



Centermount Coal Ltd.

Bingay Main Coal Project Updated Project Description - Update

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EXECUTIVE SUMMARY

Centermount Coal Ltd (Centermount) proposes to develop the Bingay Main Coal Project (the Project), with a maximum capacity of 1 million clean tonnes per year (Mt/year), located in the Elk River valley, approximately 21 kilometers (km) north of the town of Elkford, in southeastern British Columbia (BC). The Project is located within the coal “Enhanced Resource Development Zone” (ERDZ) as defined in the Kootenay/Boundary Land Use Plan and Southern Rocky Mountain Land Use Plan, and would produce metallurgical (coking) coal for the seaborne steel marketplace. The Rocky Mountain coalfield currently supports five operating surface coal mines and is serviced by major infrastructure such as railroads, provincial highways, natural gas, water, numerous hydro-power lines, communications and towns. Large-scale underground and open pit coal mining has been ongoing in the region since 1911, and the area currently produces approximately 23 million tonnes per annum of coal, which is primarily coking coal for the steel industry. The center of the coal deposit is located 193 road kilometers northeast of the City of Cranbrook, which is a major industrial center for mining and forestry, and is also a railway center for the Canadian Pacific and Union Pacific railways.

Centermount Coal and Centerpoint Resources hold five coal licenses totaling 1,802 hectares (ha) near the confluence of Bingay Creek and the Elk River. Coal within the licence area is concentrated in Bingay Hill, a small knoll rising 50 meters above the surrounding terraces. The coal deposit is within the Bingay syncline, which is a steeply dipping bedrock fold which dips to the northeast beneath the Elk River. At least 32 coal beds are present, ranging in thickness from 0.3 to 16.2 metres. Of these coal seams, 24 are typically at least 1 metre thick. The cumulative thickness of these coal seams reaches a maximum thickness of 62.6 metres, within an overall coal-bearing rock strata thickness of 460 metres.

Major components of the Project include an open pit, coal processing facilities, ancillary infrastructure such as administrative offices and maintenance shops, temporary and permanent rock and topsoil storage areas, a 27km rail line, a 1km power line with associated substation to bring power to the site, and a rail load out facility. The majority of the mine components will be located on Crown Land within coal licence areas held by Centermount, or by its majority shareholder, Centerpoint Resources, on the west side of the Elk River. The rail line will be located on Crown Land on the east side of the Elk River. Power will be brought from the existing BC Hydro transmission line on the east side of the Elk River via an overhead line to the processing facilities and infrastructure on the west side of the Elk River. Access to the mine is via the Elk River Forest Service Road (FSR) that parallels the west side of the Elk River. The Kananaskis Power Line FSR and transmission line also parallel the east side of the Elk River.

Three types of metallurgical coal similar to that produced by adjacent coal mines would be generated by the Project. Coal would be processed on site using a combination of heavy media cyclones, water only cyclones, spirals and classifying cyclones, and froth flotation depending on the size of the coal. Coal dewatering will be done mechanically using screenscroll centrifuges, screenbowl centrifuges and hyperbaric filters, rather than thermal dryers. Coal produced at the mine would be transported to shipping terminals near Vancouver via the existing CP Rail line.

Rock will be stored in a single common area within the property. The area is situated on flat to gently sloping terrain, with limited surface water features, and has been previously logged. Rock may be sorted based on potential for metal/selenium leaching, based on the results of laboratory and field analysis. If waste rock with a high risk of leaching is identified, it would be stored separately within the same rock storage footprint and potentially used to backfill the pit after mine closure. All reject material produced from processing activities will be stored with the rock in the one common area. There will be a separate stockpile for all topsoil salvaged within the Project area. Water management will be an integral part of the mine plan. Diversion ditches will reduce surface water runoff on to the site, and drainage ditches will collect surface runoff from disturbed areas for treatment. Metal leaching and acid rock drainage studies are ongoing to assess impacts of the project on water quality.

Centermount is currently continuing mine planning, First Nations and public consultation, and engineering and environmental studies for the Project. These will continue through the pre-application phase of the Environmental Assessment process.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1 INTRODUCTION	1
1.1 Proponent Information	1
2 PROPERTY DESCRIPTION AND LOCATION	3
2.1 Project History	4
2.2 Type and Size of Project	7
2.3 Project Purpose and Rationale	7
2.4 Capital Cost	7
2.5 Employment	7
3 Project Description	8
3.1 Project Components	8
3.2 Mining	11
3.2.1 Open Pit Mining	11
3.3 Coal Processing	11
3.4 Rock Storage Area	13
3.5 Infrastructure	14
3.5.1 Onsite Infrastructure Development	14
3.5.1.1 Buildings	14
3.5.1.2 Water Management Infrastructure	15
3.5.1.3 Utilities	15
3.5.1.4 Roads	16
3.5.1.5 Bridges and other Stream Crossings	16
3.5.1.6 Hazardous Materials	16
3.5.2 Offsite Infrastructure Development	17
3.5.2.1 Roads	17
3.5.2.2 Rail Line and Rail Load out	17
3.6 Alternatives	18
3.7 Emissions, Discharges and Waste	18
3.7.1 Airborne Emissions	18
3.7.2 Liquid Wastes	18
3.7.3 Solid Wastes	19
4 PROJECT SETTING	19
4.1 Geology	19
4.2 Geochemistry	21
4.2.1 Acid Rock Drainage	21
4.2.2 Metal Leaching	21
4.3 Climate	22
4.4 Aquatic Resources	24

4.4.1	Hydrology	24
4.4.1.1	Elk River	24
4.4.1.2	Lowe Creek.....	25
4.4.1.3	Bingay Creek	25
4.4.1.4	No Name Creek 1	25
4.4.1.5	Hornickel Creek.....	25
4.4.1.6	No Name Creek 2	25
4.4.1.7	Forsyth Creek	26
4.4.1.8	Streams on east side of the Elk River	26
4.4.1.9	Blue Lake	26
4.4.2	Surface Water Quality.....	26
4.4.3	Fish and Fish Habitat.....	27
4.4.4	Groundwater	27
4.5	Terrestrial Resources	28
4.5.1	Riparian Ecosystems and Wetlands	29
4.5.2	Old Growth Management Areas	29
4.5.3	Wildlife	30
4.5.3.1	Mammals - Ungulates	30
4.5.3.2	Mammals – fur bearing.....	30
4.5.3.3	Birds	30
4.5.3.4	Amphibians and Reptiles	30
4.6	Rare and Endangered Species	30
4.6.1	Badger	31
4.6.2	Grizzly Bear	31
4.6.3	Bighorn Sheep	31
4.6.4	Barn Swallow.....	32
4.6.5	Olive-sided Flycatcher.....	32
4.6.6	Western Toad	32
4.6.7	Westslope Cutthroat Trout	32
4.6.8	Bull Trout.....	32
4.7	Land Use	33
4.8	First Nations and Heritage	33
4.9	Socio-Economics.....	34
4.9.1	Local Community	34
4.9.2	Population and Housing	34
5	POTENTIAL EFFECTS	34
5.1	Physical and Biological Environment	35
5.1.1	Air Quality and Greenhouse Gas Management	35
5.1.2	Noise and Vibration.....	35
5.1.3	Surface Water	35

5.1.4	Groundwater	35
5.1.5	Fish and Fish Habitat.....	36
5.1.6	Vegetation	36
5.1.7	Wildlife	36
5.1.8	Acid Rock Drainage/Metal Leaching	36
5.1.9	Federal Requirements	36
5.1.9.1	Fish and Fish Habitat	36
5.1.9.2	Aquatic Species at Risk	36
5.1.9.3	Migratory Birds	36
5.2	Socio-Economic Environment	37
5.2.1	Land Use.....	37
5.2.2	Visual Quality.....	37
5.2.3	Recreation.....	37
5.2.4	First Nations Use.....	37
5.2.5	Services and Infrastructure	37
5.2.6	Effects on Federal Lands, other Provinces, or outside of Canada	37
6	CONSULTATION	37
6.1	First Nations.....	38
6.2	Public	39
6.3	Government Agencies	41
6.3.1	Regional Governments.....	41
6.3.2	Provincial Government	42
6.3.3	Federal Government	42
6.3.4	US Government Agencies.....	42
7	PERMITTING PROCESS	42
7.1	Federal Triggers	43
7.1.1	Fisheries Act	43
7.1.2	Navigable Waters Protection Act	43
7.1.3	Explosives Act.....	44
7.1.4	Canadian Transportation Act / Canadian Rail Safety Act	44
7.1.5	Species at Risk Act	44
8	PROJECT SCHEDULE	47
8.1	Construction.....	47
8.2	Operations	47
8.3	Decommissioning.....	48
8.3.1	Infrastructure	48
8.3.2	Rock Storage Area	48
8.3.3	Pit	48
8.3.4	Roads	49
8.3.5	Rail line.....	49

9 REFERENCES50

LIST OF FIGURES

Figure 1. Regional Area 5
Figure 2. Project Location6
Figure 3. Project Layout 10
Figure 4. Conceptual design flowsheet 12
Figure 5. Generalized stratigraphic column for the Project 20
Figure 6. Comparison of shake flask selenium concentrations versus contained selenium in the Project's rock types22
Figure 7. Monthly average temperatures at the Elkford (1971-1993) and Sparwood (1980-2000) and Project's (2010-2011) climate weather stations.23
Figure 8. Wind rose for the Bingay Hill station, Oct 23, 2010- June 20, 201224

LIST OF TABLES

Table 1. Coal licenses held by Centermount for the Bingay Main property..... 3
Table 2. Coal licenses held by Centerpoint Resources for the Bingay B property.....3
Table 3. Summary of major stream crossings anticipated..... 16
Table 4. Summary of alternatives under consideration 18
Table 5. Summary of climatic information at Bingay Hill climate station.....23
Table 6. Species at risk observed in the Project area31
Table 7. Species at Risk Schedule 1 listed species identified in the Project area45
Table 8. Preliminary list of permits required for the Project46

LIST OF APPENDICES

Appendix 1. Site Photographs

LIST OF ABBREVIATIONS

AIR	Application Information Requirements
BC	British Columbia
BCM	bank cubic metre
bgs	below ground surface
CMT	clean metric tonne
EA	Environmental Assessment
EAO	Environmental Assessment Office
ERDZ	Enhanced Resource Development Zone
ESSF	Engelmann spruce subalpine fir
FSR	forest service road
GHG	greenhouse gases
ha	hectare
kV	kilovolt
MPMO	Major Projects Management Office
MS	Montane spruce
Mt	million tonnes
NOx	nitrogen oxides
OGMA	old growth management area
PM	particulate matter
ROM	run of mine
t	tonnes
TSP	total suspended particulate
UTM	universal transverse mercator
UWR	ungulate winter range

1 INTRODUCTION

Centermount Coal Ltd (Centermount) is proposing to develop a surface coal mine at the Bingay property in the Elk River valley in southeastern British Columbia (BC). The following will provide a description of the project and the socio-economic and environmental setting of the proposed Project. The report has been prepared following guidance from the BC Environmental Assessment Office (EAO) (BC EAO 2008) and the Government of Canada's Major Projects Management Office (MPMO) (MPMO 2008), in anticipation of an environmental assessment by both the Province of British Columbia and the Government of Canada.

The Project Description was formally submitted to the EAO in March of 2012 and was officially accepted by the EAO on November 30, 2012 at which time a Section 10 Order was issued and determined the need of an Environmental Assessment Certificate. A Section 11 Order of the Environmental Assessment Act was issued on February 26, 2013, which delineated the scope, procedures and methods of the Environmental Assessment process. Centermount temporarily suspended work on the Bingay Main Coal Project on April 18, 2013 due to economic uncertainties at the time. Centermount indicated in August of 2015, their intention to resume the environmental process as of October 2015. A revised Project Description was submitted in October of 2016 and new section 13 order was issued by the EAO on March 10, 2017 formally accepting the Project for review. Since that time, Centermount has continued the engineering review of the Project and based on this review has made some changes to the Project. Centermount felt that an updated Project Description including changes to the schedule and Project information should be submitted to regulators and stakeholders to ensure all parties have the best possible understanding of the status of the Project.

1.1 Proponent Information

The Bingay Main Coal Project (the Project) is wholly owned by Centermount, a private, Canadian company with its head office located in Vancouver, BC. Centermount is 38.5% owned by Centerpoint Resources Inc., also a private Canadian company; Northern Pacific Resources owns 30.0% with the remaining 31.5% owned by two private shareholders. Bingay Main is the only Project owned by Centermount. Centermount has six full-time, permanent employees and has engaged a group of consultants with specialized expertise to assist in the development of the project. Key members of the Centermount management team are identified below.

Chaogui Ren (Chairman and President)

Mr. Ren Chaogui brings over 20 years of mining investment, business operation and management experience to the management team of Centerpoint. He is an outstanding entrepreneur and a well-respected businessman in both Canada and China. In his capacity as President of an enterprise group in China, he has successfully turned a small local steel plant into an international enterprise of over 2,000 employees involving coal, coke, iron and brick production and power generation operations. On his unparalleled contributions to the mining industry of Shanxi Province of the People's Republic of China, he was awarded the People's Republic of China National Labour Model Award, Metallurgy Labour Model Award, and the "May 1st Labour Medal". Mr. Ren holds a Master's Degree at the Tianjin University, China.

Evita Qian (Vice President)

Evita Qian has over 10 years of experience in business management and international trade. She has worked in the Chinese steel and coking coal industry for several years, and held senior positions in marketing and accounting at an international medical equipment supply company. Evita has accumulated a rich experience in operations, management and financing. Since 2011 she has worked for Centermount Coal Ltd. Ms. Qian holds Master Degrees from Shanghai University and Beijing International Study University.

Mr. Victor Zhou (Master) (Vice Manager-Technical Services)

Mr. Zhou has 30 years of mining industry experience in planning, developing, and coordinating programs of geotechnical, geological, geophysical, and hydrological data acquisition; analyzing and mapping to assist in the development of mining Projects for regional development; planning, developing, coordinating, and conducting theoretical and experimental studies in mine exploration, evaluation, and feasibility studies related to the mining industry. Mr. Zhou used to work for Canadian Dehua International Mines Group Inc., conducting prospecting and exploration for underground coal mines and drill hole lithology logs; assessment of geology, geophysics and geochemistry of Vancouver Island Iron Property; Coal mine and Iron Project geological management. Other project experience includes Murray River Coal, Bullmoose Coal, Wapiti River Coal and Pacific Iron Project. Victor has been involved with the Bingay Main Coal Project completing the geotechnical exploration on site in 2016. Victor has won the Chinese provincial science and technology progress prize and the youth academic excellence award. Mr. Zhou graduated from Central South University (Bachelor's degree) and Northeastern University (Master's degree) in China.

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2 PROPERTY DESCRIPTION AND LOCATION

The Bingay Main Coal Project is situated in the Elk River valley in south-eastern British Columbia, Canada, located approximately 21km north of the community of Elkford as illustrated on Figure 1 below, and comprises four coal licences, totaling 1,157 hectares (ha) as summarized in Table 1, and illustrated on Figures 1 and 2 below. The licences are located within the area designated as a coal Enhanced Resource Development Zone as defined in the Kootenay/Boundary Land Use Plan (KIAMC 1997) and Southern Rocky Mountain Land Use Plan (MRSM 2003). The Project includes the proposed surface coal mine and related components, including a 27km rail line connecting the Project to an existing CP rail line near Teck Coal's Greenhills operation.

The coordinates for the center of the mine pit are approximately latitude 50°12'03" North (N) and longitude 114°58'49" West (W). The coordinates for the start and end of the rail line are approximately latitude 50°12'34" N and longitude 114°57'40" W and latitude 50°01'09" N and longitude 114°50'04" W respectively. Components of the Project may also be located on land immediately to the south of Bingay Main, known as "Bingay B". The holder of the coal licence for this property (Bingay B) is Centerpoint Resources, the major shareholder of Centermount. The project components are all located on provincial Crown land. The nearest federal lands are Banff National Park, located approximately 80 km to the north, and the Dominion Coal Block, located 60 km to the south near the town of Sparwood.

Table 1. Coal licenses held by Centermount for the Bingay Main property

Tenure Number	Map Number	Area (Ha)	Description
374190	082J016	260	DL 9478 of Kootenay Land District
414014	082J026	64	NTS 082J 02 Block L Units 48,49 save and except those portions within DL 9478 of Kootenay Land District and Coal Lease 389312
415139	082J025	241	NTS 082J 02 Block L units 59, 60, 50 save and except that portion within DL 9478 of Kootenay Land District
417302	082J026	592	NTS 082J 02 Block L units 58, 68, 69, 78, 79, 88, 89, 98, 99 save and except that portion covered by coal lease 389312)

Table 2. Coal licenses held by Centerpoint Resources for the Bingay B property

Tenure Number	Map Number	Area (Ha)	Description
418503	082J016	645	Portions of DL 9476 and DL 9477 of Kootenay Land District

The Project is centered on Bingay Hill, a small hill that rises approximately 50 meters above the surrounding terraces at the confluence of the Elk River and Bingay Creek. The Elk River valley is a north-south trending valley that lies at an elevation of 1,350 m in the Project area. Adjacent to the Project, the Elk River is a wide, extensively braided, river with a floodplain approximately 300 to 600 m wide. Large

terraces approximately 25 to 50 m above the floodplain are adjacent to the river on either side. The valley bottom itself is approximately 2.5 km wide, before rising steeply 600 to 800 m to the ridge tops. Photographs of the project area are provided in Appendix 1.

The majority of the mine components, including the pit, rock storage area, topsoil storage area, coal processing plant, sedimentation ponds, water treatment facilities, and mine administration and maintenance buildings will be located on Crown Land on the west side of the Elk River, as illustrated on Figure 3 below, while the rail line and associated load out will be located on the east side of the Elk River also on Crown land. The Project will not require the use of any federal land. Both sides of the Elk River valley are readily accessible via two existing forest service roads (FSR) located on both sides of the Elk River. The Elk River FSR is located on the west side of the Elk River, while the Kananaskis Power Line FSR is located on the east side of the Elk River. A 138 kilovolt (kV) transmission line is located on the east side of the valley and can be used to service the mine.

The Elk River watershed has a long history of coal mining beginning in the late 1800's. Five coal mines operated by Teck Coal are currently active in the region, and the infrastructure to support these operations, including rail lines and power lines, as well as support services are readily available in the valley. Two of the existing Teck mines, Fording and Elkview have proposed the Swift and Baldy Ridge expansion Projects and both Projects were issued EA certificates recently. The Elk River valley has not been subject to a regional environmental study, although a largescale aquatic effects monitoring program (the "Elk Valley Water Quality Plan") has recently been implemented by Teck Coal to assess the effects of coal mining activities on aquatic resources.

2.1 Project History

Exploration and work on the Bingay property dates back as early as 1908 and a number of test pits and old workings still exist onsite. Between 1902 and 1981, coal licenses at Bingay have been held by the Elk Valley Coal and Coke Company, Cominco, and Specific Natural Resources, although details regarding exploration work on the site are limited. In 1982, Mr. W. Shenfield and Mr. S. Gardner staked the property, and subsequently sold the property to Utah Mines in 1983. Utah Mines conducted some exploration work on the property in the autumn of 1983, including 3 diamond drill holes and a geophysical survey on each hole. In 1986, Utah Mines abandoned their interests, and the property reverted back to Messrs. Shenfield and Gardner in May 1987. In 2004, Hillsborough Resources Ltd optioned the property and conducted an extensive exploration program, including 14 rotary drill holes on the property.

The coal licences were subsequently transferred to Hillsborough, who developed the property sufficiently to prepare and submit an application for a Small Mine Permit in 2007. Hillsborough withdrew this application in order to focus on other projects elsewhere in the province. In October 2009, Centermount acquired the coal licences from Hillsborough, and conducted further exploration work in 2010, 2011 and 2016. During 2010, 56 boreholes were drilled, utilizing rotary and diamond drills, as well as 1.8 km of trenching. In 2011, 15 boreholes were drilled also using both rotary and diamond drills. Extensive coal quality analysis was done to assess the potential for Bingay coal to meet the international coking coal market requirements.

Regional Area



Data Source: SNC-Lavalin, ESRI Base Layers, City of Elkford, Centremount Coal Inc.
 Map Created By: ECH Map Checked By: JB Date Exported: 2017/07/25 Map Reference Number: 639144-VCP-022 Revision Number: 002
 MXD Path: P:\LOBE\IAM-IBC\Current Projects\Centremount\639144\4.0 Execution\4.5 GIS and Drawings\GIS\Map Documents\MXD\Valued Components\639144-VCP-022 Regional Area.mxd

Figure 1. Regional Area

Project Location

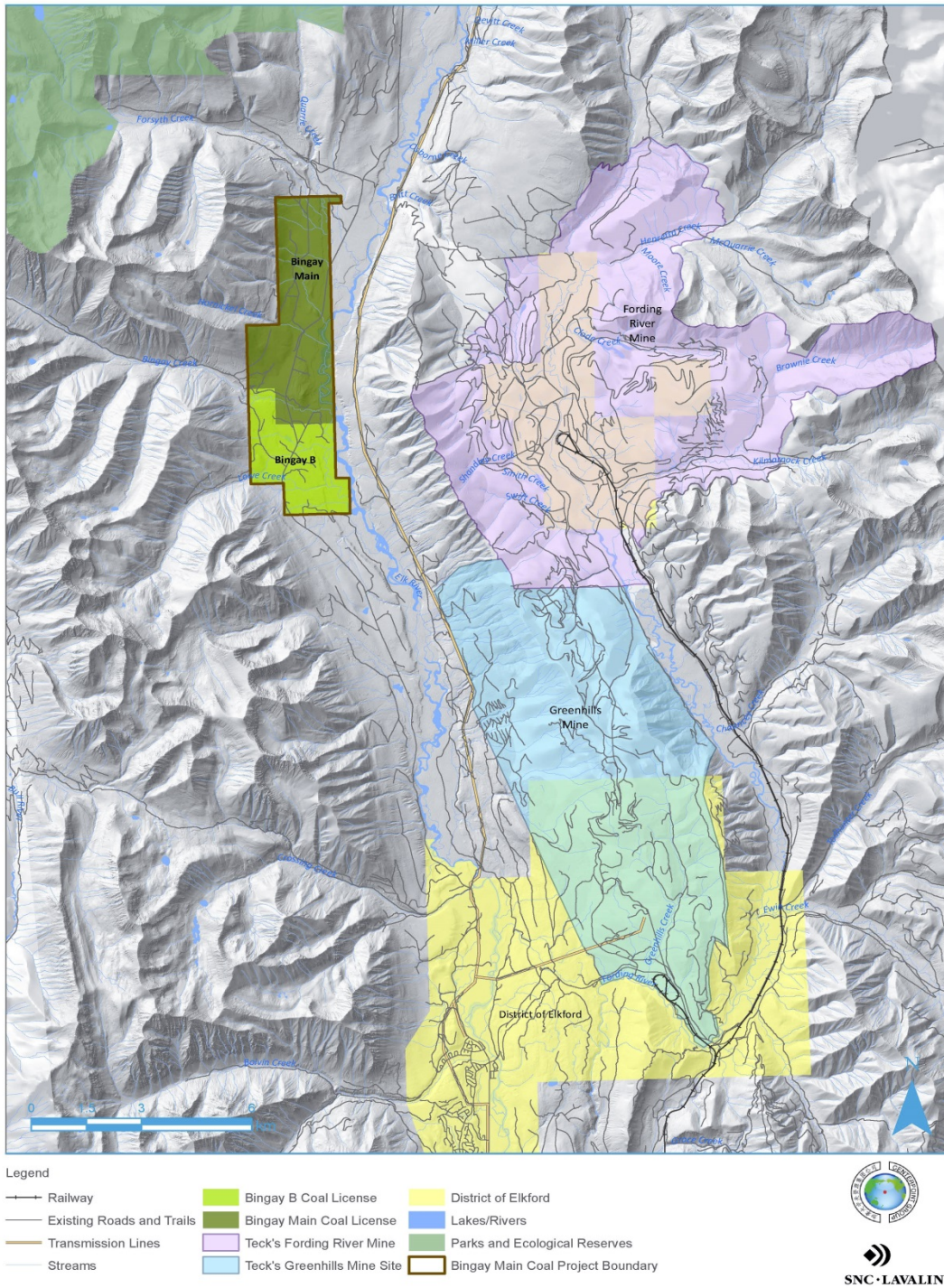


Figure 2. Project Area

2.2 Type and Size of Project

The Project is planned to produce metallurgical coal at an annual maximum production rate of 1 million clean tonnes which is equivalent to approximately 2,750 tonnes per day. The lifespan of the Project is planned for approximately 15 years including construction and operation phases. A preliminary mine design estimates between 12 to 14 years of shovel and truck operation open pit mining, although the property has potential for additional resources. The size of the Project means that the Project is subject to review by the BC EAO as it exceeds the threshold for review of new coal mines under BCEAA. At this time the Canadian Environmental Assessment Agency (CEAA), is reviewing the Project to determine if it requires a federal environmental review as the Project does not exceed the threshold for review for a new coal mine under CEAA 2012.

2.3 Project Purpose and Rationale

Centermount is proposing to develop a coal mine that would extract approximately 13 million tonnes (Mt) of clean metallurgical coal (coking), suitable for use in overseas steel mills. Global steel production has increased an average of 5.4% since the year 2000 (WSA 2011), with 1,621 Mt of steel produced in 2016. At present, 70% of world steel production uses coking coal, with the remainder produced by recycling scrap steel. Coking coal is an essential component of steel production. Each tonne of steel produced requires approximately 600 kilograms (kgs) of coke, which is produced from 770 kgs of coking coal.

The Project would provide additional employment and economic opportunities to the Elk Valley and the surrounding region, as well as providing additional tax revenues for local, provincial and federal governments. Centermount is committed to developing the Bingay Main Coal Project in a sustainable manner that respects natural, heritage, social and environmental values, while providing economic benefits for the local, regional, provincial and federal governments.

2.4 Capital Cost

A prefeasibility study estimated the capital cost for the Project at \$380 million. This includes the initial mining equipment, processing plant, conveyors, administrative and maintenance buildings, the rail line and load out, roads and bridges, engineering, and owner's costs. The Project will not require any financial support from the federal or provincial governments.

2.5 Employment

The Project is expected to generate 394 person years of direct employment during the 1.5-2 years of construction. During operation, the Project is anticipated to require 200 full time employees, and generate 2,600 person years of employment over the thirteen years of operation.

3 PROJECT DESCRIPTION

3.1 Project Components

The Project includes the following components (See Figure 3):

- Surface mine area.
- Coal processing plant.
- Rock, plant reject and topsoil storage areas.
- Materials handling systems for raw coal, coarse and fine coal plant rejects, and cleans coal, including plant conveyors, storage bins and stockpiles.
- An overland conveyor will span across the Elk River and associated floodplain, connecting the plant site located on the west side of the Elk River to the rail load out located on the east side of the Elk River.
- 27 km of rail line to connect to the existing main CP rail line located to the south on the east side of the Elk River.
- Rail bridges over the Fording River, and various smaller waterways.
- Rail load out facility on the east side of the Elk River.
- 6 km of new forestry service road to bypass the mine operations on the west side of the proposed Project that will serve as an access road for the mine and for forestry and public use north of the Project.
- Improvements to existing Elk River Forestry Services Road to allow the passing of vehicles in designated areas.
- Surface water management features, including ditches, sedimentation and storage ponds and potential water treatment facilities.
- Administration, maintenance and storage buildings.
- Propane storage facilities.
- Mine haul roads and access roads that include road crossings over Bingay Creek and other smaller watercourses in the Project area.
- Water supply wells, storage, and distribution systems.
- Sewage treatment plant.
- Potable water treatment plant.
- Fuel and lube storage facilities.
- Explosive storage facilities and vehicle wash facilities.

- Magazines.
- A 25kV power line will span the Elk River and associated floodplain from the 138kV to 25 kV substation on the east side of the Elk River to the 25 kV to 600 kV substation and subsequent site distribution system on the west side of the Elk River.

The majority of the facilities associated with the mine and coal processing, including the rock storage area, topsoil storage area, coal processing plant and administration, maintenance and storage facilities, will be located within the Bingay B licence area as illustrated on Figure 3. The area identified as surface mine area is located on the Bingay Main coal licence area. The majority of the rail line and load out, access road, and the power line are located outside of these license areas on Crown Land.

The estimated total disturbance area of the Project, excluding the rail line, bypass road, and load out, is estimated at 420 ha. This includes the mine pit (115 ha), rock storage area (250 ha), sediment ponds (20 ha) and related infrastructure (35 ha).

The layout proposed is currently considered the preferred option based on discussions with stakeholders and consideration of potential environmental effects and economic inputs. Alternative options will be discussed in the text in the relevant sections.

Project Layout and Proposed Linear Infrastructure

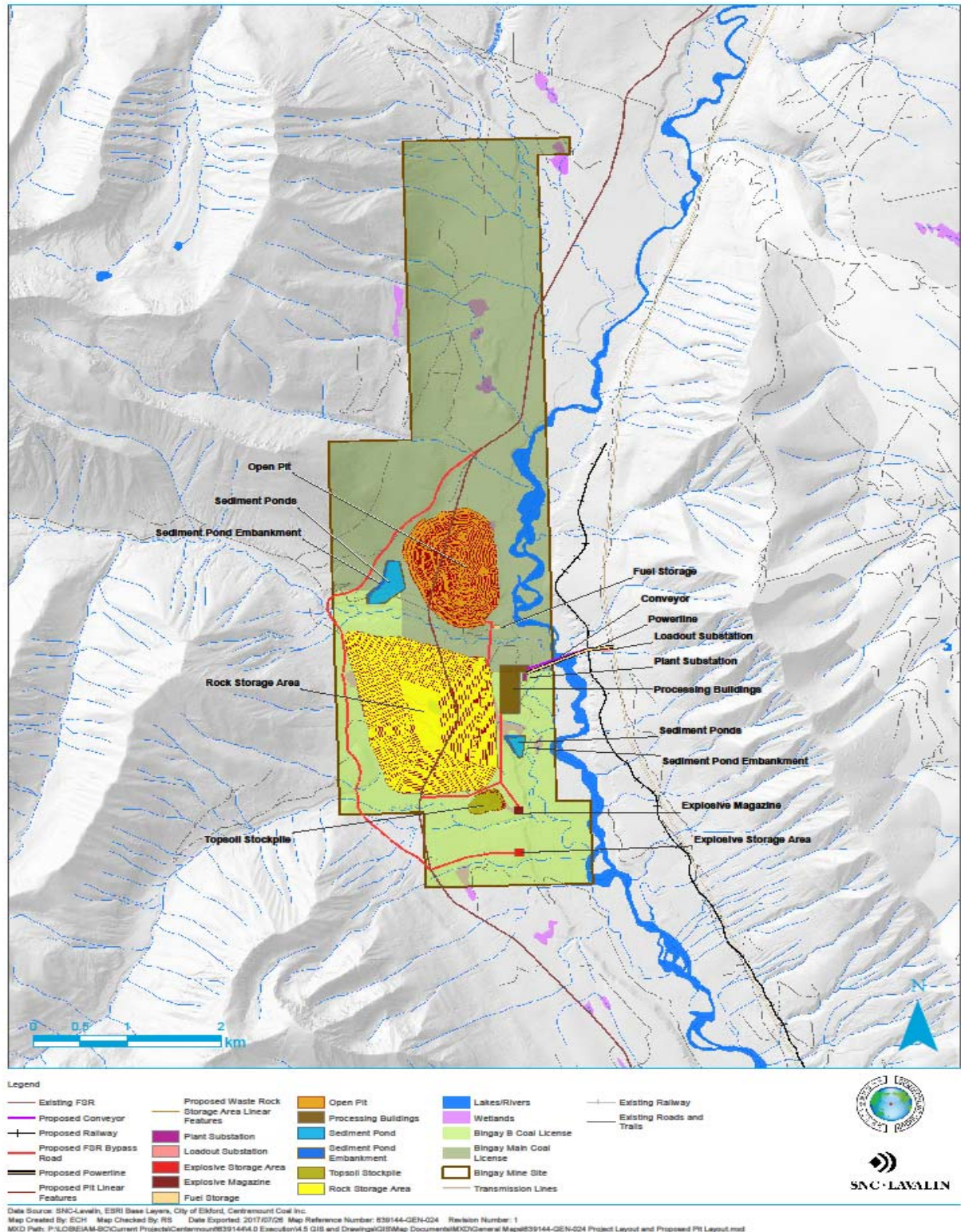


Figure 3. Project Layout

3.2 Mining

The Project will produce metallurgical coal at an annual maximum production rate of 1 million clean tonnes. The lifespan of the Project is planned for approximately 15 years including both construction and operation phases. Open pit mining will be done by a conventional shovel and truck operation similar to the existing Teck operations in the Region.

3.2.1 Open Pit Mining

The Project's coal deposit is planned to be mined using the conventional bench-by-bench (10 metre) open-pit mining method, which includes excavation of overburden, drilling and blasting of rock, ripping and dozing coal, loading material with a hydraulic shovel and a front-end loader, and hauling coal with 100 ton capacity trucks and rock with 200 ton capacity trucks. The strip ratio is variable but is expected to average 11.5 bank cubic meters (BCM) per clean tonne produced (CMT). The entire open pit mine is located in the measured/indicated resource portion of the coal deposit. Auxiliary equipment that will be used in the open pit, includes dozers, graders, front-end-loaders, service trucks and general equipment to support mining operations and conduct maintenance.

Based on the level of production and the strip ratio, the mining fleet planned for the operation consists of two hydraulic shovel/excavators, eight to ten 200-tonne capacity haul trucks, three 100-tonne capacity trucks, two diesel rotary drills, one front end loader and four dozers.

At completion the proposed open pit is expected to encompass approximately 115 ha and extend approximately 1300 m in the north-south direction, approximately 1000 m to the east and west, and 250 to 300 m below the current topographic surface.

3.3 Coal Processing

The clean coal product is targeted at 10% moisture content and an average of 9.5% ash. A conceptual coal processing circuit has been developed to achieve the above quality and is illustrated by Figure 4 below. The proposed coal processing plant is similar to coal plants operating at other mines in the area.

Run of mine (ROM) coal will be stockpiled and fed into a hopper with a 305 x 305 mm grizzly on top to define the maximum lump size going to the breaker. The breaker station would be designed for a maximum capacity of 250 tonnes per hour and will include an interconnecting conveyor, scalping screen, rotary Bradford type breaker, breaker reject conveyor, and a dust collection system. Crushed -45 mm coal from the breaker will be conveyed to the processing circuits. Oversized rejects will be conveyed to a reject stockpile for further disposal within the rock storage area.

**Centermount Coal Plant
Conceptual Design Flowsheet**

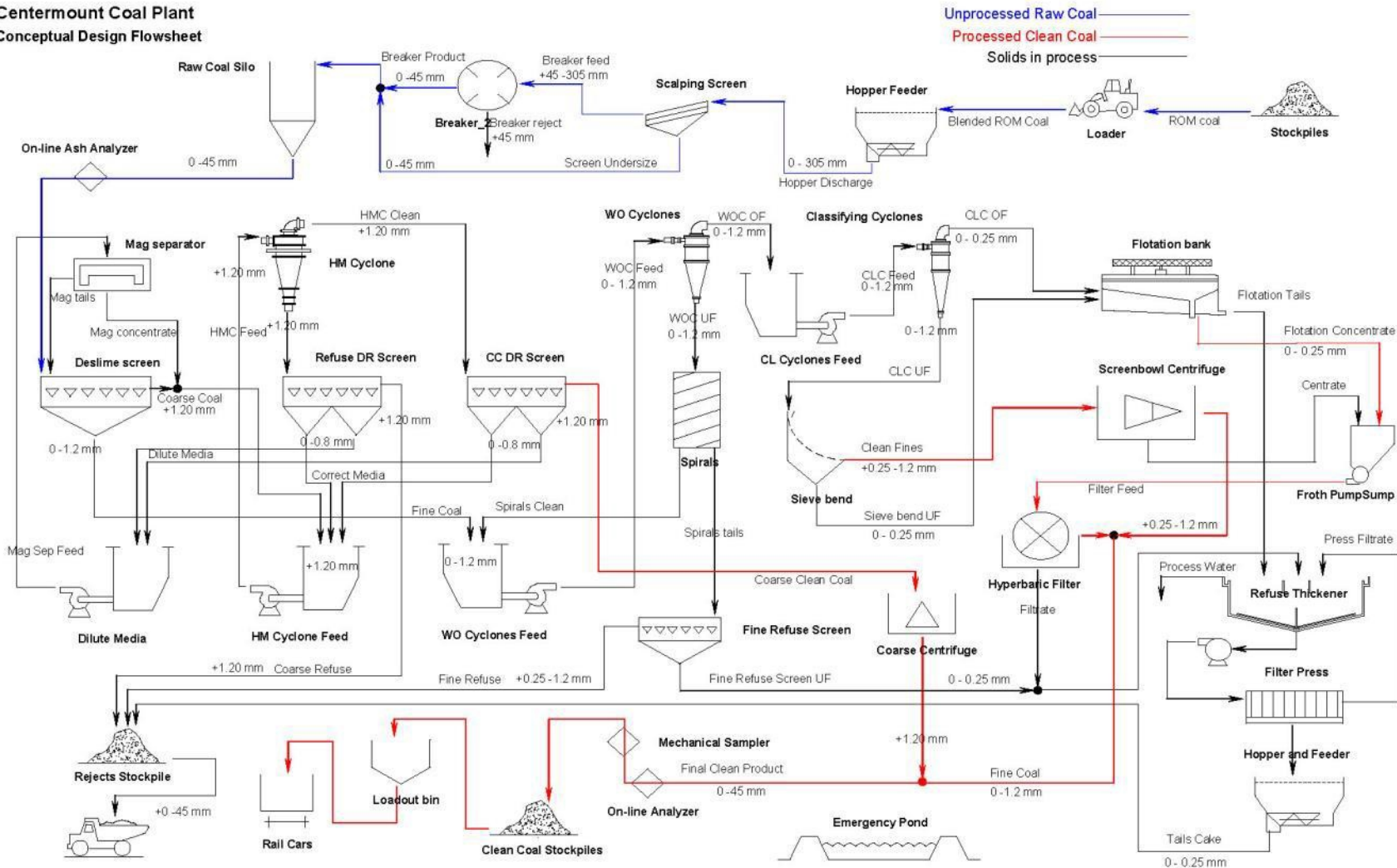


Figure 4. Conceptual Coal Processing Circuit

The preparation plant would employ three processing circuits: heavy media cyclones for coal in the size range 1.2 – 45 mm; water only cyclones, spirals and classifying cyclones for coal in the size range 0.25 – 1.2 mm; and froth flotation for coal < 0.25 mm.

Coal dewatering will be done mechanically to avoid the use of thermal dryers, to prevent coal from direct contact with flames, and to limit stack emissions of particulate matter and other pollutants into the surrounding environment. Centermount would employ screenscroll centrifuges, screenbowl centrifuges and hyperbaric filters to achieve the final moisture content.

The processing plant would be constructed south of the mine pit on the south side of Bingay Creek, and would employ a closed water system. All process plant water will be reused or recycled; and no discharge of used water or liquid tailings material into the environment is anticipated. The fine tailings stream would be dewatered by belt filter presses and the dewatered solids will be added to the coarse refuse material for co-disposal into rock storage area.

3.4 Rock Storage Area

The current estimate of the volume of excess rock generated during open pit mining is approximately 150,000,000 m³. This would be generated during the 10-15 years of operation as the pit is developed. One area, totaling 250 ha, designated as a rock storage area has been identified, with sufficient storage for over 225,000,000 m³ of rock based on a 150 m total height and 2:1 (Horizontal:Vertical) slopes.

The rock storage area is located on flat terrain where much of the area has recently been clear cut by forestry companies based in the region. The rock storage area also overlaps Blue Lake and would result in the loss of the Blue Lake Recreation site. The rock storage area was selected and designed in order to minimize environmental disturbance. The rock storage area will be built from the bottom up, in 10 metre lifts, in contrast to the conventional end-dump approach, where the dump is constructed from the top, which is more common in the region. This method provides additional control in the design and development of a rock storage area. Leaching of selenium and calcite from site rocks is a particular concern in the region and elsewhere, and Centermount has considered this in the design of the storage area. To minimize the likelihood of materials being leached occurring at the Bingay Main Coal Project, the following features have been incorporated into the design:

- the rock storage area will be located on flat terrain away from existing watercourses to minimize subsurface flow through the rock material; except for Blue Lake which is an isolated stagnant waterbody,
- upslope diversion ditches will divert “clean, non-contact” water away from the rock storage and surface mine areas,
- downslope collection ditches will collect runoff from the rock storage area and divert it into sedimentation ponds,
- sedimentation ponds will be designed with a single point of discharge, with the option for transfer by pumping to a pond to allow for water treatment if required,

- bottom up approach for rock storage construction that allows drainage/impervious layers to be included in the rock storage area if required, and
- the waste rock storage area will be temporarily and/or permanently reclaimed as mining allows.

Centermount implemented a geochemical characterization program for the Project in order to assist in the development of rock management plans, and this program will be maintained during mine operations. Depending on the results of ongoing analytical work completed during the operations phase, a portion of the rock storage area may be designated to store rock with a high potential for metal/selenium leaching, due to the risk of the adverse environmental effects. Following the end of mining, these materials could be backfilled in the pit and subsequently submerged underwater to prevent the leaching process. The remainder of the rock storage area will be used to store rock with low potential for acid rock drainage or metal/selenium leaching. This rock will be stored permanently in the rock storage area and permanent or temporary reclamation of the rock storage area will be ongoing throughout the surface open pit mine life.

3.5 Infrastructure

The long history of coal mining in the Elk River valley has supported development of infrastructure that can readily accommodate the Bingay Main Coal Project. An energy-transport corridor occupied by a high-voltage (138 kV) above-ground power line is located along the eastern side of the Elk River, approximately 1 km from the Bingay plant site. All-weather roads extend along both east and west sides of the river; the forest service road on the west side of the river bisects the Bingay Main coal property. An existing railway services Teck Coal's Greenhills and Fording River operations, and has sufficient capacity to accommodate production from the Project.

3.5.1 Onsite Infrastructure Development

Onsite infrastructure would be developed to support the operation, including administration, maintenance and storage buildings, sewage treatment facilities, power supply and distribution system, water supply and distribution system, propane storage facilities, mine road network and surface water management features. The location of the majority of these components facilities are provided in Figure 3. The final location of these facilities will be determined once the detailed mine plan has been developed.

3.5.1.1 Buildings

The mine will require the following buildings:

- Administration building.
- Gatehouse.
- Services.
- Mine dry and change room.
- Repair shops.

- Fuel storage facility.
- Propane storage facility.
- Magazines and explosive facilities.
- Security and emergency services building.
- Miscellaneous storage buildings.

3.5.1.2 Water Management Infrastructure

Surface water management for the Project includes collecting and managing surface water from disturbed areas (contact water) on the mine site, and diverting surface water (non-contact water) from undisturbed and upslope areas around the Project into existing natural watercourses. Contact water drainage ditches would convey water from disturbed areas to sediment ponds for treatment. In addition to sediment settling, chemical or biological water treatment could be implemented prior to the release of water to the environment. Metal leaching and acid rock drainage studies are ongoing to provide estimates of water quality and treatment solutions.

The location and design of diversion ditches and collection ditches will be developed in detail once the locations of the major project components have been refined.

3.5.1.3 Utilities

Water

Fresh water for site services, including potable water, water for fire protection, process water make-up, and wash down and utility requirements would come either from wells and/or ponds located adjacent to the plant and/or pit areas. Preliminary hydrogeological studies indicate an adequate source of groundwater within the pit area of the property.

Potable water will be treated prior to distribution to facilities. Water for process, services, and fire protection supply would be directed to a plant site water storage tank of suitable capacity, of which the lower section would be a dedicated reserve for fire protection purposes. Site distribution would be as required to support the facilities. More detailed information on average and maximum daily water demand at the plant will be developed during the detailed design stage.

Electricity

An energy-transport corridor occupied by a high-voltage (138 kV) above-ground power line (transmission line IL274) is located along the eastern side of the Elk River, 1 km to the east of the Bingay Main site. Preliminary discussions with BC Hydro indicate that this line can accommodate the load required by the mine. A substation on the east side of the Elk River will be required to reduce the voltage from 138 kV to 25 kV to meet mine requirements. A new 25 kV power line connecting the mine to the existing transmission line would be approximately 1 km long, and would require crossing the Elk River floodplain, a span of approximately 500 metres. Detailed design and location of the powerline have not been completed at this point, so specific impacts cannot be described. The substation and powerline are envisioned to be constructed, owned and maintained by Centermount. A 25 kV to 600 kV substation will be required on the west side of the Elk River adjacent to the plant site. Vegetation management

within the corridor will follow practices developed by BC Hydro. Vegetation management requirements for a transmission corridor are based on the circuit's "limits of approach" (the distance a person, machine, or conductive material can safely approach energized conductors), which will be 3 metres for the proposed 25 kV line.

Vegetation which could potentially encroach within the "limits of approach" for the line will be actively managed. A riparian management zone will be established within the powerline corridor so that impacts to riparian vegetation and fish habitat are minimized.

Propane

Propane will be trucked to site using a licensed third-party contractor and stored in tanks for the use of various buildings on site.

3.5.1.4 Roads

Site roads to access the mine facilities include a haul road from the pit area to the raw coal stockpile, haul roads from the pit to the rock storage area, and access roads from the existing Elk River FSR to mine infrastructure. All roads, with the exception of paved aprons adjacent to some structures, would be compacted gravel suitable for heavy industrial use. Detailed alignments of haul and access roads will be completed during the detailed design phase. A portion of the existing Elk River FSR would need to be relocated to avoid mine development activities. This would involve new road construction around the mine site, although portions of the existing road will be used as much as possible. All accesses to the mine site from the Elk River FSR would be gated and monitored. Wherever possible, existing roads will be used and incorporated into the mine planning.

3.5.1.5 Bridges and other Stream Crossings

As part of the Project, several stream crossings will be required. The rail line will involve crossings of the Fording River, and other small watercourses. Road crossings will be required over Bingay Creek and other small watercourses. A conveyor crossing is required for the Elk River to allow product coal to be transported from the plant to the proposed loadout on the east side for the Elk River. A variety of other stream crossings may be required depending on the final layout of the Project. Major stream crossings expected are summarized in Table 3.

Table 3. Summary of major stream crossings anticipated

Crossing	Span (m)	Width (m)	Comments
Elk River	570	15	Conveyor and powerline crossing. Width includes wide
Fording River	40	7	Rail crossing.
Bingay Creek	20	7	Road crossing to accommodate Elk FSR relocation
Bingay Creek	20	20	New or upgrade of existing crossing accommodate haul

3.5.1.6 Hazardous Materials

Fuel and Oils

Diesel fuel for mining equipment and haul trucks will be transported to site via the Elk River FSR by a

licensed third party vendor. Diesel fuel will be stored in above ground fuel storage tanks located near the maintenance shop. Two 95 m³ double walled storage tanks in a secondary containment facility are anticipated.

Explosives

The primary explosive used during mine operation will be a combination of ammonium nitrate fuel oil (ANFO) and emulsion. The blasting operations will be contracted out to a third party company. All required explosives will be obtained through an explosives supply contractor and stored in areas on site in silos and magazines. The initial location of the silos and magazines is presented on Figure 3. The estimated size of the silos is 40,000 kilograms and two magazines will be required; each with a size of approximately 2,000 kgs. It is not currently planned to manufacture explosives on site, however this may change dependent on the third party contractor. The transportation of explosives to and from the mine site will comply with the Transportation of Dangerous Goods Regulations. Licenses and permits for an explosives magazine will be required from Natural Resources Canada and the Ministry of Energy, Mines and Petroleum Resources.

3.5.2 Offsite Infrastructure Development

3.5.2.1 Roads

The Elk River FSR will be used to access the mine site. This road is used for forestry, and is under radio control; however, recreational use of this road is high and 22 km of road between the mine and Elkford will need to be upgraded to allow passing of vehicles in designated areas to reduce potential conflicts. To reduce traffic, employees will be bussed to the mine site from a parking facility in Elkford, as is done for the other operations in the area. The parking area would be provided with lighting, block heater stations for cold weather, an emergency phone line to the plant, and a perimeter security fence. This parking lot will be located on private land designated for this use. A new 6 km section of forest service road will need to be constructed which bypasses on the west side of mining operations. This road will require a new bridge crossing of Bingay Creek upstream of the existing crossing. This access road will need to be constructed prior to the existing road being decommissioned. Minor modifications will also be made to the Kananaskis Power Line FSR during the construction of the rail line and loadout.

3.5.2.2 Rail Line and Rail Loadout

Coal would be shipped by rail to coal terminals in Vancouver. The nearest rail line is operated by Canadian Pacific and is located 27 km south of the Project near Teck Coal's Greenhills Operation. A proposed spur line will be constructed to connect the rail line near Greenhills to the rail loadout on the east side of the Elk River. The rail line will cross the Fording River, as well as numerous smaller watercourses draining the west side of the Greenhills ridge. The preliminary rail line extension route to the Project's loadout is shown on 3. A detailed alignment of this spur and the required crossings will be completed during the detailed design phase. Centermount has had preliminary discussions with Canadian Pacific regarding the rail line and the capacity of the Canadian Pacific network to accommodate the additional shipping volume.

The rail loadout will include coal storage containers, and a dust control/suppression system. The loadout will service approximately one 152-car train per week. The preferred option for the rail loadout is to

locate it east of the proposed plant site, which would require a conveyor crossing of the Elk River adjacent to the plant. Direct loading of the trains from the conveyor is anticipated with no external stockpiles being present on the east side of the Elk River.

Transport of coal by truck to an existing loadout was rejected as this option would substantially increase traffic on the Elk River FSR (6 trucks per hour), create dust and noise issues in Elkford, increase the risk of road mortality to wildlife, as well as lead to higher coal transport costs.

3.6 Alternatives

A variety of alternatives for various components has been completed and presented in Table 4. The current preferred alternatives are presented in the Project Description, however during the stakeholder engagement process it is expected that further alternatives might be generated and investigated.

Table 4. Summary of alternatives under consideration

Component	Alternatives Considered	Preferred Options
Mining Method	Surface versus Underground	Surface only at this time
Infrastructure	Siting of Project Components	One rock storage area south of Bingay Creek All infrastructure located adjacent to this area Rail line and loadout on east side of the Elk River
Coal Transport	Rail versus trucking	Rail from mine site
Roads	Road location	Road on west side of mining operations

3.7 Emissions, Discharges and Waste

3.7.1 Airborne Emissions

Airborne emissions associated with the Project may include:

- Contaminants and greenhouse gases (GHG) associated with the operation of vehicles and heavy machinery. This includes CO₂, NO_x, SO_x, and particulates.
- Fugitive dust emissions associated with blasting and crushing activities and road use, including particulate matter (TSP, PM₁₀, PM_{2.5}).
- Methane gas associated with the coal deposit.

3.7.2 Liquid Wastes

Liquid waste associated with the Project can be divided into three main classes. Wastewater associated with sewage treatment facilities, process water, and site runoff and pit water.

- Ground disposal of wastewater using septic field(s) or sewage treatment plant is anticipated. Septic field(s) or a sewage treatment plant will be designed and sized appropriately according to applicable legislation and regulations.

- Process water will be recycled or reused. The coarse and fine rejects streams would be dewatered by pressure filters and combined with coarse reject stream, with the excess water being recycled. No discharge of process water to the environment is anticipated. The combined coarse and fine reject material produced by the plant is planned to be combined together into one reject stream and then hauled with mine haul trucks to be co-disposed with the rock generated from open pit mining in the rock storage site.
- Site runoff and pit water will be diverted into sedimentation ponds sized and designed appropriately. Water quality will be monitored at the point of discharge prior to release into the environment. If required, additional water treatment facilities (*i.e.*, nitrate and/or selenium reduction) will be added at the point of discharge to ensure water quality parameters are met. Space for additional treatment facilities are incorporated into the mine design, and geochemical characterization of waste rock is underway to predict potential water quality and treatment requirements.

3.7.3 Solid Wastes

Solid waste streams will be segregated according to standard practices. Recyclable materials will be separated and collected on site and shipped to the nearest suitable facility for recycling. Industrial waste materials that can also be recycled, including lubricant, fuel, oils, batteries, will also be shipped to an appropriate facility for disposal. Solid waste that cannot be recycled will be shipped to an appropriate landfill either on site or off site. Disposal of waste rock is discussed above in Section 3.4.

4 PROJECT SETTING

4.1 Geology

The Project includes the western margin of the Elk Valley coalfield. The coalfield is an infaulted remnant of a substantially larger body of coal-measures, correlative with the Crowsnest Basin to the south and the Highwood Pass/Mount Allen/Canmore coalfields to the north. During deposition of the Mist Mountain coal-measures, the Fernie Sea (the local name for the Interior Seaway) lay to the east and northeast, and orogenically-elevated highlands lay to the southwest.

The Bingay property is situated within the geologic Bingay Syncline, a steeply dipping bedrock fold which dips to the northeast beneath the Elk River. The syncline's southern nose extends along the southern slope of Bingay Hill above the north bank of Bingay Creek. Because of the synclinal structure, the bedding in the proposed mining area ranges between generally sub-vertical (45 to 65 degrees) to vertical and even overturns in a few areas. The eastern syncline limb is known to be significantly less steep than the western limb. Numerous small faults have been observed in exploration rock core and geologic maps show the west-dipping Bourgeau Thrust Fault extending along the west part of the proposed mine area.

Coal-measures in the Project's area are hosted by the Mist Mountain Formation of the Kootenay

Group, of latest Jurassic to earliest Cretaceous age. The Mist Mountain Formation is underlain by Jurassic rocks of the Morrissey and Fernie formations. At the crest of the Greenhills Range, east of the Project,

the Mist Mountain Formation is overlain by the younger coal-measures of the Elk Formation, also of Cretaceous age. Although younger coals are known from the overlying Elk Formation in the Greenhills Range, the Elk coals appear to have been stripped away by erosion within the Project area. At least 32 coal seams, whose true thickness ranges from 0.3 to 16.2 metres are present. Of these coals, 24 typically have a thickness of 1 metre. The maximum cumulative thickness of these coals is 62.6 metres, within an overall coal-bearing rock thickness of approximately 460 metres. Bedrock in the proposed mine area consists primarily of siltstone, mudstone and sandstone with interbedded coal seams, which are exposed in the central Bingay Hill and along the east side of the proposed open pit adjacent to the Elk River. The mudstone, siltstone and coal layers appear relatively soft; however coal-bearing and erosion resistant sandstone layers form prominent bedrock ridges in the southwestern part of the proposed mining area and along Bingay Creek. A generalized stratigraphic column within the open pit mining is shown in Figure 5.

Overburden, generally consisting of coarse sand and gravel is present on the west and north sides of the proposed pit area, and thick silt and clay is located on the north side of the proposed pit area. Thin deposits of silty sand and gravel overlying bedrock are present on the pit's south and east sides.

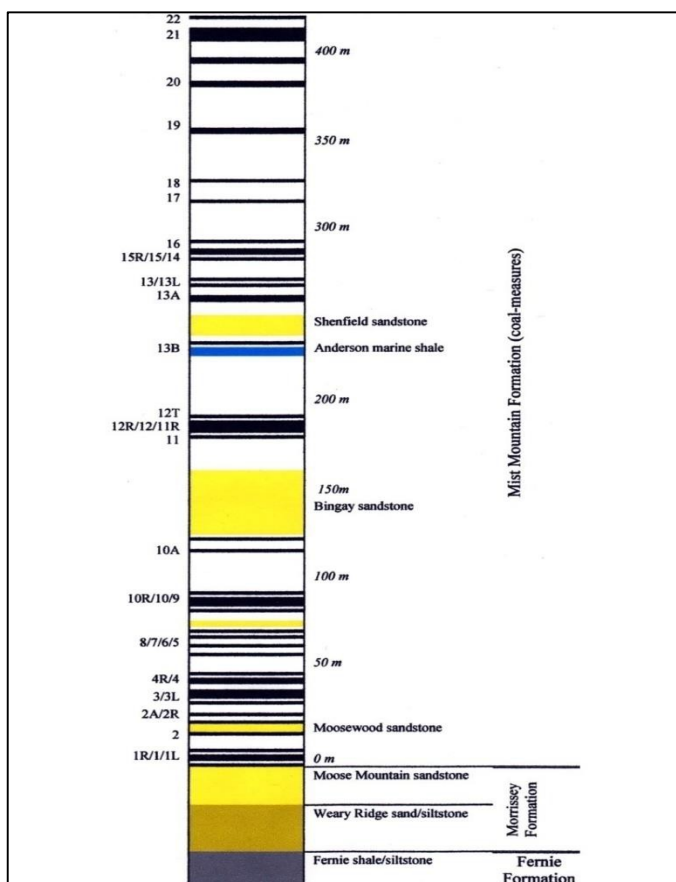


Figure 5. Generalized Stratigraphic Column for the Project

4.2 Geochemistry

Three primary waste rock types are present within the Project disturbance area: mudstone, siltstone and sandstone. A minor amount of ironstone and marine sediments associated with the Anderson Formation are also present at the site; however the amount of these materials expected to be excavated as a result of open pit mining represent significantly less than 1% of the total rock to be disturbed by mining. A metal leaching and acid generating potential study is underway to gain a full understanding of the potential environmental effects. Current studies have shown that the rock disturbed by the Project has minimal acid generation potential, consistent with the observations at nearby mines; ongoing studies will provide further confirmation of this aspect. The focus on metal leaching studies is primarily related to the potential for selenium to be leached from rock at the site.

4.2.1 Acid Rock Drainage

The waste rock types within the Project area average less than 0.2% sulfur with only a few samples having total sulfur contents greater than 0.2%. Sulfate sulfur in the waste rocks was low in all samples, indicating that there has not been a great degree of weathering on the rocks post deposition and that sulfide sulfur is the dominant form of sulfide in the deposit. Given the sedimentary nature of the rocks in the open pit area, the total inorganic carbon content of the rocks will be used to determine the carbonate neutralization potential (NP_{carb}), rather than using Sobek NP method (NP_{Sobek}). The acid potential (AP) of the rocks tends to be low due to the low sulfide sulfur content. Results to date indicate that the mudstone rock type has the highest likelihood of being classified as a potential acid generating material (PAG), depending on the amount of available NP. A kinetic testing program with 2 cells planned for each of the primary waste rock types was established in 2012 to better understand the amount of unavailable NP.

4.2.2 Metal Leaching

Selenium is the primary element of concern from a metal leaching perspective, although other elements of potential concern are also being evaluated as part of the static geochemical characterization program. Shake flask extraction (SFE) testing on 87 samples of the primary geological materials present at the site (mudstone, siltstone, sandstone and coal) show that all of the geologic materials at the site have the potential to leach selenium in excess of the British Columbia Water Quality Objective (BCWQO) of 2 µg/L as illustrated in Figure 6 below. The results show that for the siltstone and sandstone units there is a slight increasing trend between selenium leaching and contained selenium. The mudstone unit appears to have a decreasing trend between selenium leaching and contained selenium.

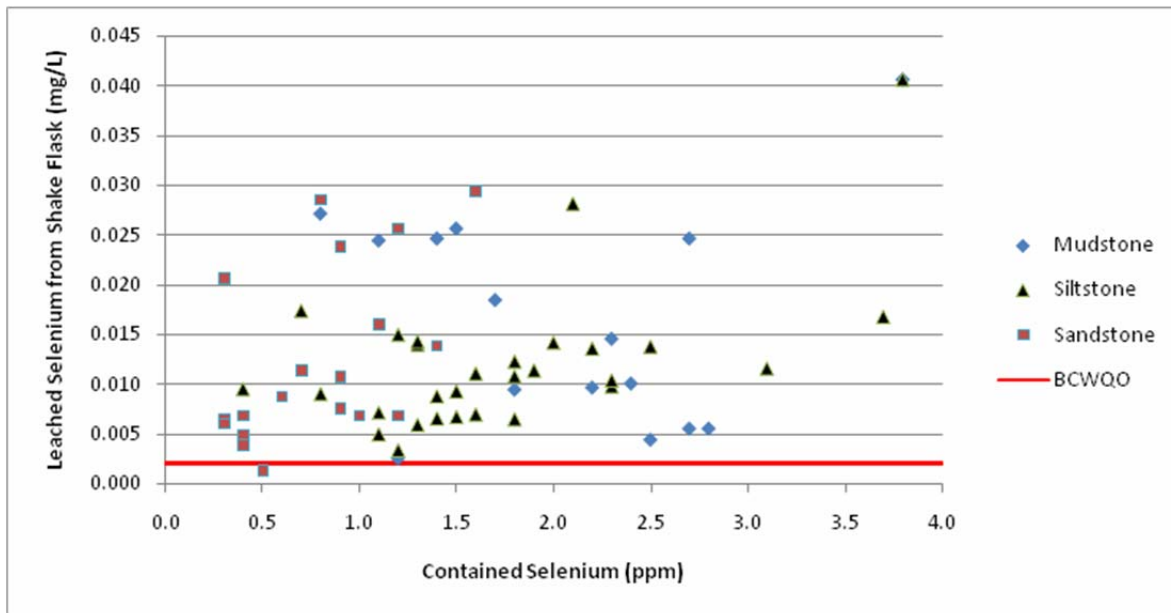


Figure 6. Comparison of shake flask selenium concentrations versus contained selenium in the Project’s rock types

4.3 Climate

The climate in the Project area and upper Elk River is characterized by long, cold winters and short, warm summers. Long term climatic data is also available for Elkford (1971-1993) and Sparwood (1980-2000) (Environment Canada 2011) as illustrated in Figure 7, and this data can be used to infer longer term trends and conditions. Average daily temperatures measured at Elkford, 23 km to the south and approximately 120 metres lower in elevation, range from -8.4°C in January to 14.7°C in July. Average yearly precipitation at Elkford is 610 mm, with approximately 60% falling as rain, and 40% falling as snow. The climate at the Project site is expected to be somewhat colder and wetter than in Elkford.

An FTS 12S (Forest Technology Systems) datalogger was installed on the site in October 2010 near Bingay Hill (UTM 11U.643881.5562513) and monitors temperature, humidity, wind speed and direction, and precipitation. Data collected to date (Oct 2010 – Oct 2011) is summarized below in Table 5 and illustrated on Figure 7 below. Wind speed and directional information for the Project is illustrated by Figure 8. Winds are generally from the south-southeast.

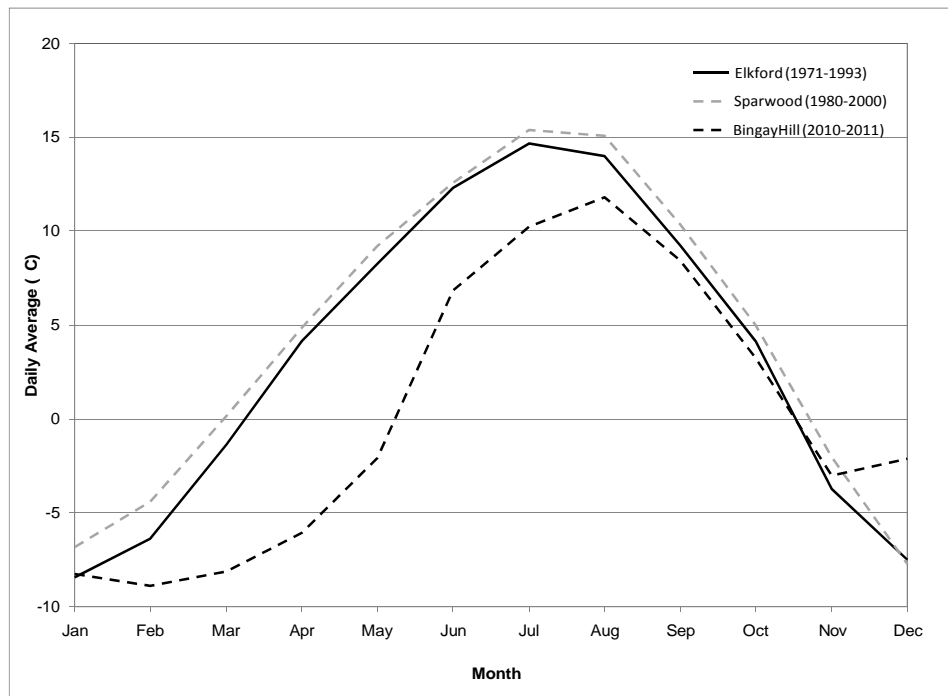


Figure 7. Monthly average temperatures at the Elkford (1971-1993) and Sparwood (1980 – 2000) and Project’s (2010-2011) weather stations

Table 5. Summary of climatic information for the Project’s climate station (Oct 2010 - Oct 2011)

Bingay (Oct 2010-Oct 2011)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Temperature												
Daily Average (°C)	-3.0	-2.1	-8.2	-8.9	-8.1	-6.1	-2.1	6.9	10.2	11.8	8.4	4.2
Daily Maximum (°C)	6.1	0.2	2.1	0.2	1.5	3.7	10.9	16.9	20.7	21.0	18.1	11.4
Daily Minimum (°C)	-27.2	-18.0	-23.0	-26.2	-17.0	-7.1	-1.2	5.0	7.3	8.3	4.3	-1.8
Extreme Maximum (°C)	9.9	3.8	7.7	6.3	8.2	11	18.7	24.8	29.6	29	27.8	23.7
Extreme Minimum (°C)	-32.2	-22.6	-28.6	-35	-22.9	-14.9	-5.9	-3	1.8	-0.7	-2.8	-4.2
Precipitation												
Precipitation (mm) ¹	n/a	n/a	n/a	n/a	25.3	44.9	50.4	56.0	41.7	19.0	39.0	64.4

¹ no precipitation data collected from Nov 2010 - Feb 2011

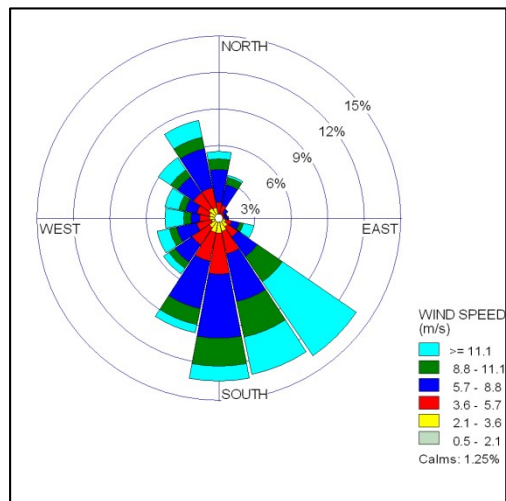


Figure 8. Wind rose for the Project's climate station, Oct 23, 2010- June 20, 2012

4.4 Aquatic Resources

4.4.1 Hydrology

The Bingay Main and Bingay B properties are transected by several watercourses including the Elk River, and several tributaries draining east into the Elk River including, from south to north, Lowe Creek, Bingay Creek, No Name Creek 1, Hornickel Creek, No Name Creek 2, and Forsyth Creek. In addition to these features, there are a number of wetlands within the Project area as illustrated on Figure 3. The proposed railway line is also transected by a number of streams draining west into the Elk River. The mine plan was developed with these surface water features in mind to minimize effects to the aquatic environment. With the exception of several stream crossings and Blue Lake, direct effects to water bodies would be avoided.

Hydrometric stations have been established in Lowe Creek, Bingay Creek, No Name Creek 1, Hornickel Creek, No Name Creek 2, and Forsyth Creek. Stream flows in all the creeks except No Name 1 are dominated by snowmelt, with peak flows occurring between May and July. No Name Creek 1 is groundwater fed, and the highest flows occur between May and July.

4.4.1.1 Elk River

The Elk River in the vicinity of the Project is extensively braided and lies within a wide floodplain ranging from 300 to 600 m in width. Bull trout (*Salvelinus confluentus*), Westslope cutthroat trout (*Oncorhynchus clarki lewisi*), mountain whitefish (*Prosopium williamsoni*), Eastern brook trout (*S. fontinalis*) and longnose dace (*Rhinichthys cataractae*) have all been observed in the Elk River adjacent to the Project.

4.4.1.2 Lowe Creek

Lowe Creek is a third order stream with a mainstem length of approximately 7.6 km and drains an area of 21 km². The lower 2 km are within the Project area. Bull trout and Eastern brook trout have been observed in Lowe Creek. The culvert crossing on the Elk River FSR is currently a barrier to upstream fish passage.

4.4.1.3 Bingay Creek

Bingay Creek is a fourth order stream with a mainstem length of approximately 14.3 km and drains an area of 52 km². The lower 2 km of this stream are within the Project area. In this reach, Bingay Creek has an overall gradient of 3%, with riffle pool channel morphology. The average channel width varies between 9 and 13 m. The lower part of Reach 1 has low complexity due to channel instability and aggradation of substrate material. The upstream end of the reach has abundant cover in the form of deep pools, large woody debris and overhanging vegetation. Spawning gravels were scarce in the lower part of Bingay Creek due to aggradation of the channel with mostly cobble material. Spawning gravels were more abundant further upstream. Bull trout, Westslope cutthroat trout, mountain whitefish and Eastern brook trout have all been observed in Bingay Creek, although in low numbers. During the winter, large parts of this reach of Bingay Creek freeze solid, which may affect fish use and recruitment in this tributary.

4.4.1.4 No Name Creek 1

No Name Creek 1 is a first order stream, 750 m long, drains an area of approximately 48 ha and originates from groundwater seeps below the Elk River FSR. The stream flows into an oxbow/wetland complex of the Elk River, and currently supplies most of the flow to this complex. No Name Creek 1 is non-fish bearing, based on surveys conducted in 2005 and 2010. Steep gradients and frequent small steps at the downstream end of the stream present barriers to fish passage. Longnose dace and mountain whitefish have been observed in the lower part of the oxbow/wetland complex, where it is accessible from the Elk River.

4.4.1.5 Hornickel Creek

Hornickel Creek is a third order stream and approximately 6.1 km long and drains an area of 4.6 km². The lowermost 1 km is within the Project area. This reach has an overall gradient of 3% and riffle pool channel morphology, with an average channel width of 1.9 m. Abundant Westslope cutthroat trout fry and juvenile were observed in Hornickel Creek in 2010. Bull trout have also been reported, although were not observed during field work in 2010.

4.4.1.6 No Name Creek 2

No Name Creek 2 is a third order stream, 4.1 km long, and drains an area of 3.9 km². The lowermost 1.5 km lies within the Project area. The first reach has low gradients of 2% with 3 major wetlands near the upstream end. Westslope cutthroat trout have been reported within the first 0.9 km of stream below the first wetland.

4.4.1.7 Forsyth Creek

Forsyth Creek is a fourth order stream, 30 km long, and drains an area of 178 km². Within the Project area, Forsyth Creek has an average gradient of 1%, with a meandering channel and a riffle pool morphology. The average channel widths vary from 11 to 17 m. Westlope cutthroat trout and bull trout were observed in Forsyth Creek, and Eastern brook trout have also been reported.

4.4.1.8 Streams on east side of the Elk River

The 27 km rail line will cross a number of small streams on the east side of the Elk River. The majority of these streams are non-fish bearing, due to steep gradients and limited watershed area. Streams that are potentially fish bearing, and that have not been classified previously, have been assessed during the summer of 2012 and 2016 in order to design appropriate stream crossings.

4.4.1.9 Blue Lake

Blue Lake is an isolated non-fish bearing water body approximately 2.0 ha in surface area located between Bingay and Lowe Creeks that will be lost through the development of the rock storage area. Blue Lake does not have an inlet or outlet channel and experiences seasonal variations in both water level and water quality. Furthermore, in some years this water body completely dries out or has very limited water present.

4.4.2 Surface Water Quality

Water quality in Bingay Creek, the Elk River, the oxbow/wetland complex, No Name Creek 1 and Forsyth Creek has been monitored on a monthly or quarterly basis since 2010. Sample sites were selected on Bingay Creek and the Elk River upstream and downstream of the proposed Project so that potential impacts due to Project development could be assessed. No Name Creek 1 and the associated wetland complex originate from groundwater seeps within the Project area and therefore no sites upstream of the Project are available. Sites were chosen within this complex to monitor inputs from the mine area. Forsyth Creek was chosen as a potential reference site, since development that would affect this creek was considered unlikely.

The water in the Elk River, Bingay Creek and Forsyth Creek has an alkaline pH, moderate conductivity and hardness, and low sensitivity to acidic inputs, reflecting the predominance of limestone in the watershed. No Name Creek 1 and the associated wetland are characterized by an alkaline pH, high conductivity and hardness. The higher conductivity and hardness in No Name Creek 1 and the wetland compared to the Elk River and Bingay Creek, reflects the groundwater source of No Name Creek 1, and the increased concentrations of ions, notably calcium, magnesium, bicarbonate and sulfate in this water.

Water quality parameters were compared to relevant provincial and federal guidelines for the protection of aquatic life. With the exception of rare instances, the parameters measured were within the relevant guidelines, which are expected given the relatively undisturbed nature of the Project area. Of particular note, selenium levels ranged from 0.4 – 1.4 ug/L, which is below the current guideline of 2 ug/L, but slightly higher than the results obtained in the upper Elk River valley in a 1996 study (McDonald and

Stroscher 1998). Selenium levels appear to follow a seasonal trend, with the highest levels in late winter and early spring when discharge (and dilution) is lowest. Sulfate is also high in No Name Creek 1, averaging 63 mg/L over the sampling period. During lower flow periods, sulfate concentrations of up to 90 mg/L have been recorded, which is higher than the proposed aquatic life guideline for sulfate (MoE 2011). Sulfate concentrations in the other monitored streams are typically in the range 15-30 mg/L.

The surface water monitoring was expanded in 2012 to include Lowe Creek, Hornickel Creek and No Name Creek 2, as these streams have the potential to receive runoff from the proposed rock storage and pit areas.

4.4.3 Fish and Fish Habitat

Fish presence/absence studies have been completed on most of the watercourses within the Project area. Fish habitat assessments have also been conducted on Bingay Creek, the Elk River and Hornickel Creek. Blue Lake is not fish bearing. As much as possible, the mine plan avoids direct impacts to streams.

However, a variety of stream crossings will be required for the mine and plant:

- Bingay Creek – new FSR bridge crossing further upstream for FSR bypass road, new bridge for mine haul road,
- Hornickel Creek – upgrade of the existing FSR culvert crossing,
- No Name Creek 2 – new crossing to accommodate movement of the FSR, upgrade to the existing FSR crossing,
- Elk River – conveyor and power line crossing.

Detailed habitat assessments for each proposed crossing will be conducted, and mitigation and/or compensation measures for any lost habitat will be developed.

4.4.4 Groundwater

Bingay Hill is a locally prominent resistant bedrock outcrop covered by a thin layer of silty sand and gravel overburden. Overburden north of the proposed pit area consists of thick and very low permeability clay/till sediment overlying a thick sand and gravel layer, while thinner sand and gravel overburden layer is present on the proposed pit's southwest and west sides. Bedrock is located at or near the ground surface along the eastern and south sides of the proposed pit however depth to bedrock is more than 215 m below ground surface (bgs) in the northern portion of the mining area.

Groundwater recharge generally occurs in the topographically elevated parts of the property with discharge downslope into sediments in topographically lower areas. Groundwater flow generally follows surface topographic slope with seasonal flow radially downward from Bingay Hill towards lower areas. Groundwater from the western and northern mine areas flows to the east and northeast around the Bingay Hill.

The overburden covering Bingay Hill contains groundwater seasonally during freshet, but is otherwise generally dry during the remainder of the year. Groundwater elevations in overburden in the remainder of the property ranged between 10.8 and 22.2 m bgs. Groundwater elevations in the bedrock varied widely, with elevations ranging from artesian conditions in one well and several exploration boreholes

located on the north side of the proposed mine area, to over 135 m bgs in an exploration hole converted into a monitoring well on the southwest side of the mine area, adjacent to Bingay Creek.

Based on the aquifer test results obtained, the overburden hydraulic conductivity (K) values ranged between 4.8×10^{-8} and 1.5×10^{-4} m/sec, which are typical for glacially-derived silty sand and gravel deposits. In contrast, low to very low permeability bedrock with few fractures and little groundwater was encountered while drilling the vertical monitoring well and angled exploration holes. Based on aquifer test results, bedrock K values are very low, ranging between 6.1×10^{-10} and 6.5×10^{-8} m/sec. These conductivities are within commonly accepted values for poorly to unfractured sandstone, mudstone and siltstone rocks.

Groundwater from the wells was calcium-magnesium bicarbonate type, which indicates a relatively short residence time in the subsurface. Several metals, including total aluminum, total cadmium, and total iron, were present above British Columbia Water Quality Guidelines and/or Canadian Environmental Quality Guidelines, although these elevated concentrations may have resulted from high turbidity in the samples.

A key finding from the 2011 and 2012 hydrogeologic assessment work is confirmation of low-permeability and shallow bedrock along the southern and eastern sides of the proposed pit. Drilling and testing conducted to date indicates this rock has a very low capacity to transmit significant volumes of groundwater and thereby could prevent lateral water flows between the proposed pit and the Elk River, Bingay Creek and underlying water-bearing sediments during and after mining operations.

Additional investigations were completed in 2016 and 2017 to better characterize geologic and groundwater conditions in the area, so that potential effects of long-term mine dewatering on adjacent surface water bodies could be identified, to predict operational and post-closure groundwater conditions. The hydrogeologic and geophysical exploration data and analyses will support a numerical model of current hydrogeological conditions in the proposed mine area. This model will be used to identify potential surface /groundwater interactions during and post-mining, and estimate potential effects from long-term pit dewatering and mine operation on surrounding surface water bodies, with specific focus on the Elk River.

4.5 Terrestrial Resources

Most of the property and surrounding areas, outside of the Elk River floodplain, have been logged and are currently in various stages of regrowth. Dense stands of lodgepole pine (*Pinus contorta*) dominate the forest cover in these areas. Mature forests are mainly associated with riparian areas along the Elk River, Bingay Creek and other streams in the vicinity.

Two biogeoclimatic units are present within the Project's area: Montane spruce, Kootenay dry cool variant (MSdk2) and Engelmann spruce – subalpine fir dry cool variant (ESSFdk2). The majority of the property lies within the MSdk2 zone, which extends from the river bottom up to an elevation of approximately 1600 m along the mountain slopes to the west. The ESSFdk2 zone is limited to the higher elevations on the western edge of the property, and will not be directly affected by the Project.

The MSdk2 is characterized by a cool, dry climate, with long, cold winters and short, warm summers. Climax stands are rare in this zone, due to stand destroying events (wildfire, beetle infestations) (Meidinger and Popar 1991). Mature stands are dominated by hybrid white spruce (*Picea glauca* x *engelmannii*) and subalpine fir (*Abies lasiocarpa*). Seral stands dominated by lodgepole pine are common due to wildfires or where logging has occurred. Common shrubs include Utah honeysuckle (*Lonicera utahensis*) and soopolallie (*Shepherdia canadensis*), grouseberry (*Vaccinium scoparium*), twinflower (*Linnaea borealis*), pinegrass (*Calamagrostis rubescens*) and heart leaved arnica (*Arnica cordifolia*) are common herbs. Mature climax stands in the area are primarily found in riparian areas along the Elk River and tributaries. Due to the extensive logging that has occurred within the Project area, young seral stands are common in the area, and are dominated by dense stands of lodgepole pine.

The ESSFdk2 zone is characterized by long, cold, snowy winters and short, cool summers. Climax stands are common in this zone and are dominated by Engelmann spruce, subalpine fir and lodgepole pine in mesic to moist sites, and lodgepole pine on drier southern aspects. The dominant shrub is false azalea (*Menziesia ferruginea*), with lesser amounts of black huckleberry (*Vaccinium membranaceum*) and gooseberry (*Ribes* sp.). Grouseberry, low bilberry (*Vaccinium myrtillus*), arnicas (*Arnica* sp.), western meadow rue (*Thalictrum occidentale*) and one leaved foam flower (*Tiarella trifoliata* var. *unifoliata*) are common herbs.

4.5.1 Riparian Ecosystems and Wetlands

The Elk River, Lowe Creek, Bingay Creek, Forsyth Creek, Hornickel Creek, No Name Creek 1, No Name Creek 2, and numerous seeps and draws create important riparian corridors throughout the Project area. These areas provide mature and old growth stands that are rare elsewhere in the MSdk, due to the frequent disturbance regime that is typical of the MSdk. The active floodplain of the Elk River valley, with numerous side channels and oxbows, has created an abundance of diverse and complex riparian ecosystems. Several wetlands are located in the project area, including an extensive braided wetland system in the oxbow/floodplain of the Elk River, a large wetland complex near the north end of the Project associated with No Name Creek 2, and numerous small wetlands located throughout the landscape. The mine layout has been developed taking into account riparian corridors and wetlands to minimize direct impacts to these ecosystems.

4.5.2 Old Growth Management Areas

Designated old growth management areas (OGMA) are present within the Project area and are primarily located along riparian corridors. OGMA are legally established and spatially defined areas of old growth forest that are identified during landscape unit planning or operational planning processes. OGMA are used in combination with other areas where forestry development is prevented or constrained, and used to achieve biodiversity targets. Within the core mine area, OGMA are located along riparian corridors and the proposed Project will minimize direct impacts to these areas. Refer to Section 4.5.1 for further detail.

4.5.3 Wildlife

The Elk River valley is an important wildlife corridor. Moose (*Alces americanus*), grizzly bear (*Ursus arctos horribilis*), black bear (*Ursus americanus*), deer (*Odocoileus* spp.), elk (*Cervus elaphus*), and grey wolf (*Canis lupus*) have all been observed in the area, with the highest use associated with the Elk River floodplain. The area also supports a wide range of bird, amphibian and invertebrate species.

4.5.3.1 Mammals - Ungulates

Moose, deer, and elk frequent this area of the Elk River valley. The upper Elk River valley is considered high value ungulate habitat (Poole and Stuart-Smith 2004). Most of the area within the proposed Project is designated ungulate winter range, with the exception of the higher elevation portions along the western boundary and isolated patches (Order - U-4-006 Ungulate Winter Range). Ungulates were found using relatively open forest habitat and replanted clearcuts with sufficient cover and browse species throughout the Bingay property, especially the Elk River floodplain.

4.5.3.2 Mammals – fur bearing

Cougar (*Puma concolor*), grey wolf, badger (*Taxidea taxus jeffersonii*), coyote (*Canis latrans*), beaver (*Castor canadensis*), black bear, grizzly bear, red squirrel (*Tamiasciurus hudsonicus*), Columbian ground squirrel (*Urocitellus columbianus*), yellow pine chipmunk (*Tamias amoenus*), have all been identified in or adjacent to the Project area. Additional species such as American marten (*Martes americana*), bobcat (*Lynx rufus*) and lynx (*Lynx canadensis*) are also likely to use the area.

4.5.3.3 Birds

Fifty-eight bird species were confirmed as breeding on site or were suspected as local breeders in surveys conducted in 2005 and 2011. Dark-eyed juncos (*Junco hyemalis*), Swainson's thrushes (*Catharus ustulatus*), warbling vireos (*Vireo gilvus*) and yellow-rumped warblers (*Dendroica coronata*) were particularly abundant within the Project area. Olive-sided flycatchers (*Contopus cooperi*) and barn swallows (*Hirundo rustica*) are species at risk identified using the Bingay properties. Spotted sandpipers (*Actitis macularius*) and redwinged blackbirds (*Agelaius phoeniceus*), which have been identified as a species for selenium monitoring, have been observed in the area. Many of these species are protected federally under the Migratory Birds Convention Act (1984). In addition, the BC Wildlife Act provides protection for a variety of bird species, and specifically prohibits the destruction of an active nest.

4.5.3.4 Amphibians and Reptiles

Western toad (*Anaxyrus boreas*), Columbia spotted frogs (*Rana luteiventris*), and wood frog (*R. sylvatica*), and long-toed salamander (*Ambystoma macrodactylum*) have been observed in the Project area.

4.6 Rare and Endangered Species

Table 6 summarizes the listed species that have been confirmed within the Project area or in the vicinity of the Project area, either during preliminary surveys of the area, or from literature reports. Additional studies focusing on rare plant and wildlife species to identify potential impacts to these species or critical habitat were completed in 2016 and 2017.

Table 6. Species at risk observed in the Project area

Species		BC	Federal	Global ¹
Badger	<i>Taxidea taxus jeffersonii</i>	Red	Endangered	G5
Grizzly bear	<i>Ursus arctos horribilis</i>	Blue	Not listed	G4
Bighorn Sheep	<i>Ovis canadensis</i>	Blue	Not listed	G4
Barn swallow	<i>Hirundo rustica</i>	Blue	Not listed	G5
Olive-sided flycatcher	<i>Contopus cooperi</i>	Blue	Threatened	G4
Western toad	<i>Anaxyrus boreas</i>	Blue	Special Concern	G4
Westslope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>	Blue	Special Concern	G4T3
Bull trout	<i>Salvelinus confluentus</i>	Blue	Candidate	G3

¹ G3: vulnerable to extirpation or extinction; G4: apparently secure; G4T3: subspecies vulnerable to extirpation or extinction; G5 – widespread, abundant, secure

4.6.1 Badger

Badgers are red listed in British Columbia and endangered on Schedule 1 of the Federal Species at Risk Registry. One badger was observed on the property in June 2012. They have also been sighted near Elkford at the southern end of the project area (BC CDC 2012). Badgers are found in grasslands and dry open forests associated with suitable soils for digging burrows. In Canada, the *jeffersonii* subspecies of badger is only found in the dry interior of southern British Columbia, and the population is estimated at less than 200. Suitable habitat in British Columbia is limited and fragmented, and has significantly decreased in quality (including reduction in ground squirrel numbers) and quantity, and much of the remaining habitat is threatened by urbanization and intense agriculture. Badgers have recently expanded into logged areas at higher elevations, but this habitat is insecure (COSEWIC 2000). The Columbian ground squirrel (*Urocyon columbianus*) and the golden-mantled ground squirrel (*Callospermophilus lateralis*), both of which are typical badger prey, were identified within the Project area (Patton et al., 2007). Low populations of prey species is a crucial limiting factor for badger recovery.

4.6.2 Grizzly Bear

Grizzly bears are blue listed in British Columbia. The grizzly bear is found in a variety of habitats including forested areas and open slopes, from alpine tundra to valley bottoms. Grizzly bear use of the Project area was identified in 2005 near the Elk River (Patton et al. 2007) and in subsequent field surveys. Grizzly bears are omnivorous, eating a wide variety of foods, both plants and animals. They require large wilderness areas over a variety of elevations to meet their seasonal requirements and are well known to be sensitive to human disturbance and development and are currently a species at risk. A DNA study to assess Grizzly bear movement in the valley was initiated in 2012.

4.6.3 Bighorn Sheep

Bighorn sheep are blue listed in British Columbia. They spend summers on high elevation and alpine grasslands, 2,000-2,500 m with nearby escape terrain. Winter habitat includes south-facing slopes below 1,800 m with little precipitation. They are gregarious animals, living in groups; however adult males live apart from the females/young for most of the year. Bighorn sheep may pass through the Project area moving from summer range to winter feeding areas (Patton, T. 2007).

4.6.4 Barn Swallow

Barn swallows are blue listed in British Columbia. They are mostly found in open habitat near water and less frequently in partly open habitats. They are found nesting in barns or other buildings, under bridges, in caves or cliff crevices, usually on vertical surfaces. They usually return to the same nesting area in successive years and even reusing old nests. Their presence within the Project area was confirmed in June 2011 (MEC, 2011b).

4.6.5 Olive-sided Flycatcher

Olive-sided flycatcher is blue listed in British Columbia and listed as threatened on Schedule 1 of the Federal Species at Risk Registry. The Olive-sided Flycatcher is most often associated with open areas containing tall trees or snags for perching. Open areas may be forest openings, forest edges near natural openings (such as rivers, muskeg, bogs or swamps) or human-made openings (such as logged areas), burned forest or open to semi-open mature forest stands. There is evidence that birds nesting in harvested habitats experience significantly lower breeding success than those nesting in natural (e.g. burned) openings. Generally, forest habitat is either coniferous or mixed coniferous. In the boreal forest, suitable habitat is more likely to occur in or near wetland areas (COSEWIC 2007). Their presence within the Project area was confirmed in June 2011 (MEC, 2011b).

4.6.6 Western Toad

The Western toad is blue listed in British Columbia and listed as special concern on Schedule 1 of the Federal Species at Risk Registry. This widespread species is primarily terrestrial, travelling far from open water and wetlands to terrestrial habitat. They are especially vulnerable to road mortality during seasonal migration, and breed in shallow, weedy, permanent water.

4.6.7 Westslope Cutthroat Trout

Westslope cutthroat trout are blue listed in British Columbia and listed as special concern on Schedule 1 of the Federal Species at Risk Registry. The Elk River population is a genetically pure population, and their range extends from Elko at the southern end of the Elk River, to the headwaters of the Elk River at the Elk Lakes, as well as many of the tributaries. Westslope cutthroat trout have been observed in the Elk River adjacent to the property, as well as in several of the tributaries that transect the Project area (see Section 4.4.1). Threats to the species include habitat loss due to expanding urbanization, agricultural activities and resource-based industries, increased exploitation, and competition and hybridization with introduced species, notably rainbow trout.

4.6.8 Bull Trout

Bull trout are blue listed in British Columbia. An adfluvial population is present in the Elk River, and their range extends from Elko at the southern end of the Elk River, to the headwaters of the Elk River as well as many of the tributaries. Loss of habitat and habitat degradation has contributed to the decrease in bull trout abundance within British Columbia.

4.7 Land Use

The Project is located within the traditional territory of Ktunaxa Nation. Ktunaxa are known to hunt, fish, trap, harvest plants and carry out cultural practices within their traditional territory.

The Bingay Main property is located within a Coal Enhanced Resource Development Zone (Coal ERDZ) as described in the Kootenay-Boundary Land Resource Management Plan (KIAMC 1997) and the Southern Rocky Mountain Management Plan (MSRM 2003). This designation indicates that the area is suitable for resource development and provides long-term commitment to coal mining exploration and development. Under the SRMMP, the management and intent of other resource values (e.g. old growth, connectivity, ungulate winter range, riparian, visual landscapes, recreation), does not preclude application or approval of mining activities in the area.

Most of the project area is located on Crown Land, with a mineral claim situated in the southwest corner of license 415139. A cabin is located on the north side of Bingay Creek that is used on a seasonal basis. Centermount has been in contact with the cabin owners.

The proposed railway line on the east side of the Elk River valley is located on Crown land. Teck Coal holds coal licenses under some of the proposed route.

The dominant land use in the immediate area of the Project is forestry, although previous coal, oil and gas exploration has occurred, and is ongoing. The area has been extensively logged over the years and the forests nearby are in different stages of regrowth. The area is currently designated as a beetle salvage area and Canfor is actively logging in the area.

The Elk River valley is a popular destination for many recreationists with access to the Elk Lakes Provincial Park and Height of the Rockies Wilderness Area located to the north as illustrated in Figure 1. The Elk Valley provides world class fly fishing in the Elk River and abundant hunting opportunities. Other activities include hiking, horseback riding, camping, off-road vehicle use and snowmobiling. A commercial guide outfitter and two registered traplines are also present within the immediate area of the Project.

In addition to the Provincial Park and wilderness area mentioned above, there are a number of recreation sites within the Elk River watershed. Of note, the Blue Lake Recreation site is located south of Bingay Creek within the Bingay B area, and currently planned to be lost through the use as a rock storage area for the Project. The Forsyth Creek Recreation Site is near Forsyth Creek just north of the property. The headwaters of Forsyth Creek are located within the Height of the Rockies Wilderness Area.

Centermount proposes to develop the Project in a manner consistent with land use planning for the area, and in a way that is not unduly restrictive to other users.

4.8 First Nations and Heritage

The Project is located within the traditional territory of Ktunaxa Nation. An archaeological overview assessment was conducted in 2004 (Choquette 2004) to identify and assess archaeological resource potential or sensitivity in the area for Hillsborough. This study focused on the area that is proposed for

pit development. Terraces at the confluence of the Elk River and Bingay Creek, and along the north side of Bingay Creek were identified as having archaeological potential because of the archaeological significance of their settings (Choquette 2004). No pre-contact archaeological deposits or features were observed in subsurface exposures within the proposed Project area. A more detailed archaeological impact assessment encompassing the entire Project area will be conducted in 2017 as part of the Project development.

4.9 Socio-Economics

4.9.1 Local Community

The three main population centers in the Elk Valley are Elkford, Sparwood and Fernie located approximately 23 km, 55 km, and 85 km south of the Project. Crownsnest Pass, located in Alberta, is 73 km southeast of the Project. All communities include a number of tourism and service facilities. Services within the communities of Fernie, Sparwood, and Elkford include: general and industrial contracting, excavating, construction, welding, electrical, irrigation, business services, catering, as well as a number of recreation facilities. Several specialized mining equipment suppliers are also located in these communities, including Finning (Elkford), SMS (Elkford), and P & H MinePro (Sparwood). The local communities are generally well-positioned to support the Project and the needs of the employees.

4.9.2 Population and Housing

After a steady decline from 1991 to 2006, the populations of Elkford and Sparwood have been increasing since 2007 (BC Stats 2011). Elkford (population 2523 at last Census) experienced a population rate increase between 2006 and 2011 of 2.4% (Statistics Canada 2012); Sparwood (population 3667 at last Census) experienced a population rate increase of 1.4% between 2006 and 2011 (Statistics Canada 2012). The populations of both communities are influenced by fluctuations in the local coal industry (Housing Strategies Inc. 2011). From 1996 to 2006, when the coal industry was depressed, Elkford and Sparwood registered decreases in children, youth, and working age adults, and increases in seniors and parents whose children have grown up and left home. The housing supply of these two towns is mainly single detached, mobile homes and apartment units. Most houses are owned and the availability of rental units is decreasing. Both towns have a lack of housing for marginalized populations including a lack of emergency and transitional shelters, group or senior and long-term care homes. The lack of housing and the transient nature of many mine employees have been identified as concerns by Elkford, and Centermount has engaged with the local council to identify employment strategies to address their concerns.

5 POTENTIAL EFFECTS

Baseline studies in the area were initiated in 2004 by Hillsborough. These were reestablished in 2010 when Centermount began more extensive exploration. To date, most of the studies have concentrated on the area surrounding the proposed pit, between Bingay Creek to the south and No Name Creek 1 to the north. These studies were expanded in 2016/2017 to include the entire mine footprint and surrounding

area to address any potential Project concerns. Some of the studies include:

- Surficial geology, topography, soils and terrain.
- Geochemistry.
- Meteorology and climate.
- Noise and dust fall.
- Surface hydrology.
- Surface water hydrology.
- Hydrogeology and groundwater quality.
- Fisheries and aquatic habitat and biota.
- Terrestrial ecosystems, vegetation and wildlife.
- Socioeconomics.
- Land use, land status and land capability.
- Archaeological resources and traditional use / knowledge.

The following provides a summary of the potential effects of the Project that have been identified to date.

5.1 Physical and Biological Environment

5.1.1 *Air Quality and Greenhouse Gas Management*

- Contaminant loading to terrestrial and aquatic resources from dust.
- Greenhouse gas emissions from vehicles/machinery required for the Project.
- Fugitive dust from increased traffic use along the Elk River FSR.
- Increased dust loading for communities situated along the rail corridor.

5.1.2 *Noise and Vibration*

- Noise issues related to worker health and safety.
- Noise impacts to wildlife.

5.1.3 *Surface Water*

- Potential water quality impacts to the Elk River, Lowe Creek, Bingay Creek, No Name Creek 1, Hornickel Creek, No Name Creek 2, and Forsyth Creek, and the effect of this on aquatic resources.
- Impacts to aquatic biota (periphyton, benthic invertebrates) due to changes in water quality.
- Changes to surface water hydrology.
- Loss of Blue Lake.

5.1.4 *Groundwater*

- Potential impacts on groundwater quality.
- Changes in groundwater flows.
- Affected groundwater/surface water interactions, i.e. potential impacts from mine dewatering on adjacent surface water bodies.
- Impacts on surface water quality from groundwater discharge.

5.1.5 Fish and Fish Habitat

- Loss of habitat associated with stream crossings for roads, rail line, power lines, and conveyors
- Impacts to fish due to changes in water quality.

5.1.6 Vegetation

- Permanent and temporary loss of terrestrial habitat due to the construction of the mine pit and associated infrastructure.

5.1.7 Wildlife

- Habitat loss due to the construction of the mine pit and associated infrastructure.
- Disturbance to migration movements due to mine location (noise, presence of humans etc).
- Increased mortality due to increased rail/vehicle use.
- Increased mortality due to construction (blasting, excavation of undisturbed terrain).
- Risk to wildlife from changes in water quality, contaminant loading from dust.

5.1.8 Acid Rock Drainage/Metal Leaching

- Ground and surface water quality impacts resulting from waste rock weathering (i.e. selenium, calcite).

5.1.9 Federal Requirements

The federal environmental assessment process requires a specific description of anticipated effects of the Project on the following aspects which fall under federal jurisdiction.

5.1.9.1 Fish and Fish Habitat

The primary effect of the Project on fish are anticipated to arise from the disturbance of habitat due to stream crossings, and to changes in water quality due to the increased area of disturbance (sediment) and the potential for leaching of chemicals (*e.g.* selenium, nutrients) from the waste rock. With the exception of stream crossings, the project is not expected to result in the direct loss of fish habitat. The storage rock area at Blue Lake is not fish bearing.

5.1.9.2 Aquatic Species at Risk

Westslope cutthroat trout is the only aquatic species identified in the Species at Risk Act that occur in the project area and that therefore could be potentially affected by the Project. Potential effects to Westslope cutthroat trout include changes in habitat (primarily due to stream crossings) and changes in water quality.

5.1.9.3 Migratory Birds

Migratory birds are defined in Article I of the Migratory Birds Convention Act, and include migratory game birds, migratory insectivorous birds, and other migratory game birds. A variety of bird species that are considered migratory have been observed in the area. Potential effects to these species include habitat disturbance as a result of the clearing of land to accommodate Project infrastructure, and changes in uptake of various chemicals (*e.g.* selenium) that may result from altered water quality.

5.2 Socio-Economic Environment

5.2.1 Land Use

- Permanent and temporary changes in land use capability due to the mine footprint and associated infrastructure.
- Impacts to other operations in the area (forestry, recreation, oil and gas) due to the presence of the Project and increased road use.

5.2.2 Visual Quality

- Changes to the natural landscape due to the development of the mine, including pit development, mine infrastructure, rock storage area, and road and rail line development.

5.2.3 Recreation

- Impacts to recreation use due to changes in the natural landscape.
- Loss of recreational areas due to mine activities in the Project area, specifically the Blue Lake recreation area.
- Changes in recreational accessibility to road upgrades, increased road use, and industrial activity (*i.e.*, blasting).
- Changes in wildlife use due to mine activities.

5.2.4 First Nations Use

- Loss of unknown historical and archaeological sites due to land disturbance associated with mine development.
- Loss of ability to carry out traditional use and harvesting activities in both the Project area and the surrounding area where off-site Project effects may occur, such as water quality due to development of the Project.

5.2.5 Services and Infrastructure

- Effect of increased employment, housing demand, and public facility use, on nearby communities.

5.2.6 Effects on Federal Lands, other Provinces, or outside of Canada

No changes to the environment as a result of the Project are expected to occur on federal land or to provinces outside of British Columbia. As the Project has the potential to increase selenium, specifically, and other contaminants of concern in the Elk River, the State of Montana and US EPA is expected to have an interest in water quality aspects of the Project. The Elk River flows into Lake Koocanusa, which is partially located in Montana, and the State of Montana and the US EPA might be involved in the EA process for this Project by being a participant on the working group.

6 CONSULTATION

Centermount recognizes that it has a responsibility to engage and consult with Aboriginal groups, the public, regulatory agencies, and local, provincial and federal governments throughout the environmental assessment process. The BC Environmental Assessment Office also has a legal duty to

consult with Aboriginal groups during the review process.

Centermount has initiated consultation with Ktunaxa Nation, the public and government agencies. Consultation has included meetings presentations, informal discussions, phone calls, emails and letters. During the course of these consultation activities, the parties have identified several issues of concern. These issues include potential impacts to water quality in the Elk River, the proximity of the mine pit to the Elk River, and wildlife movement in the Elk Valley. Other issues identified by the parties consulted include recreational access in the Elk River valley, such as Blue Lake, as well as the housing and employment challenges of the valley.

Centermount is committed to working with all Aboriginal groups, the public and government agencies to address their input, comments and concerns during Project design and operation phases.

6.1 First Nations

The Project is located within the traditional territory of Ktunaxa Nation. The two closest First Nations communities consist of two Ktunaxa Bands: St Mary's Indian Band and Tobacco Plains Band. St. Mary's Indian Band is located on Kootenay Indian Reserve #1, at the confluence of the Kootenay River and St. Mary's River, near the City of Cranbrook, approximately 80 km southwest of the Project area. Tobacco Plains Band is located adjacent to the US border along the east side of Lake Koocanusa, approximately 140 km south of the project.

Centermount is committed to meaningful engagement of Ktunaxa Nation during the environmental assessment process. Centermount Coal will take an "interest based" collaborative approach to working with Ktunaxa Nation and will seek their input on how they would like to be consulted during the EA and involved during the life of the Project. Centermount will request regular meetings with the members of Ktunaxa to identify interests and potential effects to these interests, and to negotiate agreements such as engagement protocols, employment and training agreements and impact benefits agreements.

Consultation activities would include, but not be limited to, roundtable discussions, community meetings, workshops with Ktunaxa Nation and open houses hosted by Centermount Coal in the different Ktunaxa communities, as well as meeting with the different departments within the Ktunaxa Nation Government. Consultation activities will meet or exceed the requirements specified by the Environmental Assessment Office and the Canadian Environmental Assessment Agency. Centermount will offer capacity funding to Ktunaxa Nation to support their participation in the environmental assessment process.

Ktunaxa Nation was first approached regarding the Project prior to the most recent exploration activity and a meeting was held in March 2010. Two meetings with Ktunaxa Nation regarding the Project have taken place since then, in April 2010 and June 2011. These meetings were held at Ktunaxa Nation offices in Cranbrook.

Since the submission of the Project Description version 1.0, another meeting was held in Cranbrook with the Ktunaxa Land and Resource Office in May 2012, and then again in December 2016 with the

objectives of providing an update on the Project and discussing a consultation process. During general discussions Ktunaxa have mentioned the ongoing selenium issues in the Elk River valley and cumulative effects as being of concern. Further, telephone conferences and face to face discussions have taken place with Ktunaxa Nation. Centermount has hired a dedicated First Nations liaison person based in the region, to assist with addressing concerns brought forward by the Ktunaxa Nation.

In addition to Ktunaxa Nation, other interests in this area have been expressed by Shuswap Indian Band, which is part of Secwepemc Nation. Meetings were held with Shuswap Indian Band in February and March of 2012 at the Centermount offices in Vancouver. No issues were raised on potential impacts of the Project on their traditional territory.

6.2 Public

Public consultation is an important part of both mine planning and regulatory review. A formal public consultation and notification process will be developed during the review process to meet the requirements of the provincial and federal environmental assessment processes. This will include the following:

- Provide and distribute information on the Project in a timely manner throughout the review process.
- Provide the public with opportunities to participate and/or comment on the Project.
- Incorporate public input into the mine planning process where appropriate, and provide rationale where public input cannot be incorporated.
- Track, document and resolve all issues that arise.

To date, public consultation has consisted of informal meetings with interested and potentially affected parties, including recreational groups and environmental groups, and one formal public meeting held in Elkford. The public meeting was held prior to the exploration program to discuss the Project, the field program and local concerns. These discussions have helped identify a range of issues associated with the Project, and have allowed Centermount to adjust the mine plan to address many of these concerns. Issues raised have included water quality impacts, wildlife impacts, recreational access, and employment and housing. Adjustments to mine planning to address some of these concerns include maintaining riparian setbacks and avoiding directly impacting streams, incorporating wildlife corridors, and considering options to ensure public access beyond the mine.

Stakeholders with whom Centermount has communicated:

Local Governments

District of Elkford
District of Sparwood
City of Fernie
Municipality of Crowsnest Pass
Regional District of East Kootenay
Federal MP – Wayne Stetski

Communities

Elkford
Sparwood
Fernie
Crowsnest Pass

Recreational Interest

BC Chapter of Back Country Hunters & Anglers
Elkford ATV Club
Elkford Rod and Gun Club
Elkford Snowmobile Association
Fernie Rod and Gun Club
Rocky Mountain Wilderness Hiking Excursion
Sparwood & District Fish and Wildlife Association
Sparwood Rod and Gun Club
TransCanada Trail

Commercial Interest

Elkford Chamber of Commerce
Fernie Chamber of Commerce
Sparwood Chamber of Commerce
Crowsnest Pass Chamber of Commerce
Elk Valley Economic Initiative
Elk Valley Bighorn Outfitters (formerly Fontana's Guide Outfitting)
Canfor
Jemi Fibre Corp.(CanWel)

Public Interest Groups

East Kootenay Conservation Program
Elk River Alliance
Elk Valley Stewardship Society
Hornady Wilderness Society
Wildsight
Elkford 50+ Club
Elkford Lions Club

Additional stakeholders identified:

- BC Hydro
- Canadian Pacific Rail
- Canadian Parks and Wilderness Society
- CoalMont/CanAus
- College of the Rockies
- Dogwood Initiative
- Elk River Fly Fishing Guides
- Elkford Nordic Ski Club

- Fortis
- Kootenay East (BC MLA) Kootenay—Columbia, BC
- Mining Association of British Columbia
- Mining Association of Canada
- Nature Conservancy Canada
- Provincial MLA
- Sierra Club of BC
- Teck Resources
- Tourism Fernie
- United Steelworkers (Elkford #7884)
- Yellowstone to Yukon Conservation Initiative Government Agencies

6.3 Government Agencies

6.3.1 Regional Governments

Centermount has engaged with the District of Elkford since 2010, when the most recent exploration program was initiated. A formal presentation to the Elkford, Sparwood and Fernie Councils occurred on January 23/24, 2012 to introduce the proposed Project and obtain feedback on various aspects of the Project. A follow up presentation was completed May 2016 to the same groups above to provide an update on the Project and gather any additional input on the Project.

The following issues were identified during meetings with the District of Elkford Council:

- The Council identified the issue of hauling coal by truck through the town. Centermount responded by stating that it has no plans for hauling coal by truck and will be building a rail line on the east side of the Elk River, away from Elkford.
- The Council identified the concern of their water table being altered. Centermount responded that additional hydrological drilling will be completed to confirm the location and direction of fault lines and that a hydrogeological model will be completed to assess potential effects on the ground water around Elkford.
- The Council identified the housing shortage issue. Centermount responded by participating in the District's Housing Strategy Sessions and identifying the option of a Private/Public housing development if required.
- The Council identified the issue of the current trend of transient workers not residing in the Elk Valley. Centermount responded by exploring options to encourage workers to reside in Elkford. These options include mortgage assistance, payment differential based on residence, and adjusting the work schedule to suit families living close by.

6.3.2 Provincial Government

A variety of provincial agencies have been notified of the Project to date. Several agencies were involved in the exploration stages of the Project, and additional meetings have been held to introduce the Project and obtain input and advice on Project issues and the assessment process. Agencies contacted to date include:

- BC Environmental Assessment Office.
- Ministry of Forest, Lands, Natural Resources Operations & Rural Development.
- Ministry of Environment & Climate Change Strategy.
- Ministry of Energy, Mines & Petroleum Resources.

Other agencies that will be consulted include:

- Ministry of Transportation and Infrastructure.
- Ministry of Agriculture.
- Ministry of Jobs, Trades & Technology.

6.3.3 Federal Government

The Canadian Environmental Assessment Agency corresponded via email and telephone to provide direction on the requirements of the Project Description. Other federal agencies that will be involved in the assessment process include:

- Fisheries and Oceans Canada (DFO).
- Natural Resources Canada (NRC).
- Environment and Climate Change Canada.
- Transport Canada.
- Health Canada.
- Canadian Transportation Agency.
- Major Projects Management Office (MPMO).

6.3.4 US Government Agencies

The State of Montana and the US EPA has expressed an interest and provided comments on the proposed expansions of Teck Coal's Line Creek Operations and Fording River Operations. This is largely due to water quality concerns with respect to the accumulation of selenium in the Koocanusa Reservoir, which is a transboundary waterbody. As a result, Montana and US EPA might be part of the working group for this Project once discussions have been finalized with these regulatory agencies.

7 PERMITTING PROCESS

The Project will require one or more federal permits, listed below in Table 8. For the purposes of the permitting process, a provincial Environmental Assessment review followed by permitting was assumed. A preliminary list of permits, approvals and authorizations required by the Project is provided in Table 8. The Project will not pursue concurrent permitting.

7.1 Federal Triggers

7.1.1 Fisheries Act

Triggers under the Fisheries Act include Section 32, Section 35(2) and paragraphs 36(5)(a) to (e):
Section 32: "*Authorization by the Minister of Fisheries and Oceans or under regulations made by the Governor in Council for the destruction of fish by any means other than by fishing.*"

Section 35(2): "*Authorization by the Minister of Fisheries and Oceans or under regulations made by the Governor in Council to cause the harmful alteration, disruption or destruction of fish habitat in the course of carrying out a work or undertaking.*"

Section 36(5): "*where the regulation made pursuant to those paragraphs contain a provision that limits the application of the regulation to a named site*" in relation to the deposit of deleterious substances.

Several streams are located within the Project area, some of which are fish bearing (Section 4.4.1). The Elk River is also recognized as a stream with high fisheries value, as well as abundant recreational use. Direct impacts to fish and fish habitat have been minimized by siting the Project infrastructure components, including the open pit area, the coal processing plant, the rock storage area and related infrastructure, away from any watercourses where this is possible. Provisions for riparian buffers along watercourses have also been included. However, access to and within the project area will require the construction of new roads and the upgrade of existing roads and this will involve upgrading several road crossings on tributary streams. In addition, the rail line and connection to the power line on the east side of the river will require crossing the Elk River floodplain. These activities entail clearing of vegetation within the riparian areas of tributary streams and the Elk River, potentially affecting fish habitat.

Other activities that may indirectly affect fish include potential effects to water quality through discharge and surface runoff from the open pit and rock storage area. Changes in water quantity through processing plant and domestic water use or through changes in surface water drainage have yet to be determined, but could potentially affect the downstream fish habitat.

7.1.2 Navigation Protection Act

The trigger under the Navigation Protection Act (R.S.C., 1985, c. N-22), is due to section 22 which prohibits the disposal of any material into navigable waters that are defined to be any canal or other body of water created or altered as a result of the construction of any work.

The disposal of rock within the Blue Lake area and the resultant loss of recreational use may require approval under the Navigation Protection Act (R.S.C., 1985, c. N-22) if it is deemed that Blue Lake is a navigable water body as it would trigger section 22. This activity would be prohibited pursuant to Section 22 of the Navigation Protection Act, and will require federal approval via an order by Governor in council under Section 24 to allow for rock disposal area to be constructed on the Blue Lake site.

Centermount is currently working with the federal authorities to provide an assessment on Blue Lake to Transport Canada to review and provide a decision on the navigability of Blue Lake.

7.1.3 Explosives Act

Triggers under the Explosive Act (R.S.C., 1985, c. E-17) include Subsection 7(1):

License issued by the Minister of Natural Resources for an explosives factory (manufacture) and magazine (storage)."

An explosives user magazine licence (Type U) may be required as blasting explosives will be stored on site for commercial uses. Explosives will be used during mining development. Explosives may also be used during infrastructure development (*i.e.* road building) although this has not yet been determined. Any explosive use during construction will be provided by a third party from existing storage facilities in the Elk Valley.

7.1.4 Canadian Transportation Act / Canadian Rail Safety Act

Triggers under the Canadian Transportation Act (S.C. 1996, c.10) include the following sections:

98(2): Approval for the construction of a railway line.

99(3): Authorization for the construction of a railway line across another railway line, or for any work related to that construction.

101(3): Authorization for the construction of a road crossing or utility crossing for a railway line, or for work related to that construction, or specifying who shall maintain the crossing.

The proposed rail line may operate as a Provincial Rail Line, and therefore would be governed by the provincial Railway Safety Act (SBC 2004, c.8), under the BC Safety Authority. Centermount has had preliminary discussions with Canadian Pacific regarding the railway and train capacity on their network. At this stage, specific details regarding the proposed rail line are not available.

7.1.5 Species at Risk Act

Under the Species at Risk Act (S.C. 2002, c.29), Section 79(1), every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a Project is conducted must, without delay, notify the competent minister or ministers in writing of the Project if it is likely to affect a listed wildlife species or its critical habitats.

Section 79(2) requires that, where a federal environmental assessment is being carried out in relation to a Project that may affect a listed wildlife species or its critical habitat, the person responsible for ensuring the assessment is conducted must:

- identify potential adverse effects on the listed wildlife species and its critical habitat; and
- if the Project is carried out: ensure that measures are taken to avoid or lessen those adverse effects and to monitor them, and

- ensure that such measures are consistent with any applicable recovery strategy and action plans.

Table 7 below summarizes species listed on Schedule 1 of the Species at Risk registry that could be potentially affected by the Project.

Table 7. Species at Risk Schedule 1 listed species identified in the Project area

Species	Federal
Badger	Endangered
Olive-sided flycatcher	Threatened
Western toad	Special Concern
Westslope cutthroat trout	Special Concern

Impacts to species at risk and their habitat will be identified in more detail during completion of the environmental assessment. Appropriate best management practices will be implemented for each species at risk that is identified to minimize potential impacts. Where critical habitat for species at risk is identified, Project components will be relocated to avoid unnecessary disturbance, or alternative mitigation or compensation implemented.

Table 8. Preliminary list of permits required for the Project

Permit	Authority or Agency	Legislation	Comments
Environmental Assessment Certificate	BC Environmental Assessment Office	Environmental Assessment Act	Reviews major Projects and provides for meaningful participation by First Nations, proponents, the public, local governments, and federal and provincial agencies.
Mine Permit Approving the Mine Plan and Reclamation program	BC Ministry of Energy, Mines & Petroleum Resources	Mines Act	Authorizes construction, operation, closure and reclamation.
Coal Lease	BC Ministry of Energy, Mines & Petroleum Resources	Coal Act	Provides rights to explore develop and produce coal from Crown land.
Explosive Magazine Storage and Use permit	BC Ministry of Energy, Mines & Petroleum Resources	Explosives Act	Permits storage and use of explosives.
Effluent Permit	BC Ministry of Environment & Climate Change Strategy	Environmental Management Act	Authorizes the discharge of liquid effluent to the environment.
Air Permit	BC Ministry of Environment & Climate Change Strategy	Environmental Management Act	Authorizes the discharge of airborne emissions to the environment.
Hazardous Waste Registration	BC Ministry of Environment & Climate Change Strategy	Environmental Management Act	Authorizes the temporary storage of hazardous waste.
Water License	BC Ministry of Environment & Climate Change Strategy	Water Sustainability Act	Approval to use or divert surface water.
Approval for works in and about a stream	BC Ministry of Environment & Climate Change Strategy	Water Sustainability Act	Approval to work in and about a stream (<i>i.e.</i> stream crossings).
Heritage Permits	BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Heritage Conservation Act	Authorizes a professional archaeologist to assess and define the extent and significance of archaeological sites at risk, to oversee site alteration management activities and to excavate and recover data/artefacts from an archaeological site.
Occupant License to Cut	BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Forest Act	Allows for timber harvesting for site clearing.
Road Use Permit	BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Forest Act	Authorization to use the forest service road.
Decision	Canadian Environmental Assessment Agency	Canadian Environmental Assessment Act	Decision on if the Project will cause significant adverse environmental affects (if the current federal review deems a federal EA is required).
License of Occupation	BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Land Act	Authority to occupy Crown Land (<i>i.e.</i> power line, rail line).
Section 35(2) Authorization	Fisheries and Oceans Canada	Fisheries Act	Authorizes the alteration, disturbance or destruction of fish habitat and specifies compensation for lost habitat.
Explosives User Magazine License	Natural Resources Canada	Explosives Act	Permits storage and use of explosives.
Navigable Waters Protection Act Approval	Transport Canada	Navigable Waters Protection Act	Potential Governor in Council order for loss of Blue Lake area due to rock storage area..

8 PROJECT SCHEDULE

Centermount will be continuing an economic feasibility study that is anticipated to be completed in Q3, 2017, baseline environmental and socio-economic studies, and undergoing First Nations and public consultation. Centermount is proposing to develop the Bingay Main Coal Project into full production by the end of 2020. A preliminary schedule for the EA process is provided below:

Project Description accepted by BC EAO and CEAA	November 2012
Project Description update	October 2015
Project Description update	October 2016
Mine Plan Study Complete	November 2016
Complete baseline assessments	July 2017
Submit draft Valued Components (VC) document	March 2017
Public Open House and VC comment period	September 2017
Submit AIR document	September 2017
Submit EA application	December 2017
EA application evaluated for completeness	January 2018
EA application review	February 2018 – July 2018
EA Certificate Decision	August 2018
Complete permitting	December 2018

8.1 Construction

Planning for construction will begin in 2018, with construction beginning in 2019 once all of the required permits have been obtained. Construction, commissioning and pre-mine development is projected to take 1.5 – 2 years. Major activities during the construction period include site clearing, building construction, road development, rail line construction, conveyor construction, bridge construction, and development of onsite utilities and services.

8.2 Operations

Initial coal production is anticipated to begin in 2020 at a reduced level of output of 0.5 Mt of clean coal. Full production at the 1 Mt clean coal annual rate is anticipated to begin in 2020 and continue for the remaining 13 years of the projected mine life. In the early stages of operations, the pit and rock storage area will be developed. The rock storage area will be developed in lifts over its total area to reduce initial haul cycles. Topsoil and other material suitable for reclamation or construction uses will be stockpiled in designated areas. Coal processing, and the temporary stockpiling of raw coal prior to processing, and clean coal prior to shipping, will occur. Aquatic effects monitoring, wildlife studies, and reclamation studies will also be ongoing during the operations period in order to document Project effects and develop or improve upon mitigation measures.

8.3 Decommissioning

The timing and duration of mine closure and mine reclamation activities will be determined in more detail when a reclamation plan is submitted in advance of projected mine closure. Post-closure reclamation activities are anticipated to require two to three years, with continued monitoring ongoing beyond this time frame to ensure successful reclamation.

8.3.1 Infrastructure

All buildings and other infrastructure on the mine site, including conveyors, power lines, pipelines, will be dismantled or demolished and removed from the site. Salvageable material will be reused or recycled. All material will be disposed of according to applicable legislation and regulations. Contaminated materials, such as soils or materials containing hydrocarbons will be disposed of at a suitable hazardous waste facility. Once the buildings and infrastructure have been removed, the areas be contoured, and re-vegetated with appropriate plant species for the region.

8.3.2 Rock Storage Area

The rock storage area will be sloped and graded as required, covered with topsoil and re-vegetated using appropriate plant species. Some reclamation of the rock storage area is anticipated during the mine operation period once portions no longer receive new rock material. All rock stored in temporary storage portions will be returned to the pit. Once the rock has been removed, these sites will be graded as required, covered with topsoil, and re-vegetated using appropriate plant species.

Conceptual reclamation plans include roughening the surface and returning the area to seral stage lodgepole pine stands, similar to what currently dominates the area and which should allow natural ecosystem process to occur. This may be contingent on water quality from the rock storage area meeting set criteria.

8.3.3 Pit

A combination of re-vegetation and an end pit lake is being considered for the pit's reclamation plan. Pit reclamation will include storing of the overburden portions of the walls, and placing growth medium in the littoral regions of the in-pit lake. Slopes will be graded to allow the pit to fill from surface runoff from within the pit area, and a controlled outlet would be installed to allow overflow to leave the pit. Slopes above the control elevation will be covered in topsoil and re-vegetated with appropriate plant species. Prior to the reclamation of the pit, a water balance will be developed and water quality in the pit will be modelled to define water treatment requirements. Water sampling of the pit as it fills would also be conducted to verify model accuracy and refine water treatment requirements.

8.3.4 Roads

Roads, culverts, and bridges on the mine site will all be reclaimed appropriately. This will include re-contouring and establishing natural drainage patterns, removal of all stream crossings, and rehabilitation and re-vegetation of roads, stream banks and riparian areas. The crossing of Bingay Creek that was part of the new Elk River FSR will be left in place.

8.3.5 Rail line

The rail line will be decommissioned and reclaimed, unless there is interest in retaining it from other users in the region.

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APPENDIX 1
PHOTOGRAPHS



Photo 1.

Aerial view of property looking south, showing the Elk River, the Bingay Creek valley entering from top right, and Bingay Hill near the confluence.

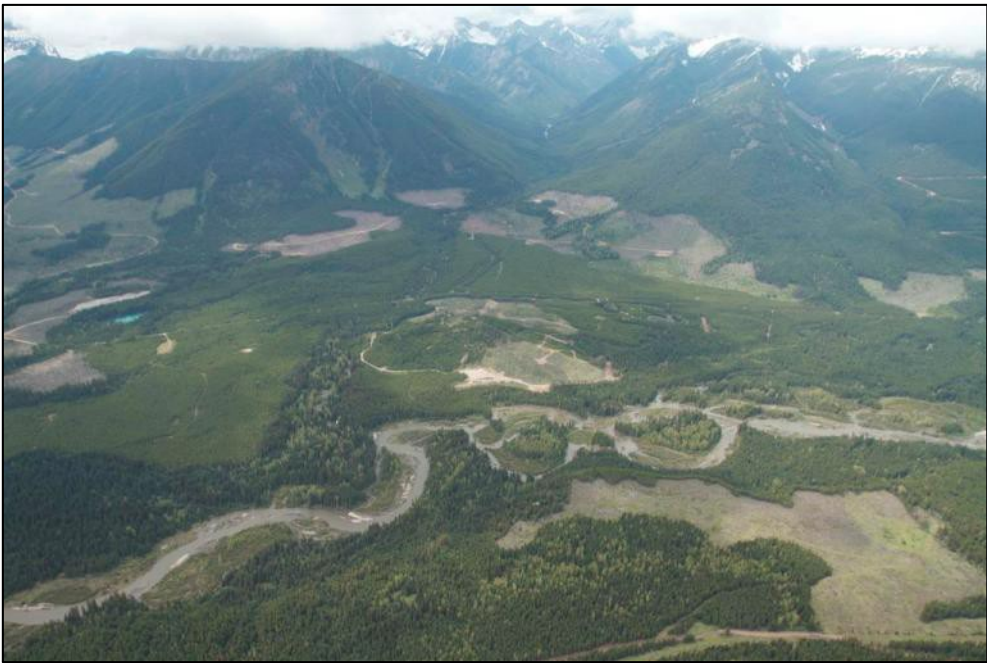


Photo 2.

Aerial view of Bingay Hill (centre) with Elk River in the foreground and the Bingay Creek valley top centre.



Photo 3.

East side of Bingay Hill from 2010 camp location.



Photo 4.

West side of Bingay Hill.



Photo 5.

Elk River adjacent to the Project.



Photo 6.

Bingay Creek at Elk River FSR crossing.



Photo 7.

Bingay Creek near confluence with Elk River.



Photo 8.

Hornickel Creek.



Photo 9.

No Name Creek 1.