# **Castle Project**

**Initial Project Description Summary** 

October 2020



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# **Abbreviations and Units of Measure**

Abbreviation	Definition
%	percent
BC	British Columbia
BC EAA	BC Environmental Assessment Act
BC EAO	BC Environmental Assessment Office
COVID-19	corona virus disease, 2019
EVWQP	Elk Valley Water Quality Plan
FRO	Fording River Operations
GHG	greenhouse gases
HSDA	Health Service Delivery Area
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
IPD	Initial Project Description
km	kilometre
km <sup>2</sup>	square kilometre
KNC	Ktunaxa Nation Council
masl	metres above sea level
Project	Castle Project
SARA	Species at Risk Act
Teck	Teck Coal Limited

## 1 Preamble

This summary follows the *Impact Assessment Act* Guide to Preparing an Initial Project Description and a Detailed Project Description (Government of Canada 2019). A list of references is provided in Section 13 and a glossary of technical terms used in this document is provided in Section 14.

This document was requested by the Impact Assessment Agency of Canada (IAAC) and supplements the information already provided through the <u>BC Environmental Assessment Project Information Centre</u> and the <u>Canadian Impact Assessment Registry</u>. This document presents a summary of the Project as originally described in the Initial Project Description (IPD) for the Castle Project prepared by Teck in April 2020 (Teck 2020) for the BC *Environmental Assessment Act* process, with some minor differences to reflect engagement that has occurred since publication of that document.

# 2 Introduction and Project Overview

Teck Coal Limited (Teck) is proposing to develop the Fording River Operations (FRO) Castle Project (the Castle Project or the Project). Fording River Operations is an existing steelmaking coal mine in the Elk Valley of southeast British Columbia (BC). The Castle Project would use existing infrastructure at FRO while mining new operating areas on Castle Mountain, located directly south of FRO (Photo 1, Figure 1). The Project would extend the lifespan of the existing operation for several decades. Teck's Project is currently at an early stage of design.

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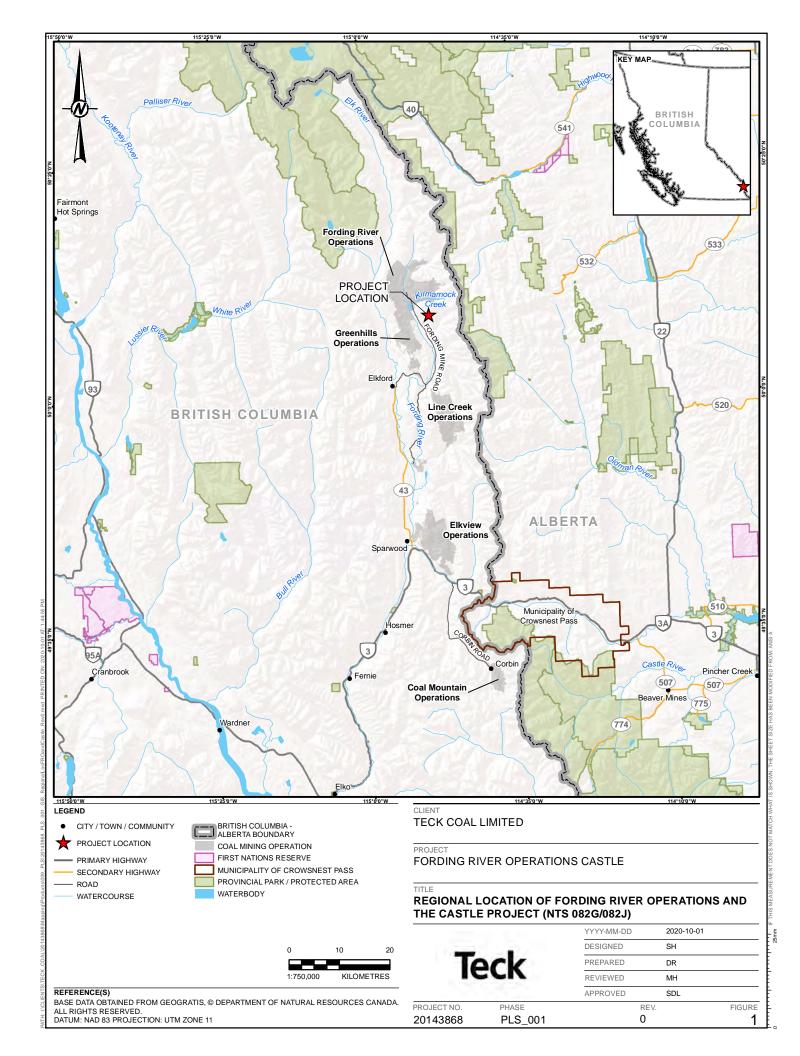
The Project will be reviewed by the BC and federal governments under the BC *Environmental* Assessment Act (EAA) and the federal *Impact Assessment Act* (IAA), respectively. Both governments will coordinate their processes to satisfy requirements of both acts.

Photo 1: Fording River Operations





Photo to the left looking southeast. Right photo shows Fording River Operations Coal Processing Plant and a waste rock storage area (purple shading). The area where new mining operations would be established for the Castle Project is directly to the south (green shading).



# 3 Purpose and Need for the Project

The purpose of the Project is to extend the lifespan of Teck's existing FRO. Beginning in the mid-2020s, economically mineable coal will become less available from FRO's existing operating areas. With its extensive deposits of mineable steelmaking coal, mining on Castle Mountain represents an extension of FRO that would allow continued, economical coal production for FRO and provide continued contributions to the local and regional economy. Teck anticipates that all coal from FRO would come from the Project by the early 2030s.

The Project is needed to maintain the long-term viability of Teck's operations and business in the Elk Valley. Fording River Operations currently represents a third of Teck's coal business unit value. The coal business unit represents approximately half of Teck Resources Limited's overall business value. Fording River Operations, with over 1,400 employees, contributes significantly to local economies through this employment and local tax sharing agreements. The Project would extend the FRO's economic and social benefits throughout its life, with benefits shared by Teck employees and their families, Indigenous Peoples, local communities, and the regional, provincial and national economies.

At present, no other economic alternatives to the Project could fill the need identified for the Castle Project.

## 4 Summary of Engagement and Key Issues

Early, inclusive and meaningful engagement with all interested persons is important to Teck and is an important part of the federal and BC review processes. To date, Teck has engaged with various organizations, groups, and members of the public. Engagement has occurred through a variety of methods, including in-person meetings (pre-COVID-19), teleconferences, letters, emails and via the Project website (https://castleproject.teck.com/).

Teck also participated in the BC Environmental Assessment Office (EAO) public engagement and comment period (May 8 to June 22, 2020). This included participation in two virtual open houses. Teck is now carefully considering comments received by the BC EAO from the public, technical advisors<sup>1</sup> and participating Indigenous Peoples, as well as the comments provided by groups that made requests to the federal government. Groups engaged to date include:

- Indigenous Peoples of Canada including:
  - Ktunaxa Nation
  - Shuswap Indian Band
  - Stoney Nakoda Nation
  - o Piikani Nation

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<sup>&</sup>lt;sup>1</sup> Technical advisors invited by BC EAO to comment on the IPD included the Ktunaxa Nation, the Confederated Salish and Kootenai Tribes, Kootenai Tribe of Idaho, City of Fernie, District of Elkford, District of Sparwood\*, Regional District of East Kootenay\*, Interior Health Authority, Environment and Climate Change Canada, Health Canada, Natural Resources Canada, Ministry of Energy, Mines and Petroleum Resources, Ministry of Environment and Climate Change Strategy, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, US Environmental Protection Agency and State of Montana\*. No comments were received from those agencies denoted by an asterisk.

- Siksika Nation
- Kainai (Blood Tribe)
- Members of the potentially affected public, local government agencies and other groups, including
  - o Landowners, residents and businesses in the vicinity of the Project
  - Self-identified members of the public
  - o Environmental groups
  - Community-based organizations
  - Local Government
    - District of Elkford
    - District of Sparwood
    - City of Fernie
    - Municipality of Crowsnest Pass
    - Regional District of East Kootenay
- Teck employees
- Government agencies and Indigenous Peoples comprising the technical advisors for the process under the BC EAA

Ongoing engagement is planned with each of the above groups and/or organizations, both directly by Teck and through the BC and federal processes. Teck's engagement objectives and methods are laid out in the <u>provincial Engagement Plan</u>. Teck will also undertake engagement with other groups, including Métis, as they are identified by the federal government during the planning phase of the impact assessment.

A brief list of key issues identified over the course of engagement with members of the public, government, non-government organizations and Indigenous Peoples include, but are not limited to:

- potential impacts to water quality that could cause impacts to aquatic biophysical resources (e.g., westslope cutthroat trout and other aquatic species) and human health
- impacts to species at risk, including westslope cutthroat trout, bighorn sheep, high elevation grasslands and whitebark pine
- cumulative effects on water quality, air quality, soil, terrestrial wildlife and ecosystems and the transmission of Indigenous knowledge and cultural practices
- importance of mining to the economy
- impacts to traditional and current land use practices for ceremonial, cultural, medicinal, harvesting and subsistence purposes, including those involving plants and vegetation, wildlife and wildlife habitat, fish and fish habitat, and specific sites of archaeological and ceremonial importance

 direct and cumulative effects<sup>2</sup> to areas of federal jurisdiction, including to transboundary environments

Each of the above key issues will be assessed and will continue to be topics for ongoing engagement.

## 5 Project Location

The Project would be located in the Elk Valley in the East Kootenay Region of southeastern BC, with the new mine area directly south of the existing FRO (Photo 1, Figure 1) at approximately 50.15445, - 114.81111 (World Geodetic System 1984). The Project would be located primarily on Crown land coal leases held by Teck, with portions of the Project on fee simple land owned by Teck (Figure 2). Access to the Project is north from Highway 3 via Highway 43 (Elk Valley Highway) from Sparwood to Elkford and then approximately 30 km north on the Fording Mine Road (Figure 1).

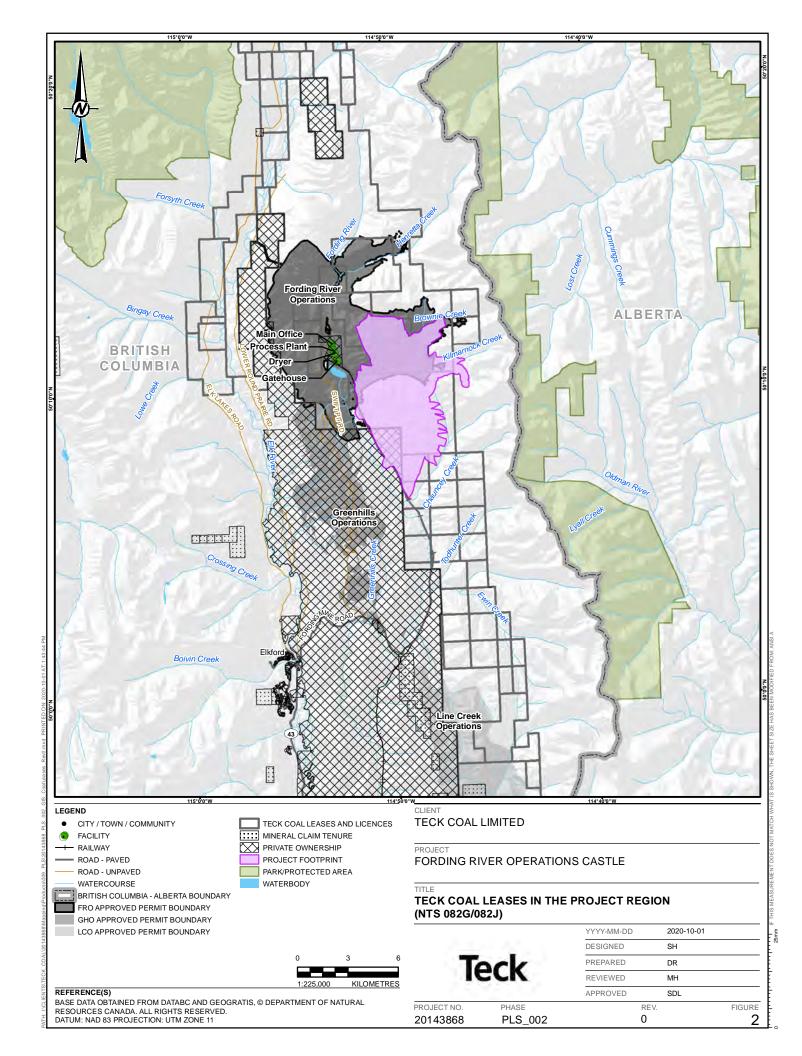
The closest Elk Valley community is Elkford, located approximately 30 km driving distance southwest of the Project (Figure 1). Sparwood is the next nearest community (approximately 60 km driving distance from the Project). Fernie (BC) and Crowsnest Pass (Alberta) are both approximately 100 km away from the Project. The nearest seasonal residence is a trapper's cabin, located approximately 1.3 km away from the Project.

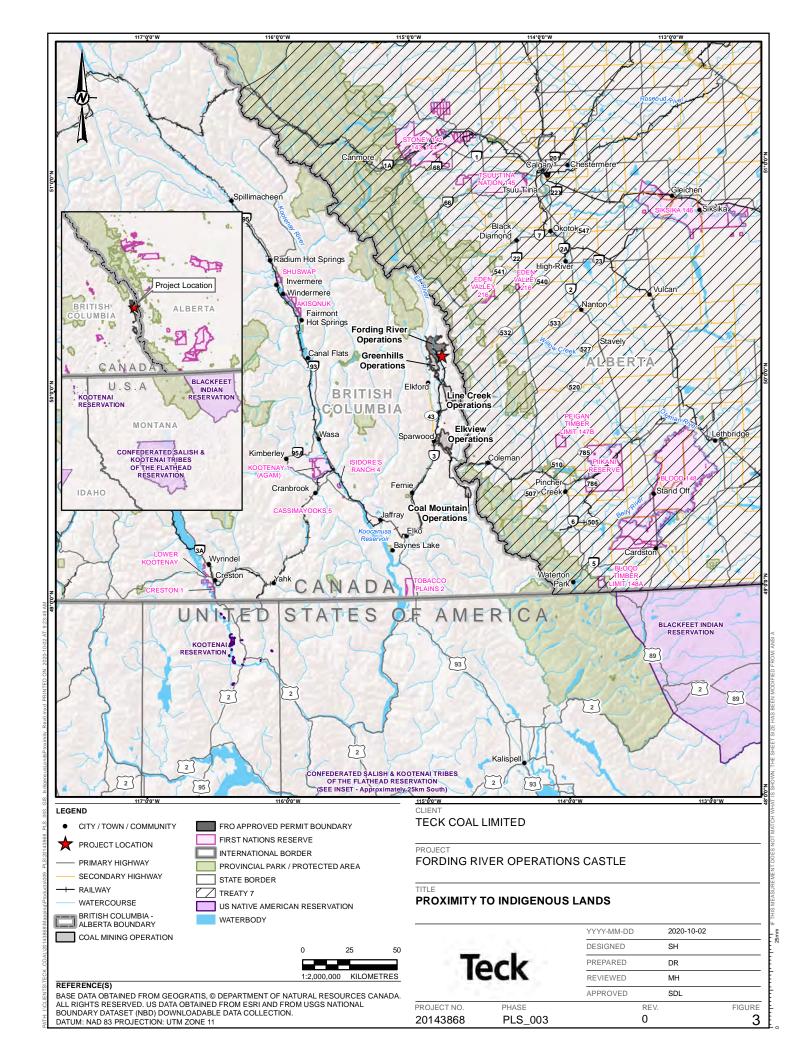
The Project area lies within ?amak?is Ktunaxa, the territory of the Ktunaxa Nation. The Elk Valley is mainly in the Ktunaxa district of Qukin ?amak?is or Raven's Land. Qukin ?amak?is extends from the headwaters of the Elk River downstream to near the town of Elko, an area of more than 3,500 km<sup>2</sup>.

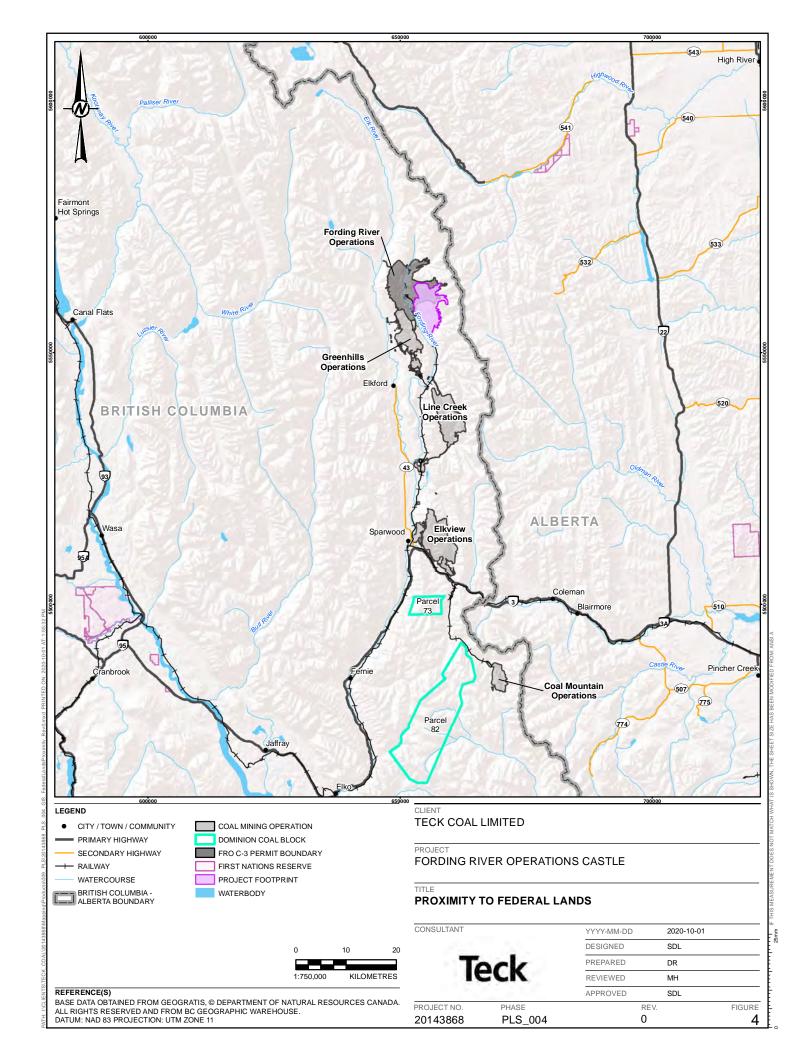
The Ktunaxa Nation is composed of the ?akinkumłasnuqłi?it (Tobacco Plains Band), ?aq'am (St. Mary's Band), yagan nu?kiy (Lower Kootenay Band) and ?akisq'nuk First Nation (Columbia Lake Band). These bands are represented collectively by the Ktunaxa Nation Council (KNC) with government offices in Cranbrook, approximately 190 km from the Project area. Teck also recognizes that there are two Ktunaxa communities in the United States of America: Kupawi¢qnuk (Confederated Salish & Kootenai Tribes) in Elmo, Montana, and ?aqanqmi (Kootenai Tribe of Idaho) in Bonners Ferry, Idaho. Lands associated with the Shuswap Indian Band in BC and the Stoney Nakoda Nation, Piikanni Nation, Siksika Nation and Kainai (Blood Tribe) in Alberta are located 90 to 130 km from the Project. Proximity of the Project to Ktunaxa and other potentially impacted Indigenous Peoples' lands is shown in Figure 3.

No federal lands would be used for the Project and there will be no direct Project impacts to federal lands. Federal lands, referred to as the Dominion Coal Block (Parcels 73 and 82), are located approximately 70 km and 80 km from the Project area (Figure 4).

<sup>&</sup>lt;sup>2</sup> Such as effects to fish and fish habitat, water quality, species at risk and Indigenous Peoples.







#### 6 **Project Components**

Existing FRO components that would support the Project include:

- coal processing plant facilities with associated coal stockpiles, tailings handling and storage, water treatment and sewage facilities
- office, warehouses, maintenance facilities
- explosives storage, manufacturing and delivery systems
- access roads (Fording Mine Road, Highways 3 and 43), rail spur, power and utilities
- mining equipment including drills, shovels and haul trucks

The main new Project-specific components would be located in the conceptual Project footprint (Figure 5) and would include:

- laydown areas and access roads on Castle Mountain
- satellite office(s), warehouses, maintenance fuelling and other support facilities3
- linkages to FRO power and utilities
- satellite explosives magazine(s)
- a mine pit or pits on Castle Mountain
- waste rock storage areas
- coal stockpile and sorting areas
- coal and waste rock materials handling facilities
- additional tailings storage to augment the existing FRO facilities that would also be used
- · water management infrastructure

The design of the Project and evaluation of the above components continue to be informed by engagement, Teck's own research and analysis, and the assessment process. Teck continues to evaluate alternative means for carrying out the Project, including evaluation of:

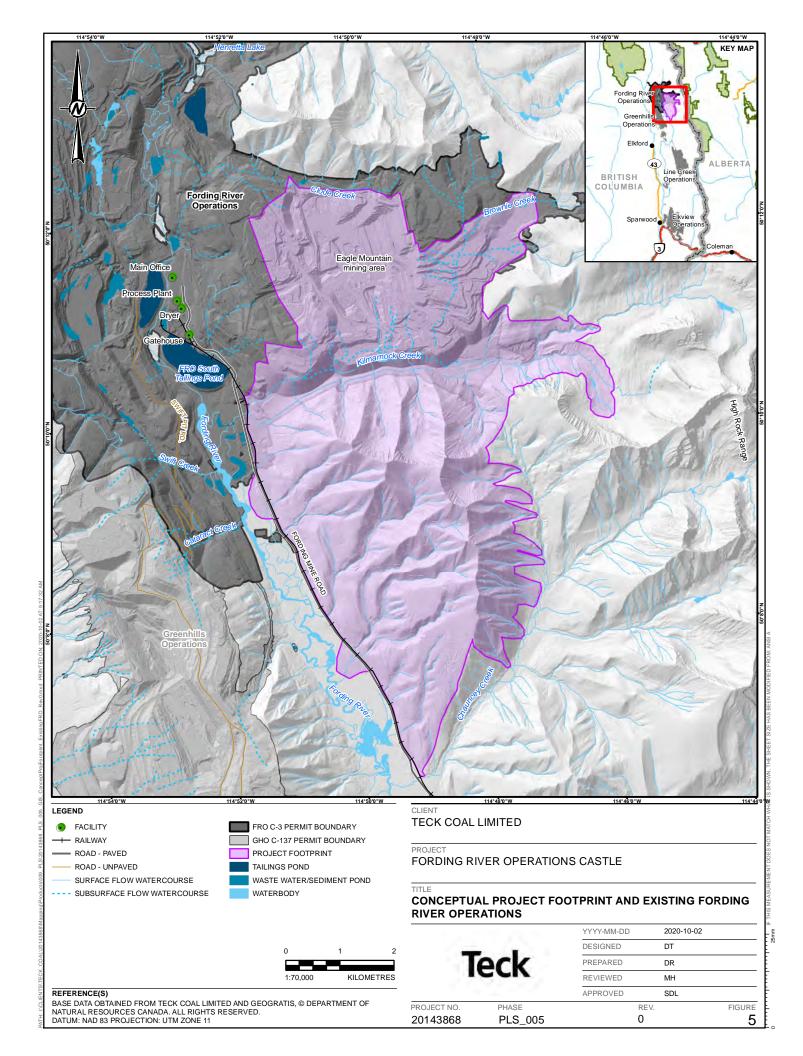
- the maximum extent of the pit, which would determine the amount of steelmaking coal reserves and the productive life of the mine
- alternative mining techniques, including potential to prioritize pit backfilling
- alternative locations of the waste rock storage areas, including potential locations within the existing mine disturbance, within the proposed pit or pits, and in new disturbance areas
- alternative water quality management techniques, incorporating outcomes from Teck research and development as they become proven and feasible
- alternative tailings handling technologies and storage locations

<sup>&</sup>lt;sup>3</sup> Non-potable water for the buildings on Castle Mountain could be supplied from a new water well with a new licence.

alternative coal and waste rock handling options

Updates on the evaluation of the alternatives means, and the resulting refinements to the Project design and configuration, will be outlined in a Detailed Project Description to be published as part of the next steps in the federal and provincial processes. The conceptual Project footprint may also be updated to accommodate refinements to the Project components but is expected to be adequately representative of the final Project footprint for engagement purposes.

Project activities would begin with construction of access roads and tie-ins to power and other utilities from the existing FRO, site preparation (including timber extraction and land clearing), salvaging of areas with suitable soil where it is safe to do so, and installation of support infrastructure. After approximately two years of pre-construction, the Project would enter its operational stage with coal mining at the open pit or pits.



The Project would provide raw steelmaking coal to the existing FRO coal processing plant. The Project would not require additional capacity beyond the plant's current design and approved operating conditions of up to 10 million tonnes of steelmaking coal per year.

To align as closely as possible with FRO's need for additional coal, construction activities would commence in 2023 and production of steelmaking coal would commence in 2026. The Project would extend the life of FRO by several decades. At the end of the Project's mine life, Project activities would include those necessary to complete reclamation and closure.

# 7 Project Wastes and Emissions

Key types of waste associated with the Project include:

- mined waste rock (which must be removed to mine coal)
- tailings from the processing of raw coal
- hazardous and non-hazardous waste (for example, office/domestic waste, vehicle maintenance wastes)
- sewage
- contaminated soil (in the event of spills or leaks)

Waste would be managed following existing FRO waste management plans and processes. Where needed, the existing plans and processes would be updated to incorporate the Project.

The sources of Project air emissions would be the same as those at the existing FRO. Air emissions would include greenhouse gases (GHG) associated with the combustion of fossil fuels used to power trucks, shovels, processing and tailings management systems, and from exposure of coal which contains trapped methane gas. Recent GHG emissions at FRO are estimated to be approximately 690,000 tonnes of carbon dioxide equivalent per year, with an emission intensity that compares favourably with industry peers. The Project may result in some changes to the current emission level, influenced by refinements to Project components like materials handling options, changes to waste rock haul distances and/or the ratio of waste rock to be removed versus mineable coal. A preliminary estimate on the changes in emissions due to the Project will be provided as part of the Detailed Project Description. An assessment of the Project's air emissions and GHGs, incorporating GHG mitigation plans and refinements to Project design, will be conducted under the federal and provincial processes.

Water emissions include the discharge of water that has come in contact with mining areas such as pits and waste rock, as well as discharge of water that comes into contact with non-mining areas that are disturbed for related work. Mine-contact water can have higher concentrations of several constituents of concern such as selenium, nitrate and sulphate; water that comes into contact with non-mining disturbance areas can generate water that contains sediment. The water quality management plan for the Project would build on and align with the regional water quality management plan for Teck's Elk Valley operations, referred to as the Elk Valley Water Quality Plan (EVWQP). The objectives of the EVWQP are to protect aquatic ecosystem health, manage bioaccumulation of identified constituents in the receiving environment, and protect human health and groundwater. Details of how the plan would be executed are laid out in the EVWQP Implementation Plan (Teck 2014) and the 2019 EVWQP Implementation Plan Adjustment (Teck 2019). The Implementation Plan is required to be updated every three years.

# 8 Applicability of Federal Assessments, Studies or Plans

As part of the Project review, Teck will provide information that allows an assessment of the Project's GHG emissions and its contribution to Canada's ability to meet its commitments with respect to climate change, as outlined in the Government of Canada's Strategic Assessment of Climate Change (2020). No other federal regional assessments, studies or plans are relevant to the Project.

## 9 Biophysical Environment

The Project would straddle portions of FRO's existing permitted operating area and portions of Castle Mountain in the Fording River Valley (Figure 3). The area to be mined as part of the Project consists mainly of forested and grassland ecosystems with some exploration and forestry disturbance. Castle Mountain is bordered by Kilmarnock Creek and the actively mined Eagle Mountain to the north, the Fording River and the Greenhills Range to the west, and Chauncey Creek and the High Rock Range to the east and south.

The region has a continental cold climate, and elevation, slope, aspect and proximity to the Fording River form important influences on temperature, precipitation and wind speed in the Project area. Snow cover in the Fording River Valley is consistent from November through March, whereas rainfall is generally moderate in the summer months. Wind in the region is mainly channelled through the Fording River Valley, with predominant winds from the south-southeast and south (although winds from the northwest also occur).

The upper portions of Castle Mountain are steep, with slopes of approximately 40%. The lower west side of Castle Mountain (facing the Fording River) includes shallower slopes of approximately 10%. Elevations near the Project range from approximately 1,550 metres above sea level (masl) near the Fording River valley floor to approximately 2,550 masl at the peak of Castle Mountain. A network of relatively small-sized watercourses collect runoff from the surrounding terrain on Castle Mountain and report to larger tributaries to the Fording River, such as Chauncey and Kilmarnock creeks, or directly to the Fording River. The Fording River flows generally south and discharges to the Elk River. The Elk River flows generally southwest and discharges to Koocanusa Reservoir approximately 100 km downstream of the mouth of the Fording River. Koocanusa Reservoir straddles the Canada/US border and is part of the Kootenay (Kootenai) River system.

The Project is situated in the Elk Valley Ecosection and the Rocky Mountain Forest District. There are two main biogeoclimatic zones in the Project area: Engelmann Spruce – Subalpine Fir zone and Montane Spruce zone. Human activities such as forestry, coal mining, and other infrastructure and developments that have occurred over the past century have had an influence on ecosystems and vegetation in the Elk Valley.

The Elk Valley supports various ecological communities and vascular, non-vascular and lichen plant species of conservation concern (refer to Teck's <u>provincial IPD</u><sup>4</sup> for further information, including lists of species). Several of the ecological communities at risk, specifically select grassland communities, are unique to the East Kootenay and are of conservation concern due to their apparent limited distribution, potential sensitivity to development, and their habitat contribution for other species of conservation

<sup>&</sup>lt;sup>4</sup> Refer to Sections 6.3.4.1 and 6.3.5 and Appendix C.

concern. These grassland communities occur predominantly at mid to high elevations in the Elk Valley (generally above 1,700 masl). Several provincially at-risk plant species are known to occur or have the potential to occur in the Project footprint. Of these, the only species that is listed under Schedule 1 of the federal *Species at Risk Act* (SARA) is whitebark pine (Endangered).

The Project area provides habitat for a wide variety of wildlife species. For example, the conifer forests, grasslands and whitebark pine stands provide habitat for wildlife such as red squirrel, snowshoe hare, marten, pine siskin and Clark's nutcracker. Stands of lodgepole pine provide summer and fall range, as well as cover, for elk and mule deer. Birds such as the three-toed woodpecker that forage on bark-inhabiting insects are also common in the pine forests. Avalanche tracks that occur within the Project area provide summer range for ungulates like deer and elk, and spring and summer habitats for grizzly and black bears. Bird species generally occurring in these habitats include fox sparrow, American robin, dusky grouse, rufous hummingbird and red-tailed hawk. Grasslands provide habitat for a variety of species in the Elk Valley, including overwintering habitat for bighorn sheep and important foraging habitat for other wildlife such as elk, mule deer, moose, black bear and grizzly bear. Columbian ground squirrel and golden-mantled ground squirrel are the common small mammals in these habitats; American badger, which preys on these species, is also present. American dipper, spotted sandpiper, and harlequin duck are known to use streams within the general vicinity of the Project. Amphibians such as Columbia spotted frog, wood frog, western toad and long-toed salamander may also use riparian and wetland habitats in the general vicinity of the Project.

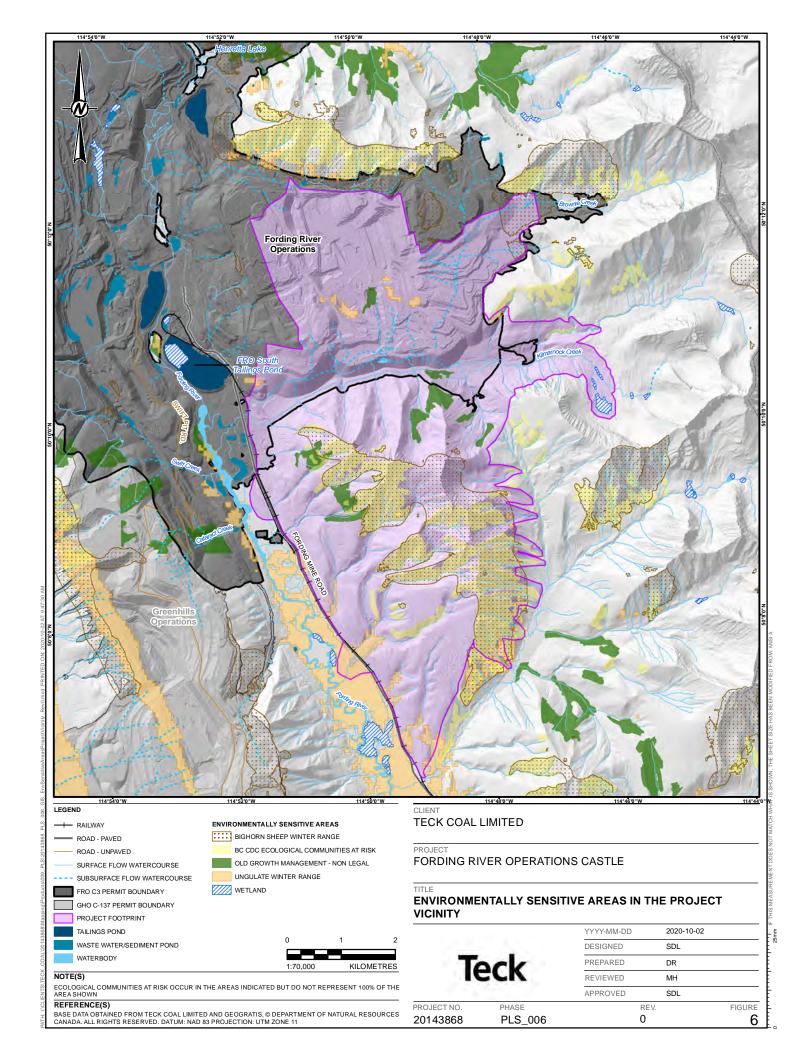
Sixty wildlife species of conservation concern (listed as red- or blue- by the province) were identified as having the potential to occur within the Project footprint, including several species of conservation concern in BC. Sixteen of these species are listed under Schedule 1 of the federal SARA. Five additional species that are provincially yellow-listed (not at risk) are listed under Schedule 1 of the federal SARA. Refer to Teck's provincial IPD<sup>§</sup> for further information, including lists of species.

Westslope cutthroat trout are the only known fish species to occur in the upper Fording River above Josephine Falls (Figure 1), which acts as a barrier to upstream fish movement. The species is designated as Special Concern by the Committee on the Status of Endangered Wildlife in Canada and listed as Special Concern under Schedule 1 of the SARA and is blue-listed in BC. The population in the upper Fording River is genetically isolated from other fish, with an estimated 57.5 km of available habitat in the watershed. Critical habitat for this species in the upper Fording River is identified as overwintering and tributary habitat. Recent surveys (fall 2019) show a decline in the numbers of westslope cutthroat trout in the upper Fording River. Collaborative efforts by a multi-agency working group are underway to gather more data, evaluate the cause of the decline and support ongoing protection of fish.

Several ecologically important areas that have been mapped in the Project vicinity or within the broader region are shown in Figure 6, including wetlands, mature and old growth forests, ecological communities at risk, bighorn sheep winter range and ungulate winter range.

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<sup>&</sup>lt;sup>5</sup> Refer to Sections 6.3.4.2 and 6.4.3.3 and Appendix D.



## 10 Economic, Social and Health Environment

#### **Economic Environment**

Coal has been mined in the Elk Valley since the late 1890s, and coal mining has historically been a major part of the Elk Valley and Regional District of East Kootenay's economies. Mining employs approximately 70% of the male work force and 25% of the female workforce in Elkford, and 45% of the male work force and just under 20% of the female workforce in Sparwood. The labour force in Fernie and Crowsnest Pass is more diverse, with mining employing about a third of the male workforce and under a tenth of the female workforce (Statistics Canada 2017)<sup>6</sup>. The median incomes in the Elk Valley region and local communities have historically been among the highest in the province due to the large mining and forestry sectors, particularly among the male workforce. With heavy dependency on coal mining, unemployment rates in the Fernie-Elk Valley area have been tied to the local mines' production levels, which in turn are directly influenced by international coal market conditions.

Over the construction period, it is estimated that the Project would create several hundred additional construction-related jobs. The existing FRO workforce is planned to remain in place as FRO's focus shifts to the operational phase of the Project and away from other mining areas at FRO.

#### **Social Environment**

The Project is located in the Regional District of East Kootenay (population 60,439 in 2016) and in ?amak?is Ktunaxa, the territory of the Ktunaxa Nation. The Ktunaxa Nation has a strong cultural heritage associated with the Elk Valley that includes language, knowledge, sacred values, sense of place, intergenerational transmission of knowledge and practices, and other values of importance. Traditional land and resource use in the Elk Valley has included habitation, hunting, fishing, harvesting, cultivation and processing, use of the area for cultural practices, and creation and use of trails and travel corridors that connect the valley to other areas. The Elk Valley and surrounding area is subject to ongoing treaty negotiations between the Ktunaxa Nation, the Province of BC and the Government of Canada.

Other Indigenous Peoples have expressed interest in the Project as outlined in Section 4.

The Elk Valley communities of Fernie (population 5,249), Sparwood (population 3,784), Elkford (population 2,499) and Crowsnest Pass, Alberta (population 5,589), are nearby, with Elkford being the closest. Population projections suggest that between 2021 and 2031, the total population in the Fernie Local Health Area<sup>7</sup> is expected to grow by approximately 7% (less than 1% annually). Projections indicate an increase in the percentage of the total population aged 65 years and over compared to the total population. All other age categories are projected to see a decline in overall percentages during this same period.

Housing costs and availability in the Elk Valley region are linked to the strength of the mining industry—when the market price for coal is high, demand for labour drives housing costs up, which can cause variability in housing prices from year to year. Cost of rental and owned accommodation varies across communities, with dwelling values in the local communities generally being below the provincial average.

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<sup>&</sup>lt;sup>6</sup> Parts of the Elk Valley area have experienced increased economic diversity over the past 10 years with a rise in tourism, retail and construction and manufacturing.

<sup>&</sup>lt;sup>7</sup> Fernie Local Health Area includes the communities of Fernie, Sparwood and Elkford, as well as Tobacco Plains First Nation Reserve, Elko, Hosmer, Jaffray, Baynes Lake, Grasmere and Roosville.

It is anticipated that the construction workforce would be housed at Teck's Elk Valley Lodge temporary work accommodation located in Elkford. As the existing FRO operational workforce is expected to shift from other mining areas at FRO to the Project, no additional housing requirements are anticipated for the operational stage.

The four local communities each have preschools and elementary and secondary schools operated by the BC Ministry of Education and School District #5. Two colleges<sup>8</sup> with main campuses in Cranbrook and Lethbridge provide a mix of vocational, trade, technical and academic programs. Each of the communities in the Elk Valley have their own fire department, and there are volunteer search and rescue teams in Elkford and Fernie. Ambulance service in the Elk Valley is provided by the BC Ambulance Service and is based in each of the local BC communities. The Royal Canadian Mounted Police provides municipal police services to the Elk Valley municipalities and unincorporated rural areas. Elkford draws water from three nearby wells to supply water and sewer services to the community. Solid waste disposal services are provided through the Elkford Transfer Station. With the exception of Elkford, the local communities are located on a major highway network, with Highway 3 the key commuting route for those working at Teck's Elk Valley mines.

Lands associated with the Project area are zoned for Rural Resource under the Elk Valley Zoning Bylaw No. 829 of the Regional District of East Kootenay. The Rural Resource designation allows agricultural, rural residential, and rural resource land uses and also recognizes the use of these lands for public utility use, resource extraction, green space and outdoor recreation.

Land use is guided by a number of land use plans for the area. Strategic land use planning in the area includes a variety of objectives, including those addressing commercial resource development. Under the Kootenay-Boundary Land Use Plan and Higher Level Plan (1997, 2002), the Project area is within the Coal Enhanced Resource Development Zone, which represents lands with priority management emphasis on coal resources and their exploration, development and production and provides long-term commitment to coal mining exploration and development. Teck is aware that the Ktunaxa Nation has established formal and informal planning goals and objectives for the Project area and is working with the KNC to understand these and how they may be incorporated into the Project.

Other land and resource uses within and surrounding the Project area include oil and gas exploration, timber harvest, trapping, guided hunting and fishing, and outdoor recreation related activities such as golfing, wildlife viewing, camping, hiking, horseback riding, hunting, fishing, snowmobiling, all-terrain vehicle riding, bike riding and skiing. An active petroleum and natural gas lease belonging to the Elk Valley Corporation covers the Project area. Given the Elk Valley's regional attraction for outdoor recreation-based tourism, aesthetic quality of the landscape is typically valued as a setting for year-round recreational activities. From a visual perspective, landcover generally consists of coniferous forests in the valley and more irregular, sparse vegetation and exposed rock at higher elevations.

Public use of the existing FRO area is restricted within the No Shooting / No Unauthorized Entry boundary, established to maintain public safety in the active operating area. Portions of the Project area fall in the Chauncey Todhunter Access Management Area.

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<sup>&</sup>lt;sup>8</sup> College of the Rockies with main campus in Cranbrook, BC, and six satellite campuses including one in Fernie; and Lethbridge College in Lethbridge, Alberta.

#### **Health Environment**

Elkford, Sparwood and Fernie are located in the Fernie Local Health Area, within the East Kootenay Health Service Delivery Area (HSDA), which is within the Interior Health Authority. Crowsnest Pass is located within Zone 1 (South) region of Alberta Health Services administrated areas. There are a number of medical services and facilities in the area, including primary health care facilities in Sparwood and Elkford and the Elk Valley Hospital and a health centre in Fernie. The East Kootenay Regional Hospital is in Cranbrook and is the main health facility in the region, offering a comprehensive range of health services. The Crowsnest Pass Health Centre offers 24-hour emergency service as well as a range of other health services. There is also a day service medical clinic in Crowsnest Pass.

A number of addiction-related services, mental health associations, support groups for specific illnesses, hospital auxiliaries, and larger organizations such as the Canadian Red Cross are located within the local communities. A variety of community support and safety organizations exist within the local communities, including housing societies, women's centres, youth, children and infant programs, community support societies and the Food Bank. Other safety organizations are also present, such as the Citizens on Patrol and Road Watch in Crowsnest Pass. Social organizations include clubs for children and youth (e.g., Cubs, Girl Guides and Scouts), groups for seniors, veteran's organizations and church-related activity groups.

Arts, cultural, educational and environmental organizations are prevalent and include arts and historical societies, wildlife associations, music organizations, community garden societies and outdoor educational groups. Sports and recreational organizations are also abundant and include fishing, lacrosse, boxing, running, golf, weight-lifting, swimming, flying, skating, soccer, martial arts, hockey, skiing and snowmobiling organizations. There are a variety of recreational facilities spread amongst the local communities, including pools, rinks, outdoor parks and courts, fitness centres and community halls and ski hills.

For certain health categories, including smoking, heavy drinking and body mass index, the East Kootenay HSDA<sup>9</sup> trailed the provincial average for health behaviours. In other health categories including physical activity and having regular healthcare providers, respondents in the East Kootenay HSDA reported better health behaviours than those seen on average across BC. Both in East Kootenay and across the province women report better health behaviours than men in every category (Statistics Canada, n.d.).

# 11 Potential Effects of the Project

#### **Overview of Potential Effects**

The potential effects of the Project will be assessed through the coordinated process to be established under the provincial and federal review processes. Early review of the Project has identified the potential for Project effects to the biophysical and human environment, including those identified as concerns in Section 4. Potential effects of the Project could result from:

• Changes to geology, soils and terrain resulting from vegetation removal, overburden removal, storage of waste rock and development of the mine pit(s).

<sup>&</sup>lt;sup>9</sup> The HSDA includes other interior communities including Invermere, Golden and Creston.

- Changes to ground and surface water quantity and quality from changes topography, contact of water with mining operations, and changes in groundwater-surface water interactions.
- Changes to air quality associated with fugitive dust emissions and vehicle/equipment emissions.
- Changes to noise and vibrations associated with blasting of waste rock, vehicles and other Project activities.
- Changes to terrestrial and aquatic resources from changes to habitat, accidental mortality, disruption of movement corridors, and health effects due to changes in air, water and soil quality.
- Changes to land use and visual aesthetics associated with Project activities that affect the landscape or access to land.
- Changes to economic conditions associated with Project employment, procurement and tax contributions.
- Changes to social and community conditions associated the above interactions between the Project and the biophysical and human environment.
- Changes to health conditions associated with changes to air, water or soil/food quality and/or changes to other indicators of health (e.g., changes in lifestyle).
- Changes to Indigenous Peoples' physical and cultural heritage, current use of land and resources
  for traditional purposes and sites or things of historical, archaeological or cultural importance.
  Generally, these potential effects are related to the Project's potential impacts to the biophysical
  environment and the Project's footprint. These could, in combination, potentially affect exercising
  of Aboriginal rights and traditional land uses in and around the Project area; harvesting plants for
  food for medicinal and ceremonial purposes; and camping and gathering at sites of cultural,
  spiritual and historic importance.
- Changes to Indigenous Peoples' health, social or economic conditions (e.g., related to food security, transmission of knowledge, employment and other interactions). Generally, these potential effects are related to the Project's potential impacts to the biophysical environment and to social and economic factors. These could, in combination, potentially affect legal, spiritual and cultural practices; transmission of traditional culture, knowledge and law; and improve employment and economic opportunities.

#### Potential Changes to the Environment on Lands Outside BC and Canada

The Project is being designed to meet the intent of the EVWQP and site performance objectives in *Environmental Management Act* Permit 107517 and appropriate mitigation will be included as part of the Project or within Teck's regional mitigation planning process to manage impacts to water quality. The geographic extent of potential impacts to water quality will therefore be limited and is not anticipated to extend beyond the boundaries of BC.

The air quality assessment for the Project will evaluate air quality impacts at a local and regional scale. Receptor locations will be identified with input from technical advisors identified for the assessment processes under the BC EAA and IAA, and at locations sufficiently afield to evaluate the geographic and temporal extent of Project-related incremental and cumulative effects. The Project will include

implementation of an air quality and dust control plan and will be designed to contribute to Teck's commitments to climate action.

Potential effects will be evaluated at geographic and temporal scales relevant to the terrestrial resources (e.g., the area used by a wildlife population) being assessed.

#### **Environmental Assessment Scope and Methods**

The scope and methods for the assessment will follow environmental assessment guidance from BC and Canada and will be established in collaboration with participating Indigenous Peoples, government agencies and other interested groups so that the effects of the Project are understood. The assessment will include consideration of:

- mitigation measures to eliminate, reduce, control or offset any potential adverse effects of the Project, including replacement, restoration, compensation and other means
- · integration with existing FRO and regional permits and programs
- residual incremental and cumulative effects associated with the Project and other past, present and reasonably foreseeable developments

## 12 Closing

The Castle Project area has extensive deposits of mineable steelmaking coal that would allow continued operation of Teck's FRO for several decades to come. The Project is being designed to meet Teck's commitments to sustainability, including provision of ongoing economic contributions to the local and regional economy. Teck continues to evaluate the Project to incorporate consideration of economics, operational efficiency and safety, as well as environmental and community sustainability.

Please provide feedback to the IAAC or directly to Teck:

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# 14 Glossary

Term	Definition
Aquatic resources	Ecosystems, plants and wildlife living in or frequenting water; occurring or situated in or on water.
Bioaccumulation	The process through which chemicals build up in organisms from sources in food and water.
Biogeoclimatic Zone	A large geographic area with a relatively uniform climate, named for the dominant vegetation species.
Biophysical resources	Aspects of the environment relating to living things such as plants and animals and to non-living things such as rocks, soils and water.
Clean Coal	Coal that has been processed at the coal processing plant.
Closure	Actions carried out when a mine ceases operations to bring the site to a safe and stable condition for the long term.
Community (plants and animals)	Plant or animal species living in close association or interacting as a unit.
Crown Land	All provincial and federal government lands. Provincial parks and public land are examples of provincial crown land.
Cumulative Effects	The combined effects of past, present and reasonably foreseeable activities, over time, on people and the environment.
Disturbance	An event that causes a sudden change from the existing pattern, structure and/or composition in an ecological system or habitat.
Ecosystem	An integrated and stable association of living and non-living resources functioning within a defined physical location. A community of organisms and its environment functioning as an ecological unit. For the purposes of assessment, the ecosystem must be defined according to a particular unit and scale.
Emissions	Gases going into the atmosphere (e.g., vehicle exhaust, chemicals).

Term	Definition
Ephemeral	A phenomenon or feature that lasts only a short time (e.g., an ephemeral stream is only present for short periods during the year).
Fee simple	Freehold ownership of land; the land is owned completely without limitation or conditions.
Footprint	The proposed development area that directly affects the soil and vegetation components of the landscape.
Groundwater	That part of the subsurface water that occurs beneath the water table, in soils and geologic formations that are fully saturated.
Greenhouse Gas (GHG)	Any of various gases, especially carbon dioxide, that contribute to trapping the sun's warmth in the Earth's lower atmosphere.
Habitat	The place or environment where a plant or animal naturally or normally lives or occurs.
Hazardous Waste	Chemicals or other wastes that are persistent and toxic, with the potential to cause undesirable consequences under certain conditions.
Infrastructure	Basic facilities, such as transportation, communications, power supplies and buildings, which enable an organization, project or community to function.
Laydown Area	An area that has been cleared for the temporary storage of equipment and supplies. Laydown areas are usually covered with rock and/or gravel to ensure accessibility and safe manoeuvrability for transport and off-loading of vehicles.
Material Handling	Hauling, conveying, loading and unloading of materials such as coal and waste rock.
Mature Forest	Trees established after the last disturbance have matured; a second cycle of shade tolerant trees may have become established; understories become well developed as the canopy opens up; time since disturbance is generally 80–140 years for most biogeoclimatic units in the Project area except the high-elevation Parkland units where it is 80–250 years (RIC 1998).
Mitigation	An activity intended to avoid, control or reduce the severity of adverse physical, biological or socio-economic impacts of an activity.
Old Growth Forest	Old, structurally complex stands composed mainly of shade-tolerant and regenerating tree species, although older seral and long-lived trees from a disturbance such as fire may still dominate the upper canopy; snags and coarse woody debris in all stages of decomposition typical, as are patchy understories; understories may include tree species uncommon in the canopy, due to inherent limitations of these species under the given conditions; time since disturbance generally >140 years for all biogeoclimatic units in the Project area except the high-elevation Parkland units where it is >250 years (RIC 1998).
Overburden	The soil, sand, silt or clay that overlies a mineral deposit and must be removed before mining (material below the soil profile and above the bituminous sand).
Raw Coal	Unprocessed coal: coal that is produced from mining operation before processing at the coal processing plant.
Receiving Environment	The natural aquatic environment that receives the deposit or discharge of waste from the mine.
Reclamation	The restoration of disturbed land or wasteland to a state of useful capability.
Residual Effects	Effects that persist after mitigation has been applied.
Riparian	Terrain, vegetation or a position next to or associated with a stream, floodplain or standing waterbody.

Term	Definition
Runoff	The portion of water from rain and snow that flows over land to streams, ponds, or other surface waterbodies. It is the portion of water from precipitation that does not infiltrate into the ground or evaporate.
Soil	The naturally occurring, unconsolidated mineral or organic material at least 10 cm thick that occurs at the Earth's surface and is capable of supporting plant growth.
Species	A group of organisms that actually or potentially interbreed and are reproductively isolated from all other such groups; a taxonomic grouping of genetically and morphologically similar individuals; the category below genus.
Species at Risk	Any species known to be "at risk" after formal detailed status assessment and designation as "endangered," "threatened" or "of special concern" in Canada.
Steelmaking coal	A grade of coal used to produce coke, which is a raw material for steelmaking; also known as metallurgical coal or coking coal.
Tailings	A waste stream from coal processing, consisting of water, fine coal, other clay sized particles, and trace quantities of coal processing chemicals.
Terrestrial resources	Ecosystems, plants, and wildlife that rely on the land base for their life processes.
Traditional Land Use	Activities involving the harvest of traditional resources such as hunting and trapping, fishing, gathering medicinal plants and travelling to engage in these activities. Traditional resources include plants, animals and mineral resources that are traditionally used by Indigenous Peoples.
Ungulate	Belonging to the former order Ungulata, now divided into the orders Perissodactyla and Artiodactyla, and composed of the hoofed mammals such as horses, cattle, deer, swine, and elephants.
Waste Rock	Unprocessed rock materials that are produced as a result of mining operations.
Watercourse	Riverine systems such as creeks, brooks, streams, and rivers.
Wetland	Land where the water table is at, near or above the surface or that is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or peatlands, and mineral wetlands or mineral soil areas that are influenced by excess water but produce little or no peat.
Wildlife	Under the Species at Risk Act, wildlife is defined as a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus that is wild by nature and is native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.