Teck pays the utilities for the child care facility (Scotland, 2015).

Elkford does not have a licensed child care or a StrongStart early childhood development program. Preschool-aged children in Elkford can attend preschool part time, with 57 children registered in the 2015-2016 academic year (The Free Press, 2016).

There are major capacity issues surrounding demand for child care in Fernie, and the situation is not improving (City of Fernie, pers. comm., 2020; Fernie Child Care Society, pers. comm., 2020). There are very limited licensed child care facilities in Fernie, with one licensed group child care facility that can provide care to infants and toddlers, with a capacity of 12 full-time spaces. This facility also has spaces for 32 children aged 3 to 5 years old; it does not offer drop-in child care (Scotland, 2015; Fernie Child Care Society, pers. comm., 2020). Fernie Child Care Society recently added space, but there is still not enough to meet current demands, and further expansion would be sought if there was adequate funding available. There are a number of families living in Fernie, and coupled with recent "baby booms", have contributed to increased demands for child care (Fernie Child Care Society, pers. comm., 2020). There are also challenges with recruiting and retaining staff; it is difficult to find enough qualified people (Fernie Child Care Society, pers. comm., 2020).

Child care choices are greater in Cranbrook than in the other Socio-Community LSA communities. It is understood that child care spaces in Cranbrook are limited (The Drive FM, 2018). There are currently 19 licensed child care providers situated in the Cranbrook area (British Columbia, 2019de). The East Kootenay Child Care and Resource Referral (EKCCRR) office is located in Cranbrook and provides referral services, training, and other resources for those seeking child care support and information (EKCCRR, 2019).

Crowsnest Pass has several licensed daycare providers. The Brighter Futures program provides a combination of free activities and services that provide personal support, and play and learning opportunities for parents with children ages 0 to 6. In addition, Brighter Futures offers many drop-in seasonal programs to help families learn and develop together and sessions where parents can focus on the different parenting challenges (Municipality of Crowsnest Pass, 2019a). Pre-school is provided by Kids Kollege Nursery School, which is a licensed pre-school program for children who are at least 3 years of age and toilet trained (Municipality of Crowsnest Pass, 2019a). There are also a variety of other drop-in child services within Crowsnest Pass (Municipality of Crowsnest Pass, 2019a).

Recreation Services

Communities in the Socio-Community LSA provide a variety of recreation services to community members. These include community centres, sports complexes, arenas, and other recreational features within communities. Outdoor tourism and recreation activities such as trails, hunting areas, and fishing access points are described in Chapter 19.

Within Sparwood, indoor recreation facilities include a pool and leisure centre, an arena, and a curling rink. Sparwood also has numerous parks and playgrounds, sports fields, a spray park, and a skateboard park (District of Sparwood, 2018).

Elkford recreation facilities currently meet the community's existing demand; however, there is always a desire to increase and improve these services (District of Elkford pers. comm., 2020). Existing facilities include the Elkford Aquatic Complex, the Elkford Recreation Centre, which features a hockey arena and 3-sheet curling club, four ball diamonds, tennis courts, sports fields, a running track, playgrounds, and the

Elkford skate park (which requires an upgrade or replacement). Elkford also has a golf course, local trails for snowmobiles, ATVs and cross-country skiing, and a local downhill ski facility, the Wapiti Ski Hill. Additional recreation assets that are desired include a bike skills park/jump park, and possibly an off-road vehicle park (District of Elkford pers. comm., 2020).

Fernie's existing recreation and parks facilities currently meet the needs of residents, and include the Fernie Aquatic Centre, a skateboard park, arena, curling club and a recreation centre; however, some existing facilities are aging and may require replacement in the future (City of Fernie, pers. comm., 2020). There is a parks and recreation master plan and facilities master plan in progress (City of Fernie, pers. comm., 2020). Fernie has a well-used seniors' centre and three new dog parks. Fernie currently manages seven public parks. It also has an 18-hole golf course.

In Cranbrook, indoor facilities include three indoor arenas, including Western Financial Place, which offers aquatic activities. There is a bowling alley, casino, curling centre, eight golf courses, and numerous playgrounds and sports fields. There are also 17 parks within the city limits maintained by the City of Cranbrook (City of Cranbrook, 2017).

The Municipality of the Crowsnest Pass owns and operates a number of recreational facilities including indoor facilities (ice arena, curling rink, skateboard park, climbing wall, multiple gymnasiums) and outdoor facilities (swimming pool, downhill ski and snowboard area, and mountain biking trails; Municipality of Crowsnest Pass, 2018b). There is also a non-profit golf course, community paths, groomed snowmobile and cross-country skiing trails, ATV trails, baseball diamonds, and soccer fields (Municipality of Crowsnest Pass, pers. comm., 2020). The existing facilities currently meet the needs of the community (Municipality of Crowsnest Pass, pers. comm., 2020).

18.4.2.5 Community Infrastructure

The individual communities or municipalities in the Socio-Community LSA typically provide water, wastewater, and solid waste services in the RDEK. In areas where solid waste and recycling collection is limited (i.e., rural areas), the RDEK also supports with solid waste management and recycling services. Power and gas are provided by private sector companies throughout the RDEK. Like community services, infrastructure may be in further demand by the Project due to local population growth and/or the demand on infrastructure by the Project itself.

18.4.2.5.1 Infrastructure - Regional Study Area

Water, Wastewater, and Solid Waste

There are ten water systems located within the RDEK, eight of which are operated by the Regional District (RDEK, 2019a). Additional information on these water systems is provided in the Socio-Economic Baseline Report (Appendix 17-A) and is relevant to the Socio-Community LSA communities in Section 18.4.2.6. Water quality and monitoring in the East Kootenay is regulated and conducted by the IHA in compliance with applicable regulations (RDEK, 2017). Total annual water consumption in the RDEK was reported as 656,000 m^3 in 2007/2008, with 1,542 residential equivalent connections (each connection equal to one residential connection) (RDEK, 2009).

Sewer systems for Edgewater and Holland Creek (Lakeview Meadows) residents are managed by the RDEK. The Baltac Sewer Collection System is owned but not operated by RDEK (RDEK, 2019b).

Solid waste and recycling collection is typically administered by each municipality, or through private contractors, in the RDEK. Where collection of garbage and recycling through the yellow bin program is not available (i.e., in some rural areas), the RDEK operates a number of transfer stations (5 urban and 15 rural stations), 2 landfills, and 1 recycling depot (RDEK, 2019c RDEK, 2019d). The RDEK is currently in the process of reviewing their Regional Solid Waste Management Plan. The plan was prepared in 2003 to identify policies to guide waste management priorities over a 20-year planning horizon (RDEK, 2003).

Power and Gas Utilities

Electricity is provided to the RDEK by BC Hydro, including all B.C. communities in the Socio-Community LSA. Natural gas, provided by FortisBC, is available in the Socio-Community LSA communities of Cranbrook, Fernie, Sparwood, and Elkford (FortisBC, 2019). Natural gas service is unavailable for the Upper Columbia Valley. Residential developments throughout RDEK also use wood stoves as their main source of heat, with geothermal energy as another option for some developments (RDEK, 2014a).

Infrastructure - Local Study Area

Communities in the Socio-Community LSA provide a variety of community infrastructure addressing access to utilities and waste collection. Many communities have partnerships with the RDEK addressing waste collection and often recycling waste.

18.4.2.5.2 Water, Wastewater, and Solid Waste

District Municipality of Sparwood

Sparwood provides water, sewer, and garbage collection for residents. Sparwood is metered on a voluntary basis with meters supplied by the municipal government and installed by the owner (District of Sparwood, 2019b). The Sparwood water supply is sourced from groundwater (three wells) and it is understood that residences are sometimes directed to use bottled water due to selenium contamination in Well #3. It is understood that a new municipal well has been commissioned to replace Well #3 in response to this problem.

The majority of Sparwood is serviced with a wastewater system through the District Municipality of Sparwood's Wastewater Treatment Plant (WWTP). Built in the early 1960s, with several modifications and upgrades over the years, the WWTP continues to provide the community with up-to-date services. However, this facility has a capacity of 5,800 people; if the growth of the community continues, a new WWTP will be required. While a location has not been chosen, areas south of Sparwood are currently being considered (District of Sparwood, 2019c; District of Sparwood, 2019d). Residential weekly garbage pick-up is provided with higher frequency in commercial areas where necessary. Recycling is a regional service provided through the RDEK, with drop-off depots located throughout town.

According to the District, current community infrastructure is well-maintained, with upgrades planned in the near future for wastewater infrastructure; the need for other component upgrades will be informed by the asset management plan which is currently underway (District of Sparwood, pers. comm., 2020). There was a large development that has not yet transpired, and no population growth has occurred, so

the current infrastructure is underutilized and has capacity to accommodate further demand (District of Sparwood, pers. comm., 2020).

District of Elkford

Elkford provides water, wastewater, and garbage collection. Elkford's water and sewer systems are designed to accommodate a population of 7,000 residents. Elkford's water distribution system provides the residents of Elkford with potable drinking water. Water is supplied from a system of three wells and chlorinated at the source. A separate system supplies the industrial park. Elkford operates a sewer facility including collection and treatment. The sewer system uses storm sewers to collect service runoff. Elkford's sewer system uses aerated lagoons for treatment. Although located near the Elk River, Elkford does not discharge effluent into the river. Residential and commercial regular solid waste collection services is provided by Elkford. Waste collection includes compost (grass), while other compost can be disposed of at the Elkford Transfer Station (all other yard waste). With Elkford, the RDEK administers the yellow bin recycling program (District of Elkford, 2019a; District of Elkford, 2019b).

The capacity of Elkford's water system was being studied in 2020, and sewer infrastructure capacity will be investigated in 2021 to determine demand and requirements (District of Elkford, pers. comm., 2020). Water pressure capacity was recently tested. In the interim, upgrades will continue to be completed on an as-needed basis (District of Elkford, pers. comm., 2020).

City of Fernie

Fernie provides water, wastewater, and garbage collection services. Drinking water in Fernie is drawn primarily from the Fairy Creek watershed through the Fairy Creek springs The City was planning to use two new production wells installed within James White Park to provide safe drinking water, addressing drinking seasonal water quality issues (City of Fernie, 2019b). These wells have been commissioned (City of Fernie, 2019b). Fernie operates and maintains a sewer collection and treatment system. Sewage is directed to the Main Lift Station where it is pumped to the Sewage Treatment Lagoons for treatment (City of Fernie, 2019a). Fernie has focused on bringing infrastructure and systems up to higher standards in recent years in order to increase safety and service quality and reduce inefficiencies. Fernie has a new water reservoir and plans to upgrade the sewage treatment system (City of Fernie, 2019b). Fernie is also working on completing a liquid waste management plan to manage Fernie's liquid waste and meet provincial and federal regulations for sewage treatment (City of Fernie, 2019a). Fernie provides regularly scheduled garbage collection and provides bear-proof dumpsters throughout the City at three locations. A recycling program is operated by the RDEK. Additional services include composting at the Brenner Road Transfer Station; batteries and cellphone disposal at City Hall and the Fernie Aquatic Centre; and electronics, small appliances, and sealed paint containers at the Fernie Bottle Depot.

The City of Fernie has recently completed modelling, and the Integrated Infrastructure Capital Plan (IICP) is in progress (City of Fernie, pers. comm., 2020). The ongoing IICP study will provide additional data to determine current capacity as well as current/forthcoming needs. A new water source has been developed in last few years. Waste and storm infrastructure are challenging in some areas (e.g., the floodplain of the Elk River). There is still capacity for existing infrastructure with room for growth. All core infrastructure in commercial and industrial areas is anticipated to be replaced, and is currently underway (City of Fernie, pers. comm., 2020).

City of Cranbrook

Cranbrook's water is supplied primarily by two surface water sources: Joseph and Gold Creeks. Water from these surface water sources are diverted to the Phillips Reservoir (which has a capacity of 2.3 billion litres) before being transferred to a treatment facility. Groundwater wells have also been established by Cranbrook to supplement the water supply when demand is higher seasonally during the summer months. Water is distributed throughout the city via approximately 160 km of water mains (City of Cranbrook, 2019e). The sewer system uses an underground collection system to transport wastewater to treatment lagoons north of Cranbrook. The lagoons use a natural process at the facility, then the sewage is transported to the spray irrigation property where it is stored (City of Cranbrook, 2019f). The treated effluent is then used to irrigate the property, which is used for crop production and cattle grazing. Cranbrook recently upgraded its existing wastewater treatment and spray irrigation system. The storage capacity of the system had become insufficient, so in 2009, the City built an outflow station so that excess effluent from the storage ponds could be highly treated and discharged into the Kootenay River (Kootenay Business, 2018b). Cranbrook provides regular waste collection services, while recycling is undertaken by the RDEK through recycling depots at four separate locations (City of Cranbrook, 2019g).

Municipality of Crowsnest Pass

Crowsnest Pass provides water and wastewater services to community members. Water is produced from eight wells and is treated at four treatment plants. Water is stored in one of four concrete reservoirs and distributed to the community. Water is also produced and stored in the Sentinel area west of Coleman for fire protection purposes (Municipality of Crowsnest Pass, 2019b). Wastewater is collected from throughout the community and is fed to two treatment facilities through a collection system (Municipality of Crowsnest Pass, 2019c). Crowsnest Pass has a regional solid waste disposal system, the Crowsnest - Pincher Creek Landfill. The Municipality is only responsible for the collection of residential solid waste, which is collected on weekly basis (Municipality of Crowsnest Pass, 2019d). Recyclable materials are accepted at the Pass Beverage Bottle depot, if sorted and delivered (Municipality of Crowsnest Pass, 2019e).

There is currently room to expand capacity for infrastructure in Crowsnest Pass, with future plans to update wastewater treatment facilities (Municipality of Crowsnest Pass, pers. comm., 2020). There is a long-term plan for revitalization of infrastructure (i.e., utility replacements and landscape upgrades), with an infrastructure capacity study anticipated to occur in 2021 (Municipality of Crowsnest Pass, pers. comm., 2020).

Power and Gas Utilities

Electricity is provided to Crowsnest Pass by FortisAlberta (FortisAlberta, 2019). Natural gas service is provided by ATCO Gas (ATCO Gas, 2019).

18.4.2.6 Transportation

Transportation systems provide access to the RDEK and beyond for community members and land users. Access to the Socio-Community LSA is provided primarily by highway networks. The Project will utilize these transportation networks for the movement of goods, labour, and services throughout the lifecycle of the Project. This may affect the use of transportation infrastructure by other users in the RDEK. In addition, Chapter 21 provides information related to vehicular accidents.

18.4.2.6.1 Regional and Local Study Areas

Roads and Highways

Transportation infrastructure in the RDEK is maintained by the B.C. Ministry of Transportation and Infrastructure. The Ministry of Forests companies maintain forestry roads seasonally (RDEK, 2019e). In Crowsnest Pass, transportation infrastructure is designed, constructed, and maintained by Alberta Transportation. Roads built for strata developments are constructed, owned, and operated by the strata operation (RDEK, 2019e).

Highway 3 (Crowsnest Highway in B.C.) is the major east-west highway through the southern part of the province from Hope (linked to Vancouver via the Trans-Canada Highway/Highway 1). Highway 3 passes through Cranbrook and continues to Lethbridge and Medicine Hat, Alberta. At Medicine Hat, Highway 3 reconnects to the Trans-Canada Highway. Highway 3 is also connected to the Socio-Community LSA communities of Sparwood, Fernie, and Crowsnest Pass.

As described above, all Socio-Community LSA communities, except for Elkford, are located along the major highway network. Elkford is located along Highway 43, approximately 35 km north of Sparwood, where Highway 43 intersects with Highway 3.

The Ministry of Transportation and Infrastructure's Traffic Data Program monitors traffic at various locations throughout B.C. Traffic within the Socio-Community LSA is highly seasonal. On average, monitoring locations recorded approximately 48% more traffic during the summer period than the annual average. No data are available for the monitoring location closest to the Project. To the southeast of the Project, near the Alberta – B.C. border, the average traffic is 4,615 vehicles per day, which has increased between 2012 and 2016. In the summer months, the traffic increases to 6,962 vehicles per day. To the southwest of the Project, in 2015, the average traffic was 5,802 vehicles daily, which has declined since 2012. In the summer months, traffic increases to 9,810 vehicles daily. These areas along Highway 3 provide important transportation routes for mine workers within the RDEK and are often used to access recreation and tourism features within the Socio-Community LSA. Traffic volumes near Cranbrook, the regional service area, are higher, which is to be expected given its role as a regional service centre.

Roadways within the Socio-Community LSA communities in general are sufficient; however, impacts on residential roads from industrial operations and resource extraction vehicles are an issue in Fernie (City of Fernie, pers. comm., 2020), and replacement of some roadways and infrastructure is required in Elkford (District of Elkford, pers. comm., 2020). Highway 3 can be a concern with regards to traffic, especially during the summer months (City of Fernie, pers. comm., 2020; Municipality of Crowsnest Pass, pers. comm., 2020).

Air

Canadian Rockies International Airport, owned by the City of Cranbrook and operated by Elevate Airports Inc., is the only commercial airport in the RDEK (Elevate Airports Inc., 2019). An expansion to the airport terminal building was completed in 2008 (RDEK, 2019e). The airport services over 135,000 passengers annually (Kootenay Business, 2018a) on two major commercial carriers (Air Canada and WestJet) and one small carrier (Pacific Coastal Airlines). The airport offers daily scheduled flights to Calgary, Alberta, as well as Victoria, Vancouver and Kelowna, British Columbia (Canadian Rockies International Airport, 2019).

Additionally, newer connections from Cranbrook to the communities of Lethbridge and Medicine Hat, Alberta and Prince George, British Columbia are available through WestJet (Cranbrook Tourism, 2019).

The Regional District administers the Elk Valley Regional Airport, located north of Sparwood off Highway 43. This airport is for charter service and recreational aircraft. The airport is open year-round with limited winter maintenance (RDEK, 2019f). The Invermere Airport offers flights via Airspan Helicopters and Babin Air, gliding activities through the Invermere Soaring Centre, and a certified flight school – SkyRide Aviation (Kootenay Business, 2018a).

Rail

Major railway lines situated within the RDEK follow the Highway 3 and Highway 95 corridors, connecting to the Canadian Pacific mainline in Golden, B.C., to communities located in the south through the Crowsnest Pass and to the west in Vancouver. Coal is the primary shipment transported from the Elk Valley region to various terminals for export to various markets, including Asia via Roberts Bank in Delta, B.C., as well as central and eastern United States via terminals in Thunder Bay, Ontario. Other mining and forestry operations in the RDEK are also supported by rail transportation (RDEK, 2014a).

Public Transit

The RDEK offers transit services through Columbia Valley Transit (Canal Flats-Fairmont-Invermere and Edgewater-Radium-Invermere routes), Elk Valley Transit (stops in Elkford, Sparwood and Fernie) and the Health Connections Transit Service in partnership with B.C. Transit and the Transit Service Operators (RDEK, 2014a; 2019j). The Health Connections Transit Service offers transport from RDEK communities for people seeking non-emergency medical services in Cranbrook (RDEK, 2019g).

Taxi services are available throughout the RDEK from companies operating in the municipalities. Airporter service is also provided to and from the Canadian Rockies International Airport (RDEK, 2014a).

18.4.3 Community Health and Well-Being

Community health and well-being is often a composite of a variety of social and economic issues relating to health, opportunity, crime, education, and the perception of these factors. The presence of vulnerable groups is also a consideration. Community health and well-being levels tends to be above the provincial medians within the Socio-Community LSA and RSA, in part, due to the historic economic prosperity driven by the mining sector. However, these communities also have some social issues related to their rural character and the mining sector. The Project may impact community well-being by changing the social and economic structures within the RDEK, potentially impacting vulnerable populations, most noticeably. Social issues and impacts can result from mining projects, including for example, increased substance abuse, crime, human trafficking, and prostitution resulting from the influx of outside mine workers. While economic opportunity associated with the Project may aid in improving community well-being, it may further stress vulnerable populations (e.g., the working class) due to competition for housing and other localized inflation effects arising from renewed prosperity from the Project and/or other similar projects being developed.

Community health and well-being are also interconnected with environmental conditions such as air quality and water quality. These environmental conditions may be influenced by other activities within

and outside of the socio-community study areas. For example, as described in Section 18.4.2.5.2, Sparwood residents have previously been directed to consume bottled water due to selenium contamination in one of their municipal wells. Baseline environmental conditions that may influence community health and well-being are described in further detail in Chapter 6, Chapter 9, and Chapter 11. In addition, Chapter 21 includes information related to accidents and malfunctions (e.g., vehicular accidents), which may also influence community health and well-being.

18.4.3.1 Health and Well-Being - Regional Study Area

The most recent regional health survey was completed in 2013. This survey includes perceptions of health and well-being of residents within the East Kootenay Health Service Delivery Area, which is representative of the Socio-Community RSA. Perceptions of health for community members in the Socio-Community RSA were lower, ranging from 1.4% to 5.3% lower, than the provincial averages for the following well-being factors: perceived health, perceived mental health, perceived life stress, and overall life satisfaction. However, perceptions of community belonging were higher compared to the provincial averages (Statistics Canada, 2013).

Within the Socio-Community RSA, there are higher rates of daily smokers and heavy drinkers compared to B.C. (Statistics Canada, 2013). A 2013 survey of youth in the East Kootenay showed that they were more likely than their peers across the province to have tried tobacco, alcohol, or marijuana; however, there were local improvements over time, including reductions in the use of all three substances across survey years (McCreary Centre Society, 2015).

The rate of suicide and self-inflicted injury is similar within the province and the Socio-Community RSA. However, more recently, the East Kootenay HSDA had one of the highest rates of suicide deaths in B.C. in 2016, ranking fifth in the province (The Columbia Valley Pioneer, 2018; British Columbia, 2018)

In comparison, leisure time physical activity rates are higher in the Socio-Community RSA than the province. This is likely due to the variety and number of the outdoor recreation activities available within the RDEK. There is also a higher prevalence of doctors within the Socio-Community RSA than the province. This could, in part, be due to the sparse population and distance to services within the RDEK (Statistics Canada, 2013).

18.4.3.2 Health and Well-Being - Local Study Area

Overall, the Socio-Community LSA is characterized by better community well-being outcomes compared to the province based on community well-being indices. Health and substance abuse, however, tend to be more similar to the provincial median.

BC Stats produces indices covering the socio-economic well-being of communities (Government of B.C., n.d.). The overall community wellness indicator uses a set of 80 social indicators, which are categorized, weighted, and calculated into 4 key indices and 2 target groups making up the overall community wellness indicator (Government of B.C., n.d.). These specific indices and groups and their respective weights include: Index of Human Economic Hardship (0.3); Index of Crime (0.2); Index of Health problems (0.2); Index of Education Concerns (0.2); Target Group Children (0.05); and Target Group Youth (0.05). A more detailed description, including specific values, of the socio-economic well-being indices is provided in

Appendix 17-A. It is important to note that lower index values are correspond with better socio-economic conditions.

Indices are designed to be relative measures of well-being comparing communities. The indices are only available for social districts, local health authorities, and regional districts. As such, data on the community-level health and well-being are not available for all specific LSA communities. The most recent indices (2012) for the Fernie, which also includes the communities of Sparwood and Elkford, and Cranbrook health authorities are summarized below.

Overall, Fernie is ranked in the top 10 best out of 78 health authorities within B.C. for their overall community well-being, human economic hardship, and youth indices. This may be due to the high wages and opportunities in the mining sector. In addition, Fernie ranked very close to the B.C. median for health. In comparison, Cranbrook is ranked in the top 25 best health authorities in the province for overall community well-being index. Cranbrook's indices are highest for crime and youth relative to other B.C. communities. The high crime index value may be due to the increased government spending on policing, as described in Section 18.4.2.4.1. Similar to Fernie, Cranbrook ranked very close to the B.C. median for health.

Contributing to overall well-being, a key issue in mining communities across Canada is substance abuse. Heavy drinking prevalence is approximately 5% higher in the Socio-Community RSA than the provincial average. Alcohol consumption is a common concern in remote areas and communities with large temporary resident populations associated with employment opportunities such as mines. Within Socio-Community LSA communities, alcohol consumption is above both provincial and regional averages. In 2002, Socio-Community LSA communities consumed approximately 2 litres (L) more alcohol per capita per year than regional average. As of 2017, this increased to between 4 L and 5 L more than the regional average (University of Victoria Canadian Institute for Substance Use Research, 2018).

The East Kootenay Addiction Services Society runs a treatment centre in Cranbrook. They also provide counselling services in Fernie (East Kootenay Addiction Services Society [EKASS], 2019). Little public information is available with respect to addiction services in the Socio-Community LSA. As part of the primary research program, attempts were made to collect primary data on the topic; however, the program was unable to complete an interview with representatives knowledgeable on these services.

Within the Socio-Community LSA, there are a variety of social and political organizations advocating on behalf of the community on specific issues, including community, recreational, health, governance, industry, labour, arts, and cultural organizations. The establishment of communities, through these organizations, provide social benefit to the community.

18.4.4 Gender Related Baseline Information

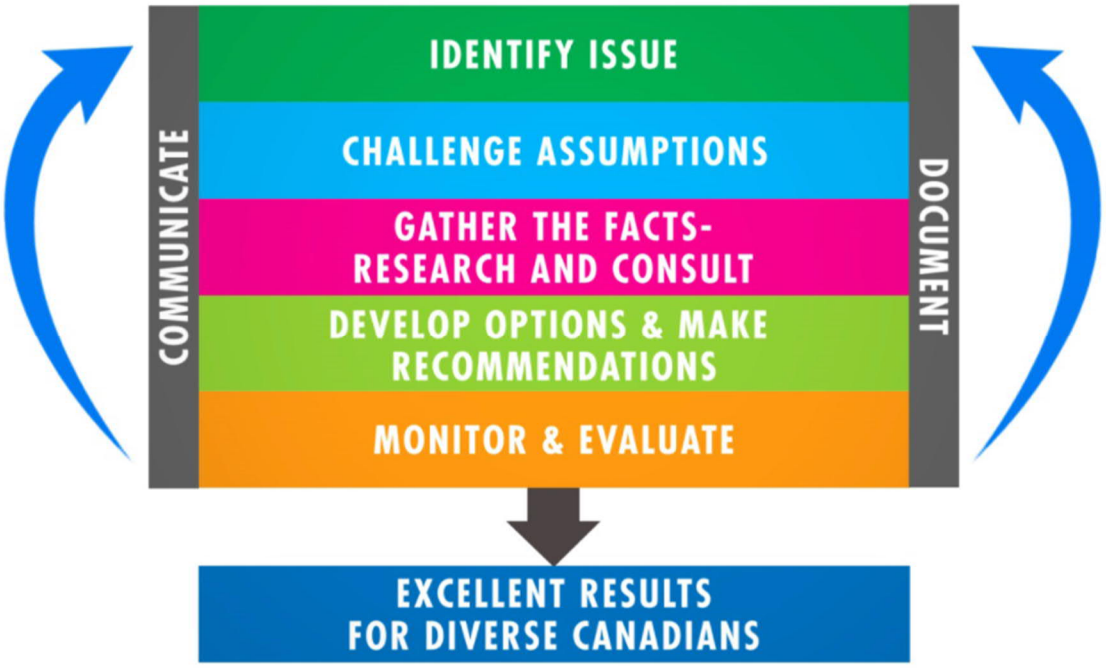
18.4.4.1 GBA+ Background

The inclusion of gender considerations began in Canada in the 1970s when the Government of Canada made commitments to consider "women's issues" and women when making policy decisions. The focus has progressively shifted from strictly women-centred views to consider "how programs and policies affect various groups of people differently due to gender and other diverse factors" (Women and Gender

Equality Canada, 2021a). In 2019, the Government of Canada's new Impact Assessment Act (IAA) was released and included requirements for federal assessments to consider the intersection of gender and sex (as well as other identity factors) when assessing a project's impacts through a Gender Based Analysis Plus analytical framework. Gender Based Analysis Plus (GBA+) is:

> An analytical process that provides a rigorous method for the assessment of systematic inequalities, as well as a means to assess how diverse groups of women, men, and gender diverse people may experience policies, programs and initiatives. The "plus" in GBA+ acknowledges that GBA+ is not just about differences between biological (sexes) and socio-cultural (genders). We all have multiple characteristics that intersect and contribute to who we are. GBA+ considers many other identity factors, such as race, ethnicity, religion, age, and mental or physical disability, and how the interaction between these factors influences the way we might experience government policies and initiatives. (Women and Gender Equality Canada, 2021b).

The GBA+ process includes a number of elements as shown in Figure 18.4-1.



Source: Women and Gender Equality Canada (2021).

Figure 18.4-1: GBA+ Process Elements

The intent of the GBA+ process is to assist in deepening the analysis and systematically incorporate important diversity considerations in the assessment (Women and Gender Equality Canada, 2021c).

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. The 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. Understanding and assessing the barriers faced by vulnerable groups with a focus on women and LGBTQIAA+[5] peoples was also undertaken through interviews as part of this GBA+ assessment (Section 18.4.4.2). An additional GBA+ study was undertaken in 2023 and considered socio-community barriers faced by Indigenous communities, and Indigenous women, girls, and Two-Spirited[6] and Indigenous LGBTQIAA+ peoples in the context of mining both in Canada and the Elk Valley region (Section 18.4.4.6).

18.4.4.2 GBA+ Studies and Current Practices in the Mining Industry – 2022

For contextual information, the following section provides a high-level summary of results of recent gender studies related to the Canadian mining industry.

18.4.4.2.1 Oxfam Canada – GBA+ Preparedness in the Canadian Mining Sector: A Baseline Study (March 2020)

In a baseline study completed by Oxfam Canada, the operational practices and policies of 12 leading mining companies in Canada were reviewed in order to assess the degree to which they were incorporating GBA+ into their practices and policies. The resource sector was identified as making up the largest number of projects that are subject to the federal impact assessment.

The study included a review of recent sustainability reports, company websites, and interviews with company representatives. Oxfam Canada looked at how the mining companies discussed gender issues and other intersecting identities in their sustainability reports and how key concepts and elements of GBA+ were being applied to the industry. It was noted by Oxfam Canada that at the time of the study, "Gender-based analysis in general and the Government of Canada's GBA+ Framework in particular have not been used widely in the industry" (Oxfam Canada, 2020). Oxfam Canada also noted that the IAA (2019) was too new to prompt the widespread use of GBA+ methods or terminology in the mining industry at the time of the study.

In the review of company documents, Oxfam Canada indicated that the mining sector was already incorporating several principles and approaches of GBA+. Oxfam Canada listed six elements that they identified as being the most relevant to applying GBA+ within the mining industry:

- Making high-level policy commitments to gender equality and equity;
- Developing analytical skills and expertise on gender equity and diversity issues;
- Using gender-disaggregated data to understand problems and make better decisions;
- Taking an intersectional approach that looks at overlapping identity factors, beyond sex and gender;
- Listening to affected populations to help mitigate potential bias within the organization; and
- Developing and implementing mitigation plans to address identified gender and other inequities (Oxfam Canada, 2020).

[5] 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, and where this is the case that discrepancy is noted in the chapter.

[6] 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

The GBA+ study report also included several recommendations to the Impact Assessment Agency and to mining companies to advance the application of GBA+ within the Canadian mining sector. The recommendations are summarized in Table 18.4-3. For recommendations made from this study related to the economic considerations, refer to Chapter 17.

Table 18.4-3: Oxfam Canada Mining Company Gender Related Recommendations

Recommendations
Public Commitments to GBA+: Make a public commitment to incorporate GBA+ into company decision making at all levels (includes internal and external issues and risks). Note: this recommendation is also included in Chapter 17.
Collaborative Pilot Projects on Gender Impact Assessment: Collaborate with gender-equity-seeking organizations to conduct gender impact assessments of existing mining operations that are not currently undergoing a federal regulatory review, to foster a "learning by doing" approach to GBA+ (appears to be both internal and external impacts). Note: this recommendation is also included in Chapter 17.
Leveraging Industry Association Frameworks: Work with industry peers in the Mining Association of Canada to map out how GBA+ methods and approaches can support their implementation of Towards Sustainable Mining's newly updated protocol on Indigenous and community relationships.
Full and Timely Implementation of the MMWIG Calls for Justice: Make a public commitment to work in collaboration with Indigenous organizations and Canadian governments to implement all relevant Calls for Justice of the National Inquiry on Missing and Murdered Indigenous Women and Girls (focus on Calls 13.1 to 13.5).

Source: Oxfam Canada (2020).

The Oxfam Canada findings and recommendations are important to consider as they provide a general indication on the extent to which gender, inclusivity, and diversity considerations and components (e.g., training) are integrated within the Canadian mining industry. It also highlights public and community commitments and collaboration when considering how to incorporate or when incorporating GBA+ into company operations.

18.4.4.2.2 Mining Association of Canada – Towards Sustainable Mining

At the community level, mining associations and companies are recognizing the significant role they play in the communities in which they operate. This includes community safety, gender-based violence, lack of diversity in the supply chain, and engagement and consultation (Prospectors & Developers Association of Canada [PDAC], 2022).

For example, the Mining Association of Canada has adopted a globally recognized sustainability program, Towards Sustainable Mining (TSM), to support mining companies in managing key social and environmental risks. As part of this TSM initiative, a series of protocols and frameworks have been developed for mining companies to use in evaluating and publicly report their performance. The TSM initiative has a performance protocol specific to Communities and People, which includes Indigenous and Community Relationships, Safety and Health, and Crisis Management and Communications Planning (MAC, 2022).

Based on the above referenced studies and resources, it would seem that the mining industry in Canada is recognizing barriers at the community level and proactively adopting inclusivity and diversity initiatives and measures to address these barriers.

18.4.4.3 GBA+ in Elk Valley Mining Communities

Further to the above, and as discussed in Chapter 17, gender imbalances exist in the mining industry, with women being underrepresented in the workforce. Studies have found that both the impacts and benefits of mining and exploration can be unequal between men and women in the mining communities (PDAC, 2022). The Prospectors & Developers Association of Canada has noted that "understanding the ways that gender inequalities within the community can be reinforced by exploration and mining workplace practices is important" and "how the industry operates in a given community is a direct reflection of a company's internal values and practice – whether intended or not" (PDAC, 2022).

The following describes the survey results of studies completed in the Elk Valley providing contextual information on current conditions related to gender, diversity, and inclusiveness. The results outlined below were captured as part of this GBA+ study to better understand gender related conditions in the Elk Valley.

18.4.4.3.1 Fernie Pride Society – 2021 Elk Valley Diversity and Inclusion Needs Assessment Study (July 2021)

A survey was launched by Fernie Pride Society (FPS) from June 14 to July 1, 2021, to understand its lesbian, gay, bisexual, transgender and questioning and/or queer (LGBTQ2+[7]) members' needs and the local barriers to increasing inclusivity. Topics covered included demographics, communities, diverse workplace, health care, and support. Respondents resided in several communities within the Elk Valley, including Elkford, Sparwood, Fernie, South Country, Crowsnest Pass, and Cranbrook. Calgary was listed as another option outside of the Elk Valley.

The results outlined below are related to the socio-community conditions and living in Elk Valley communities. For the results related to the economy and the local mining industry, refer to Chapter 17.

The survey had a significant community response, with 319 respondents of which 92 respondents currently identified as LGBTQ2+, or were questioning their sexual orientation or gender identity. The largest group of identifying respondents were from the ages of 25 to 34. In the assessment results, it was noted that there was a great representation of people who work in the mining industry. The majority of respondents indicated they worked in the communities of Elkford, Sparwood, and Fernie.

Respondents indicated that the communities of Elkford and South Country were less welcoming to people who identify as LGBTQ2+, followed by Sparwood and Cranbrook. The communities of Fernie and Nelson had a higher percentage of respondents identifying the communities as being more welcoming to people who identify as LGBTQ2+. Calgary and Vancouver were also included in the list, with Calgary being relatively welcoming and Vancouver being the most welcoming community overall. In an open-ended question, respondents indicated that they feel less safe or unwelcome as someone who identifies as LGBTQ2+ in bars (later in the evening), small towns, and medical facilities. Those who identify as LGBTQ+ mentioned that they feel less safe and welcomed in the communities of Sparwood, Elkford, and Cranbrook.

[7] LGBTQ2+ was the acronym used by the Fernie Pride Society

The biggest challenges or issues respondents witnessed for members of the LGBTQ2+ community as they have come out in the Elk Valley included the following:

- Finding a partner in a small community;
- Trans kids have expressed feeling extremely unsafe, under threat of violence; and
- People making comments, staring, and generally making them feel uncomfortable when showing affection in public spaces.

Respondents rated the support resources for members of the LGBTQ2+ community in the Elk Valley, with Workplace Diversity and Inclusion Resources, Family Peer Support, Sexual Health, and Mental Health being worse. When asked what municipalities can do to make the community more welcoming and inclusive, respondents recommended the following:

- Financial support for Fernie Pride Society;
- Education support and awareness for the community;
- Support diversity through activities and artists;
- Installation of artwork; and
- Gender neutral public washrooms.

Respondents indicated that they wished for better support in the Elk Valley LGBTQ2+ community for the following health-related resources:

- Better inclusive and more comprehensive sex education;
- More mental health resources;
- More self-help groups/groups for people who identify with the community; and
- Resources to understand specific mental health, trauma and substance use challenges.

Based on the overall survey, Fernie Pride Society recommended several programs, services and advocacy efforts, including:

- Celebrating sexual fluidity;
- Launching a community resource centre;
- Creating a support network for health care and education professionals;
- Wellness Taskforce (mental, sexual, and medical);
- Collaborate for success (i.e., with regional and provincial groups); and
- Speak about the Elk Valley LGBTQ2+ community to various stakeholders and their role in creating an inclusive environment.

While the FPS survey was not specifically targeting mining communities, the experiences of LGBTQ2+ community members in the Elk Valley, as well as the recommendations for a more inclusive community, are important to consider in the socio-community context of this Project, as well as the Project recommendations as part of this GBA+ study.

18.4.4.3.2 NWP Community Survey – 2021

NWP launched an online-survey in late 2021 (NWP, 2021) to gather input about living and working in southeastern British Columbia and working in coal mines. Topics covered in the survey included the following:

- Perception of living and working in southeastern British Columbia;

- Perception of living and working in the metallurgical coal mining industry;
- Important factors when considering employment in the mining industry/with NWP; and
- Relationships with sub-groups (i.e., Indigenous community members, Two-Spirit, lesbian, gay, bisexual, transgender, queer [or questioning; 2SLGBTQ+[8]], persons with disabilities).

The description of the survey results related to social and gender considerations are described in this section. Survey results related to the economy and working in the mining industry are detailed in Chapter 17.

A total of 154 people (82 males and 72 females) participated in the survey. The respondents included:

- Those who self-identified as Indigenous (4.17% male and 7.32% female);
- Those who self-identified as a member of the 2SLGBTQ+ community (4.17% male and 6.33% female); and
- Those who self-identified as a member of the disabled community (2.82% male and 4.94% female).

The majority of respondents (male and female) indicated they lived in Elkford, followed by Crowsnest Pass, Sparwood, and Fernie.

Respondents were asked to rank how they felt about southeastern British Columbia as a place to live and work on a scale of "very negative" to "very positive" for a number of items. A summary of the results are captured in Table 18.4-4. It is noted this table only includes the highest overall rank for all respondents (both male and female respondents). Factors captured in the table are also specific to the socio-community.

Table 18.4-4: Summary of Ranking Results - Living in Southeastern B.C.

Factor	Highest Overall Rank (very negative to very positive)	Male (%)	Female (%)
Housing (rental or purchase)	Somewhat negative	31.94	43.9
Senior housing	Somewhat negative	32.39	31.71
Daycare, child care, youth activities, education facilities	Somewhat negative	32.39	32.93
Mobility – pedestrians, bicycles, taxi transits	Somewhat positive	30	31.71
Local history, culture, art, music, festivals, events	Somewhat positive	35.71	42.68
Businesses services – retail, groceries, hospitality, food and beverage	Somewhat positive	26.76	34.15
Access to outdoors	Very positive	77.14	81.71
Equity, diversity and inclusion for everyone	Somewhat positive	32.39	35.37

Generally, respondents felt "somewhat positive" or "very positive" about several factors in southeastern British Columbia, with the exception of housing, senior housing, daycare, child care, youth activities, and

[8] 2SLGBTQ+ was the acronym used in the NWP Community Survey

education facilities. More male respondents ranked senior housing as “somewhat negative” compared to female respondents, whereas more female respondents ranked housing as “somewhat negative”. Male and female respondents were almost equal when ranking daycare/child care services as “somewhat negative”.

In addition to ranking these items, respondents also provided more information on what other factors they believe are positive and negative about living and working in southeastern British Columbia (Table 18.4-5).

Table 18.4-5: Comments about Living and Working in Southeastern B.C.

Positive	Negative
All Respondents	
• Access to the outdoors/wilderness • Beautiful area and scenery • Small town lifestyle • Close to large city centres and U.S.A. • Coal mining industry and long history of employment (part of community and sustains community)	• Housing prices and lack of housing options • Lack of retail options and diversity • Limited access to medical services and limited health care options • Limited food and hospitality
Male Respondents Only	
-	• High cost of living
Female Respondents Only	
• Community support/sense of community • Low crime and safe for children to grow up • Work life balance and comfortable income	• Internet access and speed • Shift work is not generating community support or involvement by all workers • Nomadic lifestyle • Minimal to no transit options (e.g., taxis). • Isolation • Lack of activities for children • Lack of child care • Community is not inclusive

Respondents also provided more information on what could be done to make them feel more positive about living or working in southeastern British Columbia. Some of these comments are summarized in Table 18.4-6.

Table 18.4-6: Feedback about Improving Living or Working in Southeastern B.C.

Respondents	Comments
Male & Female	• Better access to medical services • Affordable housing options and more housing • More amenities, services and leisure/recreational activities • Improve roads (hazardous with weather and heavy machinery) • More youth programs and activities • Economic diversity (including for different age cohorts)

Respondents	Comments
Male	• More accommodation/housing for tourism and mining workers • Educate the public on the coal mines and type of mining • More competitive wages • Preserve the rural culture and lifestyle
Female	• Improve internet connectivity • Better support for local businesses • Improve diversity and inclusivity in municipal government and abide by "equitable workplace" • Preserve the rural culture and lifestyle

Based on the findings of the NWP survey and the other sources above, the Elk Valley and mining communities have several pre-existing gender and subgroup related concerns, including housing availability and affordability, community inclusivity, access to medical services/limited health care services, and limited child care services and activities.

18.4.4.4 GBA+ Interview Findings (Socio-Community) – 2022

Primary data were collected for the GBA+ study in 2022 through interviews to gain a high level understanding of issues and concerns of gender specific and diverse populations/subgroups in the Socio-Community LSA, including those involved in the local mining industry. Many of these interviews were focused on understanding issues in mining related to women and LGBTQQiA+ individuals. Interviews were conducted with individuals from various sub-groups. The following individuals/organization representatives were interviewed:

- Socio-Community & Economic Effects Advisory Committee (District of Sparwood);
- Women in Mining Canada;
- Women/Indigenous Women employed/formerly employed in mining;
- Fernie Pride Society;
- Alpine Childcare Solutions;
- Elkford Housing Society;
- Elkford Women's Task Force Society;
- Kootenay Employment Services;
- Indigenous-owned business; and
- Elk Valley RCMP Detachment.

It is noted that while different genders and sub-groups were interviewed to better understand any existing gender, diversity, and identity related issues in the local communities and mining industry, the opinions of the stakeholders interviewed may not be representative of the sub-group they identify with. Several stakeholders indicated they speak based on personal experience and do not wish to speak on behalf of their sub-group.

The GBA+ interviews revealed a variety of socio-community related concerns related to the existing mining communities in the Elk Valley. Gender and other inequities identified through the interviews have been categorized by themes under the socio-community VCs identified for this Project. The themes have been classified as the following:

- Population and demographics of communities;

- Housing supply and cost;
- Community well-being and safety; and
- Community support and sense of community/belonging.

While the themes have been separated, there is some overlap between the topics discussed. For findings related to employment and economics from the GBA+ interviews, refer to Chapter 17.

The findings from the interviews related to the Socio-Community are summarized in Table 18.4-7. While the focus of the interviews was to obtain input on gender considerations, not all of the information provided was strictly related to gender but is of interest from a general socio-community-economic perspective.

Table 18.4-7: Summary of GBA+ 2022 Study Interview Findings

Valued Component	Theme	Key Interview Findings
Housing, Community Services, and Infrastructure	Population and demographics of communities	Some participants provided insight to the population and demographics of the Elk Valley. For example, Elkford was described as having a younger population, and Sparwood was described as not having a high number of visible minorities.
	Lack of economic diversity	Some participants highlighted that communities in the Elk Valley are put into distinctive hubs, such as industry or tourism-based economies. Some participants highlighted that while outdoor recreation and recreational facilities are available in many communities, there is a lack of commercial development such as retail services and eating establishments in some communities.
	Housing supply and cost	The lack of available and affordable housing throughout the Elk Valley was a major barrier that the majority of participants identified. Part of the issue highlighted by some participants was that many of the mining workers use hotbeds for accommodation during their shifts and mining workers/mining industry prices out the locals who do not work in the mining industry. As noted by some participants, mining employees that come from other communities may sleep in their cars due to the high cost of accommodation. Potential employees may also turn down jobs due to the lack of housing in the local area. Some participants also identified that the lack of available housing stock limits and causes barriers for different lifestyles (e.g., large families, single parent/individual households, couples). In communities such as Sparwood, participants

Valued Component	Theme	Key Interview Findings
Community Health and Well-Being	Community well-being and safety	highlighted that there is a lot of residential housing but limited multi-unit housing that could accommodate mining workers. Seniors were identified as a sub-group that is especially at risk by some participants. It was noted that as seniors enter retirement or wish to downsize after their children have moved out, there are no housing options available, and they are unable to stay in the communities. It was noted that there is no senior housing in communities such as Elkford. Some participants also highlighted that mine workers with families will not move to the Valley permanently due to the cost of housing. Several participants also noted that mining companies have their own housing/accommodations for workers, but they are very pricey. It was noted by some participants that with the construction camp for a new water treatment facility associated with the mines, there has been some negative experiences in the community (e.g., drinking). Most participants indicated that they did not have negative experiences with incoming mining workers.
	Community support and sense of community/belonging	Some participants noted that mining workers come into the community for their shifts and do not take pride in the community or volunteer in the community. Another issue identified by some participants was the lack of local organized sports as shift work eliminates the ability to run organized sports in communities. Some participants noted that mining companies do offer support for events for LGBTQQIA+ community members. Mining companies were encouraged to take more initiative and acknowledge inclusivity at all times. It was also noted by some that communities in the Valley (e.g., Sparwood, Cranbrook) can feel unwelcoming for LGBTQQIA+ community members. Some participants said that mining companies do their best to support communities by promoting events and having some social responsibility.

Through the GBA+ interviews, it was indicated there are some issues and barriers in the Elk Valley with the key ones related to: 1) housing availability/affordability and, 2) community support and inclusivity.

18.4.4.5 GBA+ 2023 Study Overview

The second GBA+ study was carried out in 2023 and was focused on socio-community barriers affecting Indigenous employment in mining (overlapping with Chapter 17), 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 were undertaken as part of the 2023 GBA+ study. The desktop review focuses on safety and security issues for Indigenous women, girls, and 2SLGBTQQIA+ people. Risks of sexual violence, substance abuse, and sexually transmitted infections due to rape and sex trafficking are particularly high for Indigenous women and girls in proximity to resource extraction projects (Gibson et al., 2017[9]). A 'rigger culture' characterized by hyper-masculine, sexist, homophobic, and apathetic attitudes and behaviours that dehumanize Indigenous women often develops and pervades work camps (Bond and Quinlan, 2018; Gibson et al., 2017). While there will not be temporary work camps for the Project, and the workforce will be primarily drawn locally, hyper-masculine and sexist cultures can still pervade mining regions (Native Women's Association of Canada [NWAC], 2020), including urban areas where off-reserve Indigenous women, girls, and 2SLGBTQQIA+ people may reside for this Project.

These issues were explored first through a desktop review of the broader literature concerning violence against Indigenous women, children, and Two-Spirited and Indigenous LGBTQQIA+ people in Canada, as well as socio-demographic and incident-based crime statistics. The GBA+ 2023 study also comprised 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.

18.4.4.6 GBA+ Studies, Statistics, and Current Conditions in the Mining Industry – 2023 Desktop Review

18.4.4.6.1 Native Women's Association of Canada – Indigenous Women and Impact Assessment Report (March 2020)

In a report prepared by the Native Women's Association of Canada, the various issues and concerns of Indigenous women in relation to impact assessments was outlined. The intent of the report was to provide information to help ensure meaningful and respectful engagement of Indigenous women in impact assessments, and respect and consideration for their interests, concerns, rights, and knowledge (NWAC,

[9] Note that while Gibson et al. is an important source, it was not reviewed in Section 18.4.4.6 due to its focus on work camps, which are not being implemented for this Project.

2020, p.5). The report included a literature review and engagement with Indigenous women who have expertise in impact assessment.

The report noted that as a result of economic, social, and historical factors, Indigenous women and girls experience higher rates of violent crimes than non-Indigenous women (NWAC, 2020, p.28). Increased violence against Indigenous women in the context of resource extraction projects was noted to often take the form of "gendered, sexualized, and racialized harassment and violence in the workplace" (NWAC, 2020, p.28). Due to the intensive work schedules in extraction industries, gender-based family and sexual violence in Indigenous communities can be exacerbated.

Due to the increase of the worker population and disposable income from high wages in the mining industry, regions may also experience an increase to the cost of living and the exclusion of women from well-paying jobs, which may result in higher participation in sex work (NWAC, 2020, p.28). The link between sex work and resource extraction is the result of hyper-masculine industrial-type jobs associated with large scale mining. This hyper-masculine subculture makes "Indigenous women and girls more vulnerable to coercion into sex work and violence, and creates different exploitation pathways for Indigenous women compared to non-Indigenous women" (NWAC, 2020, p.28).

The report noted that Indigenous women are concerned with the lack of support, protection, information, and advocacy for those in the sex trade and feel that environmental and impact assessments should take into account what is available in the region (e.g., local towns or reserves) that coordinate community, health, and social services for sex-workers (NWAC, 2020, p.29). According to the report, to ensure issues of violence against Indigenous women are considered and implemented properly, the participation of Indigenous women in impact assessment processes and decision-making must be increased (NWAC, 2020, p.28). This will also help to ensure agreements with proponents or governments achieve accountability for sexual violence, not only for perpetrators, but for companies and contractors as well (NWAC, 2020). It was recommended that severe and binding repercussions for sexual violence both in and near industrial work places need to be in place for companies to ensure adequate safety for Indigenous women and communities (NWAC, 2020, p.29). It was also recommended that men must be educated and trained to address the root causes of this violence (NWAC, 2020, p.29).

Summary

This report highlighted the importance of including Indigenous women meaningfully and respectfully in environmental and impact assessment processes, to help prevent violence against women in the mining industry. Issues such as intensive work schedules, disposable income, and increased outside worker populations were identified as contributors to higher rates of violence.

18.4.4.6.2 National Inquiry into Missing and Murdered Indigenous Women and Girls – Reclaiming Power and Place Executive Summary of the Final Report

In the Executive Summary of the National Inquiry into Missing and Murdered Indigenous Women and Girls, an overview of the National Inquiry's final report was provided, including the calls for immediate action (The National Inquiry into Missing and Murdered Indigenous Women and Girls, 2018).

The Executive Summary highlighted that colonial violence, as well as racism, sexism, homophobia, and transphobia against Indigenous women, girls, and 2SLGBTQQIA[10] people has become embedded in everyday life through interpersonal forms of violence in institutions (e.g., health care system, justice system) and in the laws (e.g., Indian Act), policies, and structures of Canadian society (The National Inquiry, 2018). Canadian society is often apathetic, and due to the reasons noted above, many Indigenous peoples have grown up normalized to violence. Key sections from the final report related to the extractive and development industries are outlined below.

Reclaiming Power and Place – The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls (2019)

Sections 13.1 to 13.5 of the National Inquiry's full report relate to "Calls for Extractive and Development Industries". Some of the calls for resource extraction industries included:

- 13.1: During project planning, assessment, management, implementation, and monitoring:
  - Consider the safety and security of Indigenous women, girls, and 2SLGBTQQIA people.
  - Distribute/create (for Indigenous women, girls, and 2SLGBTQQIA people) equitable benefits from local resource development.
- 13.2: Complete gender-based socio-economic impact assessments on all proposed projects as part of their decision-making and ongoing monitoring of projects. Project proposals must include provisions and plans to mitigate risks and impacts identified in the impact assessments prior to being approved.
- 13.3: When negotiating Impact-Benefit Agreements:
  - Include provisions that address the impacts of projects on the safety and security of Indigenous women, girls, and 2SLGBTQQIA people.
  - Provisions must also be included to ensure that Indigenous women, girls, and 2SLGBTQQIA people equitably benefit from the projects (The National Inquiry, 2019, p.196).

Summary

The Executive Summary touched on the different forms of violence against Indigenous women, girls, and 2SLGBTQQIA at a broader, everyday level which is embedded in Canadian society. In the National Inquiry's final report, it was stated that extractive and development industries should:

- Include Indigenous peoples throughout a project's lifespan;
- Complete studies (e.g., gender based socio-economic impact assessments) to mitigate risks and impacts; and
- Consider the safety and security of Indigenous women, girls, and 2SLGBTQQIA people.

18.4.4.6.3 Socio-Demographic and Crime Statistics

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. The socio-demographic and crime statistics for the Elk Valley are captured below, with the population identifying as Indigenous Women+ and incident based crime statistics highlighted.

[10] 2SLGBTQQIA was the acronym used for this report

Table 18.4-8 shows that both Elkford and Sparwood had higher than provincial rates of those identifying as Indigenous and Women+ in 2021. Elkford's population identifying as Indigenous and Women+ was twice the provincial rate, and Sparwood's population identifying as Indigenous and Women+ was much larger than the Province as well (4.7% higher). Alternatively, Fernie's population identifying as Indigenous and Women+ was lower than the Provincial rate.

Table 18.4-8: Population Identifying as Indigenous and Women+ (2021)

Census Area (1)	Indigenous Identity and Women+ (%)[2,3]
British Columbia (Province)	6.0
Sparwood (CSD)	10.7
Elkford (CSD)	12.1
Fernie (CY)	5.0

Notes:
1) CY = City, CSD = Census subdivision; Amounts in table are in percentage rates
2) Important note from Statistics Canada that applies to the above Indigenous Identity category data: This category includes persons who identify as First Nations (North American Indian), Métis, and/or Inuk (Inuit) and/or those who report being Registered or Treaty Indians (that is, registered under the Indian Act of Canada), and/or those who report having membership in a First Nation or Indian band.
3) Important note from Statistics Canada that applies to the above Women + category data: Given that the non-binary population is small, data aggregation to a two-category gender variable is sometimes necessary to protect the confidentiality of responses provided. In these cases, individuals in the category "non-binary persons" are distributed into the other two gender categories and are denoted by the "+" symbol. "Women+" includes women (and/or girls), as well as some non-binary persons.
Source: Statistics Canada, 2021 Census of Population. Retrieved from: https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?LANG=E&GENDERlist=1,3&STATISTIClist=4&DGUIDlist=2021A000259,2021A00055901012,2021A00055901006,2021A00055901003&HEADERlist=,21,19&SearchText=Elkford

Table 18.4-9 shows that 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.

Table 18.4-9: 2021 Incident Based Crime Statistics (rate per 100,000 people)

Incident Based Crime Statistic	Fernie		Sparwood		Elkford		British Columbia
	Municipal	Rural	Urban	Rural	Urban	Rural	Province
Total Violent Criminal Code Violations	969.15	1,251.68	-	1,388.59	-	1,078.64	1,552.16
Sexual Assault Level 3 Aggravated	0.00	0.00	-	0.00	-	0.00	0.17
Indecent/Harassing Communications	113.07	223.51	-	170.90	-	104.38	178.45
Total	1082.22	1475.19		1559.49		1183.02	1730.61
Total Offences in Relation to Sexual Services	0.00	0.00	-	0.00	-	0.00	1.48
Trafficking in Persons	0.00	0.00	-	0.00	-	0.00	0.77

Notes: Crime statistics are at a rate per 100,000 population. The population reflects only the permanent or resident population of a jurisdiction and does not include temporary or "part-time" populations (See Rate per 100,000 footnote; Statistics Canada, Incident-based crime statistics, by detailed violations, police services in British Columbia).
Only the rural areas are available for Sparwood and Elkford.

Rates were unavailable for Sexual Assault Level 3 Aggravated, Total Offences in Relation to Sexual Services, and Trafficking in Persons for Fernie, Sparwood, and Elkford.
Source: Statistics Canada. 2023. Table 35-10-0184-01 Incident-based crime statistics, by detailed violations, police services in British Columbia. (Accessed January 2023). Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3510018401&pickMembers%5B0%5D=1.102&pickMembers%5B1%5D=2.47&cubeTimeFrame.startYear=2017&cubeTimeFrame.endYear=2021&referencePeriods=20170101%2C20210101

Note that these statistics indicate that the Elk Valley is a relatively safe region. The statistics do not indicate whether crimes were committed against Indigenous women, girls, and Two-Spirited and Indigenous LGBTQQIA+ people. Importantly, however, data may also be unavailable as some crimes are never reported to the police (Statistics Canada, 2022). This is especially relevant where Indigenous peoples and Indigenous women are extremely distrustful of police in Canada based on 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).

18.4.4.7 GBA+ Interview Findings (Socio-Community) – 2023

As previously noted, a second GBA+ study was undertaken in 2023, and 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 (Section 18.4.4.6). Requests for interviews were sent to all potentially impacted and/or interested Indigenous Nations and communities through letters in email communications, with follow-up email communications also sent. Positive responses were received and interviews conducted with leaders, female, youth, and Elders as members of the following Indigenous Nations and communities:

- Métis Nation of British Columbia;
- Elk Valley Métis Nation;
- Yaq̓it ʔa·knuq̓ti’it First Nation/Tobacco Plains Indian Band;
- Kainai First Nation;
- Tsuut’ina Nation; and
- Anonymous Nation (who requested to remain unidentified).

Different Indigenous Nation and community leaders and/or members were interviewed either through videoconferencing, in-person, or by written response, depending on their preference. Note that perspectives of the interviewees may not be representative of their Nations or communities. A list of the interview questions are provided in Appendix 17-B of Chapter 17.

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 follows:

- Housing barriers;
- Child care;
- Cost of living;
- 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 the Economic Conditions Assessment (Chapter 17).

Interviewees highlighted barriers[11] associated with socio-community conditions specific to mining in the Elk Valley region, or to mining in general. The following are highlights of themes and findings outlined in Table 18.4-10 (note that where there was a counter case or finding that did not agree with the dominant theme, this was noted in Table 18.4-10).

- Housing Barriers
  - Limited availability
  - High cost of housing
- Child Care Barriers
  - Limited availability and high costs
  - Shift work schedules as challenge for child care
- High Cost of Living
- Safety of Indigenous Women, Girls, and Two-Spirited and Indigenous LGBTQIAA+ people
  - Urban and rural areas of Elk Valley as safety concern for Indigenous women
  - Sparwood, Elkford, and Fernie as generally safe (counter case)
- Health Barriers
  - Substance abuse
  - Limited health care facilities
- Other Socio-Community Barriers
  - Transportation
    - weather
    - availability
  - Shift Work
    - adjustment
    - family struggles

The findings from the interviews related to the socio-community barriers are summarized in Table 18.4-10.

Table 18.4-10: Summary of GBA+ 2023 Study Interview Findings

Valued Component	Theme	Findings
Housing, Community Services, and Infrastructure	Housing barriers impacting economic development opportunities	• Lack of housing, overcrowding, and cost of housing, especially for Indigenous youth wanting to stay in the area with family and friends. • A potential barrier is the difficulty in accessing accommodation for themselves and/or their families. It was noted that if Indigenous peoples living off-reserve (i.e., in towns or

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

Valued Component	Theme	Findings
		cities) are responsible for finding their own housing, this may impact their decision to work in the mines. • Hotels/Motels/ Airbnb are too expensive as an alternative. • Landlords often rent rooms to people on shift work, so even your room is not your own and is shared with someone else on a different shift.
	Child care barriers impacting economic development opportunities	• Access and cost of child care. • A potential barrier for Indigenous peoples to participate or maintain employment in the mining industry. Finding child care for mining shifts is difficult, and that overall, child care services are really expensive. Child care was highlighted as an issue for women, especially. Mining companies struggle to help with this issue. • Teenage pregnancy – women/ girls need a good-paying job to support a child.
	Cost of living barriers impacting economic development opportunities	• High cost of living in cities/towns closer to mining in the Elk Valley is an issue and it was noted that some Indigenous peoples are living paycheque to paycheque.
Community Health and Well-Being	Safety of Indigenous women, girls, and Two-Spirited and Indigenous LGBTQIAA+ people	• The role of women and their importance in Indigenous communities. • Women have been the decision-makers and the backbone of communities but colonialism changed this. • The Elk Valley is known for the "typical" man going to work and women remaining at home with children. • There are always safety issues for Indigenous women (e.g., treated as a commodity, assaults, trafficking) with mining camps, remote work camps[12], and trucking camps identified as locations where safety of Indigenous women is especially of concern. • Urban areas such as Elk Valley, or travelling and being out on the land were also considered a safety concern for Indigenous women, girls, or two-spirited peoples due to the presence of a primarily male mining

[12] Note that work camps will not be used for this Project

Valued Component	Theme	Findings
		workforce. Western Canada is an area where trafficking of Indigenous women occurs. • Others thought that Elkford, Sparwood, and Fernie are generally safe areas, with Cranbrook being less safe and where women need to go when the women's shelter is at capacity in the other towns.
	Health barriers impacting economic development opportunities	• There are health barriers for Indigenous people in obtaining or maintaining employment in the mining sector. Substance abuse was highlighted as a major issue. Mostly an issue with work camps[13]. • Limited health care facilities in the area means going to Kelowna for treatment, removing workers from the area for periods of time or deterring people from residing in the area and taking up jobs in mining.
	Other social barriers	• Communities need to be created in work camps [14]and personality testing can be completed to see if workers are compatible. The concern with work camps are that they become locations of violence, and lack a sense of community. • Transportation can be an issue – many families only have one vehicle. • Poor driving conditions in winter to mine sites. • Adjusting to shift work is a challenge, especially for those new to shift work or younger workers. • Shift work and family struggles.

For mitigation measures and recommendations related to the GBA+ study, refer to Section 18.5.4.

18.5 Project Effects Assessment

Chapter 5 provides a general overview of the effects assessment approach for all VCs, including socio-community VCs. The assessment of the socio-community effects of the Project during Construction and Pre-Production, Operations, and Reclamation and Closure are described in the sections below. Since there will no longer be any activity at the site during the Post-Closure phase, this Project phase is not relevant to the assessment of effects on the socio-community, and is thus not discussed further.

[13] Note that work camps will not be used for this Project
[14] Note that work camps will not be used for this Project

18.5.1 Thresholds for Determining Significance of Residual Effects

A significant adverse residual environmental effect on the socio-community is one where the Project causes an unacceptable change in baseline conditions that is beyond the historical range of variability, or one which alters the current socio-community structures to an extent that the level and quality of service are routinely and persistently reduced below current levels for an extended period such that a socio-community system is not able to respond.

The definitions provided in Table 18.5-1 were used to assess the magnitude of effects on the socio-community environment arising from a Project-related change.

Table 18.5-1: Magnitude of Residual Social Effects

Magnitude	Definition	Rationale
Negligible	An effect that may or may not be discernible but is within the historical variability as defined by baseline conditions. The effect is within the capacity of the socio-community system to respond and/or will not alter the current socio-community structures.	Negligible effects are small and may not be noticeable. These effects do not represent a change in day-to-day life at a community-level.
Low	An effect that is small but discernable and within historical variability as defined by baseline conditions. The effect is within the capacity of the socio-community system to respond and/or will not alter the current socio-community structures.	Low effects are noticeable to community members. These effects do not represent a change in day-to-day life at a community-level.
Medium	An effect that is clearly discernable and beyond the historical variability as defined by baseline conditions. The effect is within the capacity of the socio-community system to respond and/or will not alter the current socio-community structures.	Medium effects are noticeable to community members. These effects may or may not represent a change to day-to-day life but can be adjusted to within the current socio-community system.
High	An effect that is clearly discernable and beyond the historical variability as defined by baseline conditions. The effect is beyond the capacity of the socio-community system to respond and/or will alter the current socio-community structures.	High effects are noticeable to community members. These effects represent a change to day-to-day life. In the case of adverse effects, these changes cannot be responded to within the current socio-community system, resulting in systemic change.

18.5.2 Project Interactions

Project activities during the Construction and Pre-Production, Operations, and Reclamation and Closure phases have the potential to affect the socio-community VCs. Specific details on Project activities and components are discussed in Chapter 3.

To support the identification of potential effects, a matrix (Table 5.3-5 in Chapter 5) was developed to identify interactions between Project components and activities and VCs. The purpose of this matrix was to frame a process to determine, for each discipline/VC, what Project components might result in applicable effects to guide further effects assessment work. Due to the nature of the socio-community

VCs, interactions with specific Project component or activities were not of relevance because the socio-community assessment considers the Project as a whole in the assessment of effects.

Considering the socio-community VCs/indicators, the baseline conditions of the Socio-Community LSA/RSA and the various Project components, activities and phases, the following potential Project effects were identified, which provided structure to the effects assessment presented in the next section:

Change in Housing, Community Services, and Infrastructure, which includes:

- Change in population and demographics of communities;
- Change in housing demand and supply;
- Change in availability of community services; and
- Change in community infrastructure demand and availability (e.g., water, wastewater, and transportation infrastructure).

Change in Community Health and Well-being, which includes:

- Change in community well-being (e.g., increased drug and alcohol abuse, crime rates, perceptions regarding increased outsiders in communities, etc.);
- Change in public safety due to physical hazards (e.g., truck traffic);
- Potential for Project nuisance effects to residents (e.g., from noise and change in satisfaction with place and use/enjoyment of property);
- Change in community health conditions (e.g., change in air quality, consumption of contaminated water or food); and
- Change in availability/reliance on country foods.

18.5.3 Discussion of Potential Effects

The following sections provide a detailed description of the key potential socio-community effects organized on the basis of the socio-community VCs and potential Project effects listed in the previous section. Where applicable the description of potential effect is further organized on the basis of Project phase: 1) Construction and Pre-Production, 2) Operations, and 3) Reclamation and Closure.

18.5.3.1 Change in Housing, Community Services, and Infrastructure

Potential effects related to housing, community services, and community infrastructure are important to consider, as the potential increase or influx of employees (and possibly their families) for Project construction and operations may increase demand on local services and infrastructure.

The following describes the following potential effects for this VC:

- Change in population and demographics of communities;
- Change in housing demand and supply;
- Change in availability of community services; and
- Change in community infrastructure demand and availability (e.g., water, wastewater, and transportation infrastructure).

18.5.3.1.1 Change in Population and Demographics

The Project-related labour requirements have the potential to affect populations and demographics within the Socio-Community LSA communities. Population changes due to indirect and induced employment effects is expected to be minimal and substantially lower than the direct employment effects[15]. Therefore, this section only considers population growth due to Project-related direct labour requirements, which would include the hiring of workers by NWP to support the construction, operation, and closure of the mine.

During the Project's Construction and Pre-Production period, the annual labour requirements are predicted to range between 297 and 513 personnel, with the peak labour requirements anticipated to occur in the last year of Construction and Pre-Production. Of these direct jobs, the annual labour requirements sourced from outside the Socio-Community LSA communities are expected to range between 134 and 235 workers, while the remaining labour requirements would draw on the existing construction labour force within the LSA. The Construction and Pre-Production period is short-term in nature, and therefore, it is not anticipated to result in permanent population growth; however, the Project could contribute to an influx of some temporary workers. Even at the predicted peak of 235 construction workers coming from outside the Socio-Community LSA, this temporary influx and change in population is expected to be low in magnitude in comparison to the total number of people currently employed in construction and mining in the Socio-Community LSA (which in 2016 was about 1,865 and 3,345, respectively, and described previously in Section 18.4.2.1.2).

Project Operations are anticipated to extend for 15 years following Construction and Pre-Production. During the Project's Operations period, the annual average direct personnel requirements is estimated to total 329 staff, of which 49 direct jobs are predicted to be sourced from outside of Socio-Community LSA communities. Section 17.5.4.1 in Chapter 17 provides a more detailed description of the Project-related employment effects and the explanation of the allocation of the projected direct jobs from the Project.

An additional 49 people coming into the Socio-Community LSA for employment because of the Project would not result in a significant change to the population base. For comparison purposes, in 2016, there were approximately 3,350 mining, quarrying, and oil and gas extraction workers residing within Socio-Community LSA communities (Appendix 17-A). During the Operations period for the Project, approximately nine other mines (four current projects, one proposed extension project, and five additional proposed projects) located near Socio-Community LSA communities could also be in operation. Based on the projected labour requirements for these projects and NWP's direct employment estimates (Chapter 17), the total labour demand to support mining activities is anticipated to fluctuate between approximately 3,800 and 4,800 direct operational jobs during the Project's Operations period.

While these estimates provide valuable contextual information for the socio-community effects assessment, it is important to note that these estimates are inherently uncertain and subject to change due to a variety of external factors. For example, all of the proposed projects are dependent on regulatory approval and market demand for coal. In addition, some projects are still in the early stages of planning

[15] Direct employment effects are the result of direct Project-related labour requirements during Construction and Pre-Production. Indirect employment effects include employment related to upstream economic activities such as the supply of goods and services (i.e., intermediate inputs) required for construction and operations. Lastly, induced employment effects are generated through direct and indirect employment opportunities (i.e., consumer expenditures, induced by household incomes and wages generated through Project-related direct and indirect employment). Refer to Chapter 17 for more information.

and have not yet established labour requirement estimates. In order to reconcile these uncertainties, a conservative and a peak estimate are presented to account for the various stages in the mine operations.

Based on the peak estimate for all known planned mines, there could be an increase in the demand for mine workers in the Socio-Community LSA of up to an additional 1,500 workers above existing employment levels, of which a small proportion of these additional workers (less than 20%) would be attributed to the Project. Nevertheless, it is possible that the Project could attract some people to the Socio-Community LSA communities for employment, which could contribute to a small amount of population growth. Population growth in the Socio-Community LSA will be metered by other considerations, including high housing prices and limited housing supply in the Socio-Community LSA that has been reported (Section 18.4.2.3.2). These factors could contribute to some amount of the workers not living in the Socio-Community LSA on a full-time basis (i.e., they would rent accommodation in the Socio-Community LSA while working their shifts but would commute back to their homes/families located in other communities outside of the Socio-Community LSA when they are not working—known as "fly-in/fly-out"). To some extent, this currently occurs, although reliable data on the extent to which this occurs are not available.

Considering the above and that most of the workers for the Project are anticipated to come from within the Socio-Community LSA, the long-term change in the Socio-Community LSA population as a result of the Project is considered to be negligible.

As mine production decreases over time, the mine will cease operations and workers will likely either transition into other projects in the Socio-Community LSA, move to other areas, or possibly retire. Direct Project-related employment opportunities would be reduced and eventually also cease during the Reclamation and Closure phase of the Project, which is expected to occur between 2039 and 2047 and to occur over a 2 year period. The eventual closure of the Project is not expected to contribute to a substantial decrease in the Socio-Community LSA population, considering the modest number of workers that the Project would employ relative to total mining related employment in the Socio-Community LSA. In addition, it is expected that ongoing mining activity in the Socio-Community LSA will provide alternative sources of employment for the Project workers, and, as such, it is reasonable to assume that many of these workers will stay in the Socio-Community LSA.

Summary (Change in Population and Demographics)

The Project is anticipated to support the ongoing cluster of mines within the Socio-Community LSA and is not expected to significantly change population and demographic trends in the Socio-Community LSA considering the modest number of workers that the Project will attract from outside the LSA. It is important to note that changes to the Socio-Community LSA population and demographics are influenced by several other external factors, including: world market demand for coal, growth of other industries (e.g., tourism), available housing supply and prices, and settlement patterns of retirees and their families. As a recent example, as a result of the COVID-19 pandemic, there is an increased interest for people to live in many rural areas, which may contribute to a growth in rural populations. In conclusion, changes to population and demographics within the Socio-Community LSA due to Project-related employment requirements are expected to be relatively minimal and not considered adverse.

18.5.3.1.2 Change in Housing Demand and Supply

Housing supply and demand in the Socio-Community LSA can be affected through Project-related population growth due to the influx of temporary employees required for construction activities, as well as the in-migration of permanent employees (and their families) during the Operations phase.

Housing prices in the Socio-Community LSA have been subject to high variation across time, in part due to the demand driven by the mining sector, which is prone to swings and associated employment requirements. In addition, housing trends in the Socio-Community LSA include low rental vacancy rates and high demand for rental accommodations, resulting in high rental costs. Many communities within the Socio-Community LSA experience housing challenges such as a lack of affordable housing and lack of diversity in housing options. Several municipalities within the Socio-Community LSA have cited a housing affordability gap between mine workers and non-mine workers (i.e., the higher wages received by mine workers and high demand for housing can lead to housing price increases that can reduce their affordability for non-mine workers; Housing Strategies Inc., 2012). Other factors such as the presence of a seasonal population (e.g., secondary residents/homeowners), in parts of the Socio-Community LSA and particularly in Fernie, have also been cited as contributing to increased housing prices and reduced affordability for local people. Some municipalities within the Socio-Community LSA have identified housing affordability as a strategic priority. For example, through various policies and plans, the District of Sparwood has emphasized the need to diversify the local housing stock and make housing more accessible to a range of individuals with varying needs (District of Sparwood, 2019e) A more detailed description of housing availability and challenges within communities in the Socio-Community LSA is provided in Section 4.9.2 of the Socio-Economic Baseline Report (Appendix 17-A).

Project Construction and Pre-Production activities will require temporary workers, some of which will come from outside the communities in the Socio-Community LSA and which could generate a relatively small and short-term influx of temporary workers. As previously described, on an annual basis, a range of between 134 and 235 workers that live outside of the Socio-Community LSA may be employed during the Construction and Pre-Production phase. With this influx of temporary workers, the Project may result in some increase demand for short-term accommodation rentals within commuting distance to the Project site.

NWP does not intend to establish temporary worker camps or construct worker living quarters for the Project. In the Elk Valley, worker camps have a poor reputation because temporary workers who are attracted to these camps do not become part of the local community or do not contribute to community cohesion. In addition, temporary camps in the Elk Valley have been associated with social issues (e.g., theft, garbage, drugs, prostitution, etc.).

It is expected that existing accommodations in the Socio-Community LSA would be used to house workers that come from outside the Socio-Community LSA. Within the Socio-Community LSA, there are multiple motel and hotels with rooms; the availability of temporary accommodations ranges between communities, with more available rooms in Fernie and Cranbrook (Kootenay Rockies, 2021). In Sparwood, the Causeway Bay Hotel & Conference Centre offers 83 rooms, and the Valley Motel offers 29 rooms, and are options for temporary accommodation (District of Sparwood, 2016b). In addition, it is important to note that there are other informal accommodation options for workers that may include private rentals that can be booked through online services (e.g., Airbnb). However, these would also be expensive options, particularly for those with entry level positions. Room sharing is also used as a less costly living arrangement, where a room is shared based on different shift work schedules. Based on the availability

of options for temporary accommodation within the Socio-Community LSA, it is anticipated that there will be adequate temporary accommodations for the expected workforce coming from outside the Socio-Community LSA. Overall, the Construction and Pre-Production workforce demand on temporary accommodation is expected to be relatively small, will be of short duration, and therefore, changes to housing supply and demand, particularly temporary accommodations, is expected to be minimal.

During Operations, the Project could affect housing supply and demand through population growth resulting from workforce hiring. The in-migration of workers (and their families) could increase the demand for permanent housing (either to purchase or rent) within communities in the Socio-Community LSA, and, consequently, result in an increase in housing prices and a reduced supply. Within Socio-Community LSA communities, 100 residential listings, including single-family residential listings, vacant land properties, and condominiums (mostly available in Fernie), were available to purchase as of November 2020 in Elkford, Sparwood, and Fernie. (Section 18.4.2.3.2). As previously noted, it is estimated that less than 50 workers may relocate to Socio-Community LSA communities for Project related-employment opportunities during Operations. It is expected that this influx would occur over a few years and be spread out among the various communities in the Socio-Community LSA. Therefore, it is not anticipated that this relatively small influx of workers (and their families) would significantly alter the housing supply or demand within the Socio-Community LSA.

In comparison to home ownership, rental accommodations have been described as more difficult to obtain due to the low supply and high costs within communities in the Socio-Community LSA. In addition, anecdotal information indicates that hot bedding and room sharing occur within these communities (Section 18.4.2.3.2). It is important to note both the District of Sparwood and the District of Elkford have identified affordable rental accommodations as a housing priority (Housing Strategies Inc., 2012). The magnitude of this impact is lessened by the expected relatively minimal and incremental population growth. The spatial and temporal nature of these potential effects related to housing would be distributed between communities in the Socio-Community LSA and over a 15-year period, thereby further minimizing the potential effect. Overall, during Operations, the Project is not anticipated to result in a substantial adverse effect to permanent or temporary housing demand within the Socio-Community LSA due to the relatively minimal influx of workers that would be dispersed between the various communities.

Using a GBA+ lens, however, Indigenous peoples[16] who may want and also be targeted for Project employment by NWP could face a significant barrier with housing availability and cost of living. Indigenous communities are not within commuting distance of the Project, and if NWP is recruiting from those communities, they would likely require housing in the Socio-Community LSA. Housing affordability, availability, and high cost of living have been identified by Indigenous participants as a challenge in the Elk Valley. If NWP aims to reach certain employment targets for the hiring of Indigenous peoples, and this entails recruiting Indigenous employees from surrounding reserves/communities where many of those reserves/communities are not within commuting distance of the Project, then housing availability and costs could limit the potential to reach that target. In addition, the availability and cost of housing limit opportunities for entry level workers, and particularly non-Indigenous and Indigenous youth who may be

[16] 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.

taking up those entry level positions and wanting to live in the Socio-Community LSA, whose entry-level salaries would likely not allow them to afford hotel, motel, or Airbnb accommodations. Given that many potential Indigenous employees may be more eligible for entry level positions in mining, this would present an additional barrier in meeting their housing needs. In addition to housing, some interview participants identified either single car ownership or poor driving conditions in winter as barriers to employment in mining.

During Project Reclamation and Closure, negative changes to housing supply and demand are not anticipated to occur due to the fact that population changes (i.e., out-migration of Project employees due to the decrease in employment opportunities associated with the cessation of mine operations) are expected to be relatively minimal. While larger operations have the potential to influence housing markets at this stage (i.e., workers employed during Operations sell their houses and create a surplus in supply, which drives prices lower), the Project is not expected to negatively alter housing and supply and demand trends. This is due to the anticipated relatively small incremental increase in population in the Socio-Community LSA during Operations, which is not anticipated to influence the housing markets in the Socio-Community LSA. In addition, it is likely that many of the workers employed during Operations will transition to other employment opportunities with the Socio-Community LSA, and therefore, continue to reside within the Socio-Community LSA.

Summary (Change in Housing Demand and Supply)

Project-related population growth resulting from the influx of temporary and permanent employees during the Construction and Pre-Production and Operations phases of the Project has the potential to affect the housing demand and supply in the Socio-Community LSA. As Project-related population growth in the Socio-Community LSA is expected to be minimal relative to the existing population, the resulting additional demand on housing is expected to be minor to modest. The demand for short-term, temporary accommodations is anticipated to be associated with the Construction and Pre-Production phase. In comparison, the Operations phase may increase the demand for long term housing, but since the number of new people coming into the area for Project employment will be small, this anticipated increase in demand is not considered to be significant. The impact on housing demand on any single community in the Socio-Community LSA is mitigated by the expectation that demand for housing will be dispersed throughout several LSA communities.

While the additional demand on housing in the Socio-Community LSA as a result of the Project is not expected to be substantial, it is recognized that housing supply is limited, and affordability has been expressed as a concern. This is apparent with respect to Indigenous peoples and youth who represent an important potential workforce and who stand to benefit economically from employment in the mining sector if certain barriers such as unaffordable and limited housing availability are reduced. However, the housing barrier also needs to be considered for Indigenous peoples in conjunction with other barriers, including education and training, as well as racism, both identified in Chapter 17. With the continued interest and possible expansion of mining activity in the Socio-Community LSA, the housing affordability challenge is expected to continue unless the supply of local housing (including rental accommodation) increases. The lack of local housing supply in the Socio-Community LSA may due to limited available land base for new development, the price of land, limited municipal services/infrastructure to support new development, demand for recreation properties, and/or concerns related to the up and down nature of the mining sector and the risks this presents to housing developers. Housing developers may have little

interest investing in rental housing in a mining dominated region that is more vulnerable to boom-and-bust cycles of the economy. If the housing supply remains limited and/or prices continue to rise, this could result in a higher percentage of the workforce living outside of the Socio-Community LSA and commuting to the LSA (i.e., staying at rental accommodations) during their shift cycle periods. This is often referred to as "hot bedding" where several workers share an apartment or room and take turns using it. The families of these workers would remain outside of the Socio-Community LSA. This type of scenario is not ideal as it contributes to greater amounts of "economic leakage" outside of the Socio-Community LSA and can also lead to some social issues within the local communities. Overall, changes to housing supply and demand within the Socio-Community LSA due to Project-related employment requirements are expected to be relatively minor and are not considered adverse.

18.5.3.1.3 Change in Availability of Community Services

Population growth related to Project workforce hiring during Construction and Pre-Production and Operations could increase public demand on community services, which could, consequently, decrease public access and quality of community services. The potential effects due to changes in demand on community services, including education, health care, emergency services, protective services, child care, and recreational services are summarized below.

In the Socio-Community LSA, the following services have been identified as adequate and sufficient for the current population: education facilities, recreation, emergency services, including ambulatory and fire, and protective services. Section 18.4.2.4.1 provides a more detailed description of the existing conditions of these community services within the Socio-Community LSA.

During Construction and Pre-Production, it is anticipated that there may be up to 235 workers from outside of the Socio-Community LSA. While these temporary workers may utilize certain community services (e.g., emergency services, protective services, and health care), it is anticipated that the use of these services would be short in duration and occur on an as needed basis. As such, this influx of temporary workers is anticipated to have a relatively minimal and short-term impact on the demand for community services.

As previously noted, the Project is anticipated to result in a small incremental change in population within communities in the Socio-Community LSA for the Operations phase (less than 50 direct jobs are predicted to be sourced from outside of the Socio-Community LSA on an annual basis), therefore demand on community services is not expected to change substantially. In Elkford, it was reported that the temporary workforce, puts increased pressure on health care services. As a result, there is currently not enough capacity to fill the health care needs (e.g., long wait times for doctors) in the District of Elkford. In addition, many of the emergency room visits in the Elkford Health Centre tend to be contractors or subcontractors from mine sites (District of Elkford, pers. comm., 2020). In comparison, the Project workforce is anticipated to be dispersed between communities, rather than concentrated in one community, and, therefore, the change in demand for health care services are anticipated to also be distributed between communities in the Socio-Community LSA. Fernie has been described as the hub for health care services in the Elk Valley. Health care services in Fernie are currently adequate and meet the needs of residents (i.e., hospital, inventory of doctors, surgeons, general practitioners; Section 18.4.2.4.1). However, interviews with some Indigenous participants revealed that overall health care services in the area were considered inadequate to meet demand, and residents in the region often end up having to go to Kelowna,

an 8-hour drive away, for health care. This situation provides an additional barrier or deterrent for those wanting to live in the LSA and work in mining.

The following on-site services to be provided by the Project include: level-three first aid attendant, Mine Rescue Team, and Emergency Response Team to manage and respond to on-site incidents. The Mine Rescue Team would develop relationships with local municipalities (e.g., Sparwood and Elkford) for fire services and possibly enter into a mutual aid agreement. If a vehicle incident were to occur between a member of the public and Project vehicle, in addition to local emergency services, the Mine Rescue Team would also respond to the incident. As noted in Section 18.4.2.4.1, ambulatory services are provided by the BC Ambulance Service. NWP would be responsible for on-site incidents, with handoffs to BC Ambulance Service to likely to occur at the parking lot. It is expected that the Project's helicopter pad will be available for STARS use when needed.

Relative to the existing population base and with other planned projects, the Project is predicted to result in a small change in demand for community services, education, health care, emergency services, protective services, child care, and recreational services within communities in the Socio-Community LSA during the Construction and Pre-Production and Operations phases. Little Project-related demand for such services is anticipated during Reclamation and Closure.

Through a GBA+ lens though, women, including Indigenous women and single parent mothers hired to work in mining may face barriers in obtaining child care, given that there is limited or a lack of child care availability in the Elk Valley region based on the NWP Community Survey (2021) and interviews with Indigenous women. This is more problematic where mining presents particular challenges for child care with the type of long shifts involved as well as overnight shifts in some cases (Manning et al., 2018). If NWP is committed to prioritizing women in employment for the Project where possible/applicable, then limited or lack of child care in the region combined with shift work could present barriers to their employment potential.

In addition to the above, the prevalence of social issues associated with mining such as substance abuse and mental health have the potential to place further demand on existing and specialized health care services within the Socio-Community LSA. Within the Socio-Community LSA, the level of alcohol consumption is above the provincial and regional averages (Section 18.4.3.1), and crimes related to substance abuse, overdose, drinking and driving, and assault were identified as the most prevalent crimes in Elkford (Section 18.4.2.4.1). However, as noted above, changes in population due to the Project are predicted to be relatively small and dispersed between communities in the Socio-Community LSA, and therefore, the Project is not anticipated to substantially affect the capacity of existing mental health care services. Indigenous participants highlighted concerns about substance abuse primarily in relation to temporary mining camps, which will not be implemented for this Project. Though shift work can be related to problems with substance abuse, particularly if there are Indigenous employees or youth new to shift work hired for the Project (see Section 18.5.3.2.1).

Summary (Change in Availability of Community Services)

During Construction and Pre-Production, while there may be a temporary peak in labour requirements, this is anticipated to be short-term in duration and dispersed between communities in the Socio-Community LSA, and therefore, it is not expected to adversely impact the demand on community services.

During Operations, the relatively minor influx of permanent workers (and their families) due to Project-related employment opportunities is not anticipated to substantially increase demand on community services within the Socio-Community LSA. Overall, Project effects on the change in demand for community services in the Socio-Community LSA are expected to be minimal, negligible in magnitude, and not adverse. Though given that NWP has committed to defining targets for Indigenous employment, and prioritizing Indigenous women where applicable, reducing barriers to housing and child care are likely critical in being able to achieve certain Indigenous employment targets.

18.5.3.1.4 Change in Community Infrastructure Demand and Availability

Similar to housing and community services, the demand for community infrastructure is largely connected to changes in population within the Socio-Community LSA. Population growth resulting from workforce hiring during Construction and Pre-Production and Operations could increase the demand for community infrastructure, including water, wastewater, solid waste management, and transportation infrastructure.

Water, wastewater, and solid waste community infrastructure within the Socio-Community LSA has been described as generally well-maintained, upgraded on an as needed basis, or requires expansion or future studies. For the most part, communities in the Socio-Community LSA can or have plans to accommodate future growth (Section 18.4.2.5). Certain communities have recently upgraded their infrastructure, plan to revitalize or replace infrastructure in the future, or intend to complete infrastructure capacity studies in the near future (Section 18.4.2.5).

As described earlier, due to the anticipated minimal change in population in the Socio-Community LSA as a result of the Project, any growth would be dispersed among several communities in the Socio-Community LSA, and with anticipated ongoing improvements to infrastructure by these communities, the potential for adverse effects on infrastructure is considered negligible. Should there be a continued demand for long-term new housing, there may be the need to expand municipal services in some communities pending their current capacity.

The Project is expected to utilize existing transportation infrastructure to transport personnel, materials, and consumable items. Highway transport trucks, light duty vehicles, and crew buses will use Highway 43, Line Creek Mine Road, Valley Forest Service Road, and Grave Creek Road for all phases of the Project. Grave Creek Road will require improvements for the Project, but this will be at the cost of NWP and not impact the LSA communities. Routes along Highway 3 provide important transportation routes for mine workers within the RDEK and are often used to access recreation and tourism features within the Socio-Community LSA. In 2015, traffic volume on Highway 3 ranged from 4,487 to 9,567 annual average daily traffic depending on where in the LSA the traffic volumes were assessed. In addition, the summer average daily traffic on Highway 3 peaked at 13,074 vehicles (Section 4.13.1 of the Socio-Economic Baseline Report). Traffic associated with the Project will be minimized where possible. For example, multiple passenger transportation options will be provided for personnel to reduce the amount of traffic on Project roads during peak traffic times.

Summary (Change in Community Infrastructure Demand and Availability)

During Construction and Pre-Production, Operations, and Reclamation and Closure, potential effects to community infrastructure are predicted to be minimal. Project-related changes in population are not

expected to alter the demand for community infrastructure to a point that exceeds existing known infrastructure capacity levels.

18.5.3.2 Change in Community Health and Well-Being

Community health and well-being is often considered to be a composite of a variety of interrelated socio-economic issues relating to health, opportunity, crime, education, and vulnerable groups, and the perception of these factors. Community health and well-being within the Socio-Community LSA tends to be above the provincial medians, which has, in part, been attributed to the economic prosperity driven by the mining sector. As such, Project-related employment is a key driver of potential effects to the socio-community. Chapter 17 provides a more detailed description of changes in employment, employment income, and skills and training opportunities due to the Project. The following describes the following potential effects for this VC:

- Change in community well-being (e.g., increased drug and alcohol abuse, crime rates, perceptions regarding increased outsiders in communities, etc.);
- Change in public safety due to physical hazards (e.g., truck traffic);
- Potential in Project nuisance effects to residents (e.g., from noise and change in satisfaction with place and use/enjoyment of property);
- Change in community health conditions (e.g., change in air quality, consumption of contaminated water or food); and
- Change in availability/reliance on country foods.

18.5.3.2.1 Change in Community Well-Being

As is the case with most large resource extraction projects, associated population growth and increased personal income from new employment opportunities has the potential to amplify existing social issues (e.g., drug and alcohol abuse, crime rates, etc.) within the Socio-Community LSA. Within communities in the Socio-Community LSA, alcohol consumption is reported above both provincial and regional averages. The District of Elkford also cited the prevalence of crimes related to substance use, overdoses (including drugs and alcohol), as well as a trend in fentanyl availability in communities (Section 18.4.3.1). While recognizing these baseline conditions, alcohol consumption and drug use is not anticipated to change substantially as a result of the Project given the modest influx of workers associated with the Project. The Project is situated in a cluster of existing operational mines and is not expected to result in substantial population growth on a regional scale or increases in personal income, which have been tied to the social issues described above; therefore, alcohol consumption and drug use is anticipated to remain relatively stable.

Crime rates in a community can also be affected by new major resource extraction projects. Within the Elk Valley, crime rates have been relatively stable and below provincial averages in recent years (Section 18.4.3.1). However, in Cranbrook, there has been an increase in criminal activity, which is predicted to explain the higher levels of spending on police services compared to other communities (Chapter 17). During Construction and Pre-Production, particularly during the peak labour requirement period, it is anticipated that the influx of transient workers could result in an increase in social issues related to alcohol, drug use, and crimes within communities in the Socio-Community LSA. However, this potential effect is expected to be short in duration. In addition, these communities have experience with short-term influxes in transient workers due to other projects in the area and have likely developed resilience to mitigate these effects.

During Operations, the incidence of crime within the Socio-Community LSA is not anticipated to change as a result of the Project. The Project is not introducing a new type of resource development activity into the Socio-Community LSA and is not expected to attract a large influx of "outsiders". Rather, the Project will contribute to the continuation of the mining sector in the Socio-Community LSA that is expected to draw largely on the existing population for workers.

It is important to recognize, that while the incidence of crime in the Socio-Community 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). Regions and towns that are industry oriented and resource dependent tend to also have a more hyper-masculine culture coupled with intensive work schedules and high disposable incomes that could lead to higher participation of women, both Indigenous and non-Indigenous, in sex work (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 associated with the fore mentioned features are less likely to substantially increase.

While increased personal income due to Project employment opportunities has the potential to amplify existing social issues within the Socio-Community LSA, personal income has also been identified as a key component of well-being. Project-related direct employment opportunities would provide steady and dependable incomes to workers within communities in the Socio-Community LSA, thereby contributing to community and family well-being.

For employees of the Project, the conditions of employment (e.g., shift work, working conditions) have the potential to affect employee health and well-being. During Construction and Pre-Production and Operations, NWP anticipates that workers will follow a shift-rotation schedule of 12-hour shifts on a rotation of two days-on, one day-off, two days-on, and three days-off. The long work days and shift schedules can have implications for worker fatigue, stress levels, and well-being (Gibson and Klink, 2005). Shift work in mining can also create or exacerbate problems with substance abuse (Gibson and Klinck 2005). In addition, construction and mine sites have been described as high risk and high pressure work environments (Gibson and Klink, 2005). The shift schedule can be beneficial to some individuals who can use the multiple days off to participate in recreation and leisure activities such as hunting and fishing in the area. For Indigenous peoples, the specific timing of shift schedules can be adjusted to accommodate traditional practices where there is flexibility with individually tailored shift schedules. For those that do not live in the Socio-Community LSA, the shift schedule can allow the individual to return to their families for the periods they are not working. However, shift work can also have disproportionate effects on women and families, and contribute to abdication of family responsibilities, conflict, and domestic violence (Gibson and Klink, 2005; Manning et al., 2018). Adjusting to shift work can also be particularly difficult for those new to it, such as entry level workers or Indigenous employees new to work in the mining industry (see Table 18.4-10). In order to alleviate some of the challenges noted above, the following health and safety policies and plans outlined in the Project's Health and Safety Management Plan (Chapter 33, Section 33.4.2.3) will be developed and implemented on site:

- Pre-employment screening processes to ensure that employees are fit-for-duty;
- Drug and alcohol screening and testing;
- Substance abuse and re-hiring;
- Acceptable and expected behaviours within the community;

- Anti-discrimination and workplace diversity;
- Anti-bullying and harassment;
- Illness and disability management;
- Fatigue management;
- Sick days and mental health; and
- Mental wellness.

Direct employment during the Construction and Pre-Production and Operations phases is expected to be largely sourced from an existing skilled labour force from within the Socio-Community RSA, who are anticipated to have experience with shift work and working conditions associated with mines. Therefore, mine operations employees are not expected to experience a change in their current behavioural choices, lifestyle, health, and well-being as a result of the Project.

During Operations, the majority of the workforce is expected to reside in the Socio-Community LSA. Over the long-term, residing locally can contribute to a sense of place and belonging, enhanced connections with family and social support systems, and ultimately result in less social disruption compared to mines in remote locations that require workers to fly-in and fly-out (Carrington and Pereira, 2011).

Recreational use of the Project footprint, particularly the mine site, is highly valued by local residents. The loss of recreational lands currently used for hiking, hunting, and motorized uses (e.g., ATVing and snowmobiling) has the potential to adversely affect community well-being. Chapter 19 provides a more detailed description of potential changes to recreational experiences and uses within the Socio-Community LSA as a result of the loss of land currently used for these purposes. In the absence of Traditional Land Use studies from the potentially impacted Indigenous communities, the use of the Project area for traditional activities cannot be confirmed.

18.5.3.2.2 Change in Public Safety Due to Physical Hazards

Local residents, employees, and visitors may be affected by changes in public safety as a result of the Project. Public safety is a concern over the course of the Project as the public may be impacted if exposed to physical hazards such as the operational of heavy machinery and trucks. Potential effects related to Project-public safety interactions include: increased traffic on roads used as part of the clean coal haul route; increased traffic on public highways and roads to access the site; and blasting activities at the mine site.

The Project site will be accessed from the Elk Valley Highway (Highway 43) via Line Creek Mine Road, Valley Road, Harmer Creek Road, and Grave Creek Road for all phases. Valley Road, Harmer Creek Road, and Grave Creek Road will require upgrading and expansion from their current configurations during Construction and Pre-Production, to handle both coal haulage and vehicles travelling to the site. A new access road will be constructed off the Valley Road to access the rail loadout during Construction and Pre-Production and Operations. This new access road will not be open to the public.

As part of Construction and Pre-Production, the existing Valley Road, Harmer Creek Road, and Grave Creek Road will be upgraded from the upper clean coal transfer and stockpile areas down to the proposed rail loadout clean coal stockpile area, a distance of about 14 km (Section 3.7.6 of Chapter 3). This will serve as part of the clean coal transportation corridor during Operations, as well as the site access road. The

upgrade of the Grave Creek Road will involve widening out to a 12 m road platform where it is technically feasible to do so. Widening and other improvements to the road will occur during the Construction and Pre-Production phase. It is expected that vehicles such as pick-up trucks, crew buses, fuel delivery trucks, equipment transport trucks, and clean highway style trucks will be travelling on the Grave Creek Road.

While the Project intends to use the Grave Creek Road, it is important to note that NWP does not intend to close the road to the public. Grave Creek Road is used by the public to access lands for various recreation purposes such as ATV trail riding, snowmobiling, and hunting. As such, the Grave Creek Road is considered to be a key Project interaction with public safety. The Grave Creek Road is a heavily used road by the public to access land for recreational purposes (e.g., trail riding, snowmobiling, hiking, hunting, etc.). Currently, the road is used all year round; however, it is not plowed during the winter months and is accessible only by snowmobile during this time. Members of the public have expressed some concern about public safety once the road is used by highway style trucks.

Once the mine is in operation, it is projected that there will be about 140 vehicle round trips a day to the mine using Harmer Creek Road and Grave Creek Road, of which 86 of these trips will be by highway style trucks. Highway style trucks will transport coal continuously (i.e., 24 hours a day, 7 days a week) along Grave Creek Road, with the exception of short maintenance and meal breaks that are anticipated to occur.

The Traffic Control Plan (Section 33.4.2.4 in Chapter 33) provides a framework for the appropriate controls and management of traffic to avoid adverse effects to workers and the public. The speed limit of Grave Creek Road is expected to be 30 km per hour (km/h), while the speed limits on Harmer Creek Road and Valley Road are 60 km/h. Of note is that one section of Grave Creek Road cannot be widened to accommodate two-way traffic flow due to steep valley walls. Through this 2.5 km section, the road will be operated as an alternating one-way road that is managed by radio; downhill traffic will be given priority. In this section, there will be multiple pullouts for vehicles to use. It is important to note that this section of road is approximately 8.5 m wide, which provides adequate width for two standard vehicles. However, given that there will highway style trucks on the Grave Creek Road, the one-way radio-controlled section of road will be implemented. Public users of this road will require a radio to contact a dispatcher to confirm when it is safe to travel along the road. The dominant public user base of the Grave Creek Road likely has experience with radio controlled roads due to the use of other radio controlled roads in the area. NWP anticipates that there will be a sign outlining the rules (e.g., radio-controlled, speed limits, legally a public road, etc.) of the road.

During Construction and Pre-Production, while widening and other road improvements are occurring, it is anticipated that the measures outlined in the Traffic Control Plan will be adequate and minimize effects to public safety. Similarly, during Operations, it is anticipated that measures outlined in the Traffic Control Plan will help avoid adverse effects and potential conflicts between the public and Project-related traffic (i.e., fuel delivery trucks, highway style trucks, crew buses, etc.). Overall, it is anticipated that Project effects to public safety, particularly along Grave Creek Road, will be minimal during Construction and Pre-Production and Operations.

18.5.3.2.3 Potential in Project Nuisance Effects to Residents

Nuisance effects due to Project-related changes in noise, vibration, and dust have the potential to affect community health and well-being. Project activities may introduce nuisance effects, potentially creating an annoyance or disrupting enjoyment of use. In addition, Chapter 22 provides additional information on air quality with respect to human health. The following sections draw on information presented in Chapter 6 and Chapter 7.

Nuisance Effects – Air Quality

Project activities and components have the potential to cause adverse effects to the socio-community environment through nuisance effects from Project-related changes to air quality (e.g., localized dust effects) during Construction and Pre-Production and Operations. As there are no permanent residents in the vicinity of the mine site or along the coal haul route, the focus of this assessment is on the residential receptors that are in proximity to the rail load out facility. Air quality related nuisance effects as a result of Project activities that may affect recreational uses are discussed in Chapter 19, while those related to traditional Indigenous uses are discussed in Chapters 23 to 31.

The use of the rail loadout and transmission line facility have the potential to result in air quality related nuisance effects as well. Residences have been identified on Lower Elk Valley Road and Hidden Springs Road, which are located about 2 to 3 km south of the rail loadout, as well as south of the transmission line infrastructure, respectively.

As described in Chapter 6, the residual effect of a change in ambient criteria air contaminant concentrations from the Project is considered not significant. The dispersion modelling completed for the Project based on the worst-case scenario for air emissions predicted some exceedances of the British Columbia Ambient Air Quality Objectives (B.C. AAQOs) for maximum 1-hour concentrations of nitrogen dioxide (NO_2), maximum 24-hour concentrations of total suspended particulate (TSP), fine particulate matter (PM10 and PM2.5), and annual maximum concentrations of TSP and PM2.5 at up to 53 localized sensitive receptor locations in the Atmospheric LSA, mostly concentrated within 2 km of the Project footprint where in the case of the mine site, no permanent residences exist. While it is possible that people could be occasionally exposed to such levels, a continuous exposure would not be expected. Exceedances occurring more frequently than 1% of the modelling period were predicted at up to 31 sensitive receptor locations in the Atmospheric LSA, out of 143 sensitive receptor locations. Table 18.5-2 and Table 18.5-3 provide the modelled exceedances levels for receptors of interest to the social discipline (permanent and temporary dwellings and schools).

A limited number of sensitive receptors (e.g., S 200, S 201, and S 206) are located in close proximity to the Project footprint (rail loadout area and coal haul route). Both mining and haul road sources are characterized by high-concentration ground-level sources which disperse relatively quickly with downwind distance. Typically, these emissions may be indistinguishable from background conditions within 500 m downwind of the source; however, near-field concentrations are often elevated and difficult to fully mitigate. It is typical of large-scale projects that a limited number of receptors in close proximity to operations exceed select air quality criteria. People at these locations could at times notice elevated dust levels.

Table 18.5-2: Frequency of 1-hour NO_2 Objective Exceedances at Sensitive Social Receptors

Sensitive Receptor ID	Frequency of 1-hour NO_2 Exceedances	Sensitive Receptor Description
S 179	0.02%	Residence
S 180	0.33%	Residence
S 200 (KNC Receptor #4)	23.86%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 201 (KNC Receptor #5)	0.10%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 206 (KNC Receptor #10)	0.03%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 263	0.23%	School

Table 18.5-3: Frequency of 24-hour TSP, PM_{10}, and $PM_{2.5}$ Objectives Exceedances at Sensitive Social Receptors

Sensitive Receptor ID	Frequency of 24-hour Exceedances			
	TSP	PM_{10}	$PM_{2.5}$	Sensitive Receptor Description
S 21	0.0%	0.1%	0.0%	Residence
S 179	7.7%	15.2%	5.8%	Residence
S 180	6.6%	14.6%	3.5%	Residence
S 181	0.0%	0.4%	0.0%	Residence
S 200 (KNC Receptor #4)	100.0%	100.0%	100.0%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 201 (KNC Receptor #5)	4.6%	8.5%	3.7%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 206 (KNC Receptor #10)	5.8%	19.4%	14.7%	Representative location of a possible Indigenous seasonal dwelling identified by the KNC
S 210 (KNC Receptor #14)	0.0%	0.1%	0.1%	Permanent dwelling reported by KNC
S 263	5.3%	12.2%	3.5%	School

Nuisance Effects - Noise and Vibration

Activities and components associated with the Project have the potential to cause adverse changes to the socio-community environment from Project related noise and vibration at human receptors nearby. Human receptors considered in the acoustic environment effects assessment include residences, seasonal dwellings, cabins, unofficial campsites, and a representative location of a possible Indigenous seasonal dwelling. Nuisance effects due to noise and vibration changes as a result of Project activities that may affect recreational uses are discussed in Chapter 19, while those related to traditional Indigenous uses are discussed in Chapters 23 to 31. This section focuses on noise and vibration nuisance effects on permanent residences, which are located in the vicinity of the transmission line infrastructure and the rail

loadout. As such, this section focuses on noise effects in the vicinity of the rail loadout since there are no permanent residents near the mine site or along the haul route.

The acoustic environment assessment (Chapter 7) considered the Project-related noise and vibration effects on two permanent residences, referred to as Receptor 5 (R5) and Receptor 6 (R6), which were selected to represent the worst-cases conditions arising from the Project due to their proximity to the rail loadout. R5 is located at 5568 Lower Elk Valley Road, which is approximately 1.7 km west of the existing CN line and 600 m northwest of the end of the runway at the nearby Sparwood/Elk Valley Airport. R6 is located at 8882 Hidden Springs Road, which is approximately 250 m northwest of the CN line and 3.15 km southwest of the runway at the nearby Sparwood/Elk Valley Airport. In addition, both R5 and R6 are located in proximity to Highway 43, which is a source of traffic noise.

The inherent nature of construction activities affects the acoustic environment, including noise and vibration levels, in addition to the heavy equipment involved (i.e., backhoe, cement trucks, transport trucks, etc.), which emit additional noise and vibration based on their various predicted sound powers and mechanics. R5 is located east of the rail loadout and could experience some noise and vibration nuisance effects during Project construction; however, these would be short-term in duration and minimized by existing ambient noise and vibration levels.

During Project Operations, noise and vibration levels due the transportation of personnel, materials, and consumable items on various roads in and around the Project (i.e., Highway 43, Line Creek Mine Road, Valley Road, Harmer Creek Road, and Grave Creek Road) will affect the acoustic environment. While there may be an increase in construction related traffic along Highway 43, Highway 43 is designed to accommodate high traffic volumes.

Table 18.5-4 provides the predicted sound levels at the two permanent residences near the rail loadout facility for daytime and nighttime periods. The predicted sound levels from Continuous Operations during daytime and nighttime hours are less than their respective Permissible Sound Levels (PSL).

Table 18.5-4: Receptor Sound Levels (dBA) and Application Case Sound Levels (dBA) Compared to PSLs from Continuous Operations

Receptor ID	Point of Reception Description	Time of Day [1], [2]	Predicted Background Sound Level at Receptor (dBA) (L_{eq})	Application Case Predicted Sound Level (i.e., Project plus Background) (dBA) (L_{eq})[3]	Permissible Sound Level (PSL) (dBA)	Application Case Less than PSL?
R5	Residence	Daytime	36.3	48.3	53	Yes
		Nighttime	36.3	40.2	43	Yes
R6	Residence	Daytime	23.8	53	58	Yes
		Nighttime	23.9	43.1	48	Yes

[1] Daytime hours are between 0700 and 2200.

[2] Nighttime hours are between 2200 and 0700.

[3] Application Case Sound Levels represent the logarithmic sum of the PSL and the ASL (see Section 7.4.2.1.11 in Chapter 7).

Notes: dBA = A-weighted decibels; Leq = equivalent sound pressure levels; ASL = ambient sound levels; PSL = permissible sound level.

Source: Chapter 7

The impacts of blasting at the mine site were also assessed for these receptors, which are located between 10.8 km and 11.7 km from the mine site. Two parameters are used for quantifying vibration impacts from blasting on representative human receptors: ground vibration level (typically reported in millimetres per s [mm/s]) and air overpressure (in linear unweighted sound pressure level [dBL]). Table 18.5-5 presents the results for the Blasting Operations vibration impacts on human receptors. The calculations used to determine these impacts are provided in Appendix C of the Noise and Vibration Assessment (Appendix 7-A; Dillon Consulting Limited, 2021).

Table 18.5-5: Human Receptor Blasting Operations Predicted Impacts Compared to Applicable Criteria

Receptor ID	Distance Between Receptor and Blast (m)	Maximum Charge per Delay (kg)	Ground Vibration Level - PPV (mm/s)	Vibration level > 10 mm/s?	Air Overpressure (dBL)	Air Overpressure > 120 dBL?
R5	11735	2300	0.1	No	88	No
R6	10877	2300	0.11	No	89	No

Source: Chapter 7
PPV = peak particle velocity; m = metre, kg = kilogram, mm/s = millimetres per second, dBL = linear decibels

As the results indicate, with the upper limit of 2,300 kilograms (kg) (maximum charge per delay), predicted vibration levels for the two above noted permanent resident receptors are in compliance with the respective criteria for both ground vibration and air overpressure. Although the predicted levels are well below the applicable criteria for ground vibration and overpressure, the loud instantaneous blast noise may be audible at the representative human receptors depending on weather conditions. Steps outlined in the Noise and Vibration Management Plan (Chapter 33, Section 33.4.1.7) will be undertaken by NWP to notify residents and manage potential complaints from nearby receptors.

Based on the acoustic environment effects assessment results, the two permanent residences are expected to experience negligible noise level changes as a result of the Project, partly because of existing ambient noise and vibration levels from rail, highways, and airport facilities. As well, substantial noise impacts to these receptors from mine site blasting activities is not expected.

18.5.3.2.4 Change in Community Health Conditions

Mining projects of this nature have the potential to result in impacts to human health. As outlined in Chapter 22, the Project has the potential to result in the following health impacts:

- Community or temporary residents, Indigenous peoples, and seasonal land users (hunting/harvesting or recreational land use) spending time within the Human Health and Ecological Risk Assessment (HHERA) LSA may be exposed to chemical constituents associated with fugitive air release from Project activities through direct inhalation;
- Community or temporary residents, Indigenous traditional land users, and seasonal land users (hunting/harvesting or recreational land use) may be exposed to chemical constituents through direct contact and ingestion of surface water; and
- Community or temporary residents, Indigenous traditional land users, and seasonal land users (hunting/harvesting or recreational land use) may be exposed to chemical constituents through ingestion of plant and animal tissues within the HHERA LSA. Similarly, wildlife receptors may be exposed to chemical constituents through ingestion of plant and prey items.

As discussed in Chapter 22, the human health risks were estimated in consideration of current use and rights-based Indigenous traditional use lifestyle scenarios. 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. This is corroborated by the fact that the maximum human health risk estimates computed all derive from the rights-based use receptor scenario. The HHERA has concluded that the majority of identified contaminants of potential concern have been determined to pose a negligible, or low and likely negligible, risk to human health. For isolated locations, health risk was computed to be further elevated, but these isolated scenarios were derived from locations that would, in fact, not be realized (e.g., lifetime residence within the mine footprint or on/adjacent to the haul road). The residual effects of Operations activities (and by inference, other less influential Project phases) to human health are considered not significant).

18.5.3.2.5 Change in Availability and Reliance on Country Foods

As identified by the Impact Assessment Agency of Canada (IAAC; IAAC, 2015a, b; 2020 a, b, c; 2021 a) and listed in Chapters 23, 24, 27, 28, and 29, the Project falls within the asserted traditional territories of the member nations of the Ktunaxa Nation (ʔakisq̓nuk, yaqan nuykiy, ʔaq̓am, and Tobacco Plains Band), Shuswap Indian Band, the Kainai, Piikani Nation, and Siksika Nation. The Stoney Nakoda Nation (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 (EVMN) 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, EVM 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 northeast 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 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 U.S.A., covering approximately 70,000 km^2 of Ktunaxa historical traditional territory (Ktunaxa Nation, 2021). Ktunaxa member groups located in B.C. include:

- ʔakink'um‡asnuq‡iʔit or Aqanuxunik or Yaq̓it ʔa·knuq‡i 'it (Tobacco Plains Band near Grasmere);
- ʔakisq̓nuk (Columbia Lake) First Nation near Windermere);
- ʔaq̓am (St. Mary's Band near Cranbrook); and
- Yaqan Nuʔkiy (Lower Kootenay Band near Creston).

The Stoney Nakoda Nation, 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).

Food insecurity has been increasing in recent years and has been further exacerbated by the global pandemic and resultant supply chain disturbances. In the coming years, other factors will influence food security, such as natural resource developments and climate change, which threaten to decimate traditional food systems, risking further serious consequences for livelihoods and health. Food security, as defined by the Food and Agriculture Organization of the United Nations (FAO)[17] , 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).

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).

There are cultural considerations to be mindful of when discussing food and access to food. When trying to understand the reasons why harvesting, and access to traditional foods, is essential to Indigenous communities, it is important to look at the matter in terms of local traditions regarding the conceptualization of health and wellness. Indigenous communities utilizing the Elk Valley harvest their own food because they need the sustenance that the food provides, and harvesting their own food is less expensive than buying it. Indigenous households in Canada are more likely than non-Indigenous households to experience the sociodemographic risk factors associated with household food insecurity (poverty, single parenthood, living in a rental accommodation, and reliance on social assistance). It is because of these interconnected considerations that it is important to go beyond food security and aim to enact food sovereignty, including Indigenous food sovereignty (Morrison, 2008).

Generally, Indigenous food sovereignty is defined as:

> The right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods… [as well as] the right [for Indigenous peoples] to define and control [their] own food and agricultural systems, including markets, production modes, food cultures and environments. It is a framework to enable Indigenous peoples to develop highly sustainable, resilient and adaptable harvesting strategies (FNHA, 2020).

For the Project, traditional land use studies undertaken by the Indigenous communities that utilize the Project area for harvesting "country" food are currently underway. The information described below was obtained through publicly available information sources and is not intended to supersede traditional

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

knowledge or specific information that may be shared as part of ongoing engagement with the Indigenous communities identified above. The information available for harvested species included in Chapters 23 to 31 identifies the following list of species that are fished, hunted, trapped, harvested, and/or gathered is summarized in Table 18.5-6.

Table 18.5-6: Indigenous Communities' Consumption-related Resource, Use, or Species of Interest

Indigenous Interest	Indigenous Resource, Use, or Species of Interest
Fishing	Indigenous communities have indicated that Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, Bull Trout, Rainbow Trout, sturgeon, Longnose Sucker, and freshwater mussels are species of importance. Access to healthy aquatic systems for fish to support fishing is important to Indigenous communities that use the watercourses of the Elk Valley.
Hunting and Trapping	Indigenous communities hunt or trap 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, fox, fisher, and coyote; • Small mammals – badger, little brown myotis, Townsend's big-eared bat, southern red-backed vole, least chipmunk, muskrat, mink, 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 guild); and • Waterfowl – Harlequin duck and Canada geese. Hunting and trapping continue to be a traditionally and culturally important activity for subsistence, medicinal, and ceremonial purposes.
Harvesting and Gathering	Many medicines, foods, and materials that are provided by the traditional territories of the listed Indigenous communities are still important. Today, there are a diversity of culturally important plants in these drainages that these communities rely on for foods, medicines, and spiritual uses. Indigenous communities potentially harvest and gather plants such as: • Whitebark pine, western red cedar, black cottonwood, lodgepole pine, Pacific yew, highbush and lowbush cranberry, Oregon grape, red osier dogwood, currants and gooseberries, yellow glacier lily, cow parsnip, Saskatoon berry, soopolallie, juniper, antennaria, spruce, fireweed; • Roots such as bitterroot, camas, nodding onion, biscuit root, balsamroot, yampa, as well as tiger lily, yellow avalanche lily, mariposa lily, bugleweed, wild thistle, greens (e.g., sprouts, stems, leaves), prickly pear, lichen, cambium were gathered for food); and • Chokecherry, Kinnikinnick, huckleberry, raspberry, blueberry, thimbleberry, strawberry, shaggy mane mushroom, willows, and ?ayut – a culturally important plant in the genus Ligusticum.

Fish and fish habitat are critical to the maintenance of traditional activities as well as practices for ecological, cultural subsistence, and commercial values, particularly in light of the historic loss of certain

species. There are also numerous recorded fishing sites for fish species within the main stream of the Elk River and adjacent streams, as well as in the lower reaches of the Elk River and the Lake Koocanusa reservoir. The ability of Indigenous communities and their members to maintain relationships with the lands and waters in the Elk Valley, including the fulfillment of their stewardship obligations, is currently impaired by industrial displacement. To practice fishing, Indigenous communities require access to healthy streams and rivers within their traditional territory.

Grave Prairie, Upper Grave Creek, and Crown Mountain areas support significant year-round populations of ungulates. 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. Alexander Creek is regarded as 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. Other local furbearers of significance including beaver, river otter, bobcat, and coyote are also abundant in the area. The Grave Prairie, Upper Grave Creek, and Crown Mountain areas 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. Interests in wildlife were identified, as the 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 (Apps et al., 2007).

Project-specific information related to the harvesting and gathering of culturally significant plants and ecosystems by Indigenous communities and their members was not available for the characterization of existing conditions of culturally significant plants and ecosystems within the Socio-Community LSA. NWP acknowledges that the significance of plants and ecosystems may vary in time and space depending on the cultural use and sustenance of the Indigenous communities identified above. The table above lists the plant species previously identified for other proposed mining developments, traditional use, and economic planning studies as having potential cultural significance to Indigenous communities within the Socio-Community LSA. 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 LSA (Klinkenberg, 2021).

18.5.3.3 Transboundary Effects

Transboundary effects on the socio-community environment arising from the Project are not expected to occur in either the Province of Alberta or the U.S.A. Crowsnest Pass, Alberta is included as part of the Socio-Community LSA, and therefore, considered in the socio-community effects assessment. Potential effects to social and health conditions of Indigenous communities, including federally owned reserve lands, are discussed in Chapters 23 to 31. No socio-community effects to other federal lands in the vicinity of the Project (i.e., Dominion Coal Blocks; Chapter 1, Section 1.3.3) are anticipated as these lands are largely unutilized beyond limited forestry operations and recreational activities.

18.5.4 Mitigation and Benefit Enhancement Measures

Mitigation and benefit enhancement measures for a potential change in housing, community services, and infrastructure, and change in community health and well-being are described in the following sections.

18.5.4.1 Mitigation Measures for Change in Housing, Community Services, and Infrastructure

Project-related population growth due to the influx of temporary employees required for Construction and Pre-Production activities as well as the in-migration of permanent employees (and their families) during the Operations phase has the potential to change the supply and demand of housing options and increase the demand on community services and infrastructure. During all stages of the Project, changes to the demand for housing, community services, and infrastructure are anticipated to be negligible and not adverse, as Project-related population changes are predicted to be minimal. In order to minimize changes to the demand for housing, community services, and infrastructure, NWP intends to capture local labour force, particularly during the Operations phase. In addition, NWP will contribute to municipal government revenues through the payment of taxes that will partially offset for potential increases in demand for community services and infrastructure, and ultimately support local government expenditures and enhancements on community services and infrastructure.

To minimize the increase in local populations and additional demand on local services and infrastructure, as well as reduce potential barriers to Indigenous employment based on the GBA+ study completed, NWP intends to implement the following mitigation and benefit enhancement measures, which are also described in Section 17.5.5 of Chapter 17:

- Implement measures to capture the local labour force for Project work to limit an influx of remote workers to the Elk Valley region;
- Work with housing developers and municipalities to identify strategies for increasing availability of affordable rental accommodation in the Elk Valley region;
- Continued participation in and resources (financial and non-financial) to support community and Indigenous housing initiatives (e.g. Elkford Senior Housing Society, East Kootenay Métis Housing Society, etc.);
- Provide resources to support the search for affordable housing for Indigenous employees;
- Provide a housing wage subsidy for Indigenous employees, including those who are new hires and may be moving from their communities;
- Work directly with Indigenous communities to identify ways to address housing availability and affordability challenges;
- Initiate a shuttle/busing service for Indigenous employees living inside and outside of the LSA;
- Payments of taxes to communities in the Socio-Community LSA through the Elk Valley Property Tax Sharing Agreement to support community services etc.; and
- NWP to engage with local child care service providers and the municipalities to strategize about, support, and subsidize child care provision for shift workers

Based on the GBA+ study completed, additional recommendations related to the economy are included in Section 17.5.5 of Chapter 17.

NWP intends to develop relationships with local municipalities (e.g., Sparwood and Elkford) for fire services and possibly enter into a mutual aid agreement. NWP would also develop a relationship and collaborate with BC Ambulance Service. NWP would be responsible for responding to on-site incidents, with handoffs to BC Ambulance Service likely to occur at the mine site parking lot. It is also expected that the Project's helicopter pad will be available for STARS use when needed.

18.5.4.2 Mitigation Measures for Change in Community Health and Well-Being

Potential effects to community health and well-being may occur due to changes in population due to increased employment opportunities. Population growth and increased personal income due to employment opportunities have the potential to amplify existing social issues within the Socio-Community LSA. Given that population growth and the influx of "outsiders" is predicted to be minimal, social issues within the Socio-Community LSA communities are anticipated not to be considerably impacted by the Project. However, to mitigate possible social issues that could emerge, as outlined in the Project's Health and Safety Management Plan (Chapter 33, Section 33.4.2.3), the following health and safety policies and plans will be developed and implemented at the Project site:

- Pre-employment screening processes to ensure that employees are fit-for-duty;
- Drug and alcohol screening and testing;
- Substance abuse and re-hiring;
- Acceptable and expected behaviours within the community;
- Anti-discrimination and workplace diversity;
- Anti-bullying and harassment;
- Illness and disability management;
- Fatigue management;
- Sick days and mental health; and
- Mental wellness.

In addition to the above, the following community health and well-being policies and plans will be developed and implemented by NWP based on the GBA+ study completed:

- Incorporate 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;
- Collaborate with local organizations on diversity and inclusivity initiatives and events;
- Develop well-being management plan in collaboration with Indigenous communities, Elk Valley Women in Mining, and The Fernie Pride Society

Create shift work schedules so that can be flexible enough to accommodate needs of diverse employees. Potential effects to community health and well-being may also occur through exposure to physical hazards due to Project activities, including Project-related traffic and public interactions and nuisance effects.

Project-related traffic and public interactions or conflicts along Grave Creek Road have been identified as a public safety concern. This road is not used to access permanent residences. Rather, Grave Creek Road is largely used for recreational purposes. In order to minimize potential effects to public safety on public roads, Project personnel and contractors will undergo safety and environmental training during Project onboarding. This training will include guidance on vehicle and equipment operation within the Project site and along transportation routes used for the Project. It is anticipated that through measures outlined in the Project's Traffic Control Plan (Chapter 33, Section 33.4.2.4) that interactions can be minimized.

Vehicle and equipment operators will comply with the following requirements during all phases of the Project:

- All vehicles and equipment will remain on established roads and designated travel routes;
- Speed limits will be clearly marked and signed on all Project access roads. These speed limits will take into consideration road conditions, potential weather, and wildlife crossings;
- Additional road signs will be posted for wildlife crossings, speed limit changes, advisory corner speeds, areas with limited visibility, and other potential road hazards;
- Vehicles and equipment used for the Project will be equipped with two-way radios and the operator will be trained on-site specific radio use;
- Traffic associated with the Project will be minimized where possible. Multiple passenger transportation options will be provided for personnel to reduce the amount of traffic on Project roads during peak traffic times;
- Vehicle and equipment loads will be optimized to minimize traffic;
- All personnel operating vehicles and equipment will have the proper licenses and training. These records will be regularly updated and maintained at the Project site;
- Vehicle operators will be responsible for determining the suitability of roads prior to use. Project personnel will monitor weather and highway conditions, and plan activities accordingly;
- All vehicles and equipment will maintain a regular inspection and maintenance schedule to verify proper working condition, cleanliness, and that appropriate registration is place;
- All vehicles and equipment will be equipped with spill response materials and firefighting equipment while on-site;
- Vehicle and equipment operators will adhere to company and provincial requirements regarding mobile phone and radio use;
- All vehicles and equipment will meet or exceed Transport Canada requirements;
- A zero-tolerance drug and alcohol policy will be implemented for all workers and contractors operating vehicles in relation to the Project;
- A journey management plan, departure, and check-in schedule and procedure will be developed for all vehicles arriving and departing the Project site;
- During peak traffic periods such as construction, the Traffic Control Plan will be communicated to the public detailing driving routes, peak traffic periods, and potential road shutdowns; and
- Traffic plans will be communicated to provincial and local governments.

In addition, during Operations, a section of Grave Creek Road that is narrow will only permit one-way traffic and use of this section will be radio controlled.

Nuisance effects related to air quality, noise, and vibration have the potential to affect the health and well-being of permanent residences located in the vicinity of the rail loadout facility and transmission line. Noise level increases to these residents will be minimal and below applicable standards. Some air quality related exceedances are also possible at the location of a few reported dwellings. These exceedances are largely as a result of coal haul traffic. Elevated dust levels may be noticeable at these locations at some times. In order to minimize potential effects nuisance effects, NWP will implement and verify compliance with the Project's Environmental Management Plans (Chapter 33), including an Air Quality and Greenhouse Gas Management Plan (Section 33.4.1.1) and a complaints monitoring program.

NWP also intends to support a local community working group that would meet with local councils to understand the ways through which socio-community effects are occurring and the effectiveness of proposed mitigation measures. NWP anticipates that the local community working group would act in an advisory capacity; this working group would likely provide recommendations and share feedback received from the broader community with NWP.

18.5.4.3 Summary of Mitigation Measures for Socio-Community

Overall, Project effects related to a change in demand for housing, community services, and infrastructure as well as a change in community health and well-being are expected to be minimal. Nevertheless, some mitigation measures are 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 economic development. These include recommendations related to hiring and training to increase the proportion of local workers to minimize the influx of outside workers that could result in impacts to the community, as addressing affordable housing, child care needs, shiftwork, and safety issues as described in this chapter.

The key mitigation measures proposed are summarized in Table 18.5-7. This table also identifies the anticipated residual effects that will be carried forward in the characterization of residual effects, significance, and likelihood and confidence. The mitigation measures identified through the GBA+ study are also included in Table 18.5-7. Mitigation measures identified through the GBA+ study for economic related considerations are described in Chapter 17 that may have socio-community benefits as well.

These proposed mitigation measures are generally accepted and understood to effectively reduce socio-community effects and are rated as moderate-high in their effectiveness. Most would be in the control of NWP, who should monitor their effectiveness and make adjustments as required.

As noted in Table 18.5-7, there are no residual adverse effects on the socio-community following the application of known and proven mitigation.

18.5.5 Characterization of Residual Effects, Significance, Likelihood, and Confidence

The previous sections provide a comprehensive narrative of the potential effects to the socio-community environment (Section 18.5.3) and the mitigation measures (Section 18.5.4) that will be implemented to address these potential effects. Adverse effects to the housing, community services, and infrastructure VC and to the community health and well-being VC are expected to be negligible.

18.5.5.1 Characterization of Residual Effects

As noted in Table 18.5-7, all anticipated residual socio-community effects are considered to be negligible, therefore no further characterization is required.

18.5.5.2 Determination of Significance

As noted in Table 18.5-7, all anticipated residual socio-community effects are considered to be negligible, no significant adverse effects are expected.

Table 18.5-7: Summary of Proposed Mitigation Measures

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
Change in Housing, Community Services, and Infrastructure	• Continued participation in and support of community and Indigenous housing initiatives (e.g. East Kootenay Métis Housing Society, etc.) • Initiate a commuting service/shuttle or bus service for Indigenous employees living inside and outside of the Socio-Community LSA • Payments of taxes to communities in the Socio-Community LSA through the Elk Valley Property Tax Sharing Agreement to support community services, etc. • Expand child care spaces in the local communities. NWP to engage with local child care service providers to receive their input and provide support to existing service providers or create a child care facility for employees, including the provision of a 24 hour child care facility(s).	Project Construction and Pre-Production are expected to result in a small temporary increase in the Socio-Community LSA population. Change in the demand for housing, community services, and infrastructure are considered to be negligible	Construction and Pre-Production	Moderate-high	Residual effects considered negligible in magnitude
Change in Community Health and Well-being	• Incorporate diversity and inclusivity and GBA+ in all areas of the company such that acceptable and expected	Project Operations is expected to result in a minor incremental increase to the permanent population in the	Operations	Moderate-high	Residual effects considered negligible in magnitude

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
	behaviours are integrated in the company and are reflected at the community level • Collaborate with local organizations on diversity and inclusivity initiatives and events • Develop a well-being management plan with Indigenous communities to address ways to 1) reduce the potential effects of shift work for new Indigenous employees and 2) promote the safety and security of Indigenous women, girls, and 2SLGBTQIAA+ people in the workplace or the Socio-Community LSA • Provide flexible and individually tailored shift work hours for working mothers • Provide 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	Socio-Community LSA as a result of in-migration of workers. Change in the demand for housing, community services, and infrastructure are considered to be negligible			

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
	N/A	Reclamation and Closure is not anticipated to result in a change in a substantial change population within the Socio-Community LSA, as workers will likely transition to other opportunities. Change in the demand for housing, community services, and infrastructure are considered to be negligible	Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude
Change in public safety due to physical hazards (e.g., truck traffic)	• Implement and adhere to: • Access Management Plan • Traffic Control Plan	As the Project will result in increased traffic along Grave Creek Road, which is currently used by recreational users, effects to public safety may occur. Measures outlined in the Traffic Control Plan will mitigate the effect to public safety, and is therefore not considered adverse	• Construction and Pre-Production • Operations • Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude
Potential in Project nuisance effects to residents due to change in the acoustic environment	• Implement and adhere to: • Noise and Vibration Management Plan	Changes to noise and vibration nuisance effects due to localized Project activities at the rail loadout and transportation activities may adversely affect permanent residents	• Construction and Pre-Production • Operations • Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
Potential in Project nuisance effects to residents due to change in the atmospheric environment	• Implement and adhere to: • Air Quality and Greenhouse Gas Management Plan	The operation of the coal trucks between the mine site and the rail loadout facility has the potential to result in elevated particulate matter/dust at a few locations that have permanent and temporary dwellings. Users/residents of these dwellings may at times notice elevated dust levels, which could be perceived as a nuisance.	• Construction and Pre-Production • Operations • Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude
Change in community health conditions	• Implement and adhere to the: • Air Quality and Greenhouse Gas Management Plan • Site Water Management Plan • Soil Management Plan	A wide array of design mitigation measures for air quality and surface water quality have been incorporated into the HHERA. Further opportunity to mitigate health risk to individual receptors may be possible through the implementation of relevant management plans and monitoring programs.	• Construction and Pre-Production • Operations • Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude
Change to availability and reliance on country foods	• Continue to engage with Indigenous communities to determine extent to which Project lands are used for traditional harvesting activities	• Change in wildlife populations could affect traditional hunting activity within the Project footprint. A species of interest to traditional hunters is	• Construction and Pre-Production • Operations • Reclamation and Closure	Moderate-high	Residual effects considered negligible in magnitude

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
	• Establish new conservations lands to support species of interest and access for hunting • Develop closure landscape in consultation with Indigenous groups to support species of interest and use of the land for hunting • Establish fisheries offsets to support species of interest and access for fishing • Participate in and support Indigenous food security initiatives including access to country food	understood to be moose. The Project is expected to result in a decline in moose density due to winter habitat loss. However, the moose population in the area was described as relatively stable. Changes to the abundance and distribution of ungulates, with the exception of minor effects to moose density, due to Project activities are predicted to be relatively minor and not substantially alter the abundance of these species. As a result, hunting activity is not expected to be significantly impacted from changes to its population. • Based on the fish and fish habitat assessment (Chapter 12), the potential changes to the actual or perceived accessibility, health, and quality of potential fish species of cultural			

Potential Effect	Mitigation Measures	Rationale	Applicable Project Phases	Effectiveness	Residual Effect
		interest/use for country foods (e.g., Westslope Cutthroat Trout) in the downstream sections of Alexander Creek, have the potential to affect fishing activities in this waterway. Given the conservative nature of the exposure/risks and proposed mitigation (including required fish habitat offset measures), the Project is not anticipated to result in significance adverse effects to aquatic and terrestrial wildlife or Indigenous persons.			

18.5.5.3 Likelihood and Confidence

Not applicable.

18.5.5.4 Summary of Residual Effects Assessment

All anticipated residual socio-community effects are considered to be negligible, no adverse significant effects to the socio-community environment are anticipated.

18.6 Cumulative Effects Assessment

Cumulative effects assessments consider overlapping effects for all residual effects. In general, this involves the assessment of the residual Project effects in combination with those of past, present, or reasonably foreseeable future projects or activities. If no Project residual effect occurs, no cumulative effects assessment is required.

As noted in Section 18.5.5, residual socio-community effects are considered to be negligible, no 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, cumulative adverse effects on the socio-community are not expected.

18.7 Follow-up Strategy

Recommended monitoring and follow-up activities related to the socio-community environment are as follows:

- NWP to support and participate in a local community working group to monitor socio-economic impacts on the local communities as a result of the Project. The scope of this program is to be determined with the input of the local communities and may involve integration with ongoing monitoring activities related to other mine projects in the Elk Valley. Key issues to be considered include housing supply and provision of day care services in the local communities;
- NWP to monitor housing supply and engage with local municipalities, agencies/NGOs, and developers to determine how best to support the provision of housing for mining workers in the local communities;
- NWP to continue to engage with interested Indigenous communities regarding the extent to which harvesting activities occur within the Project footprint and to establish any additional measures to mitigate impacts on traditional harvesting activities, including the development of the mine closure plan and to re-establish the lands for traditional activities; and
- NWP to develop, implement, and publicly report on a complaints monitoring program, including related to possible Project disturbances such as air quality and noise concerns.

18.8 Summary and Conclusions

The Project can be expected to result in relatively minimal changes to population due to labour requirements, which is not predicted to affect demand for housing, community services, and community infrastructure within Socio-Community LSA communities. During Construction and Pre-Production, while there may be a temporary peak in labour requirements, this is anticipated to be short-term in duration

and dispersed between the affected communities, and therefore, it is not expected to alter the demand on housing, community infrastructure, and community services adversely. During Operations, the relatively minor influx of permanent workers (and their families) due to Project-related employment opportunities is not anticipated to substantially increase demand on housing, community infrastructure, and community services. Some air quality (dust) and noise nuisance effects are possible to a few properties that are reported to have permanent/seasonal dwellings resulting from the operation of the coal haul trucks.

Barriers to Indigenous employment including affordable housing, child care, and shift work may limit or prevent Indigenous hiring targets from being reached; however, the mitigations identified can help to reduce those barriers.

As previously noted, further engagement is required with interested Indigenous communities to confirm the extent to which the Project lands are used for traditional food harvesting activities. There is some potential for impact to traditional harvesting activities, should the Project lands be used for this purpose.

Overall, Project effects related to a change in demand for housing, community services, and infrastructure as well as a change in community health and well-being are expected to be minimal and negligible in magnitude, resulting in no residual environmental effects arising from the Project. In addition, as there is no spatial or temporal overlap of Project effects in combination with those of past, present, or reasonably foreseeable future projects or activities, cumulative adverse effects on the socio-community are not expected.

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