PROJECT DESCRIPTION EXECUTIVE SUMMARY

Proposed Sukunka Coal Mine Project

VERSION 2

Prepared for:

Canadian Environmental Assessment Agency
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123110482

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Date:

January 10, 2013


Stantec

EXECUTIVE SUMMARY

1 General Information and Contacts

The proponent, Xstrata Coal Canada (XCC)—a controlling entity of Boreas Coal Limited (Boreas)—proposes to develop the Sukunka Coal Project (the Sukunka Project) in northeast British Columbia (BC).

The Sukunka project tenure area is owned by Boreas Coal Limited, a jointly owned subsidiary of Xstrata Coal Canada Resources Limited (XCCRL) (25 percent) and First Coal Corporation (FCC) (75 percent). Both XCCRL and FCC are 75 percent owned by XCC and 25 percent owned by JX Nippon Oil & Energy (Australia) Pty Limited.

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To the best of XCC's knowledge there have been no regional environmental studies completed in the Sukunka project area.

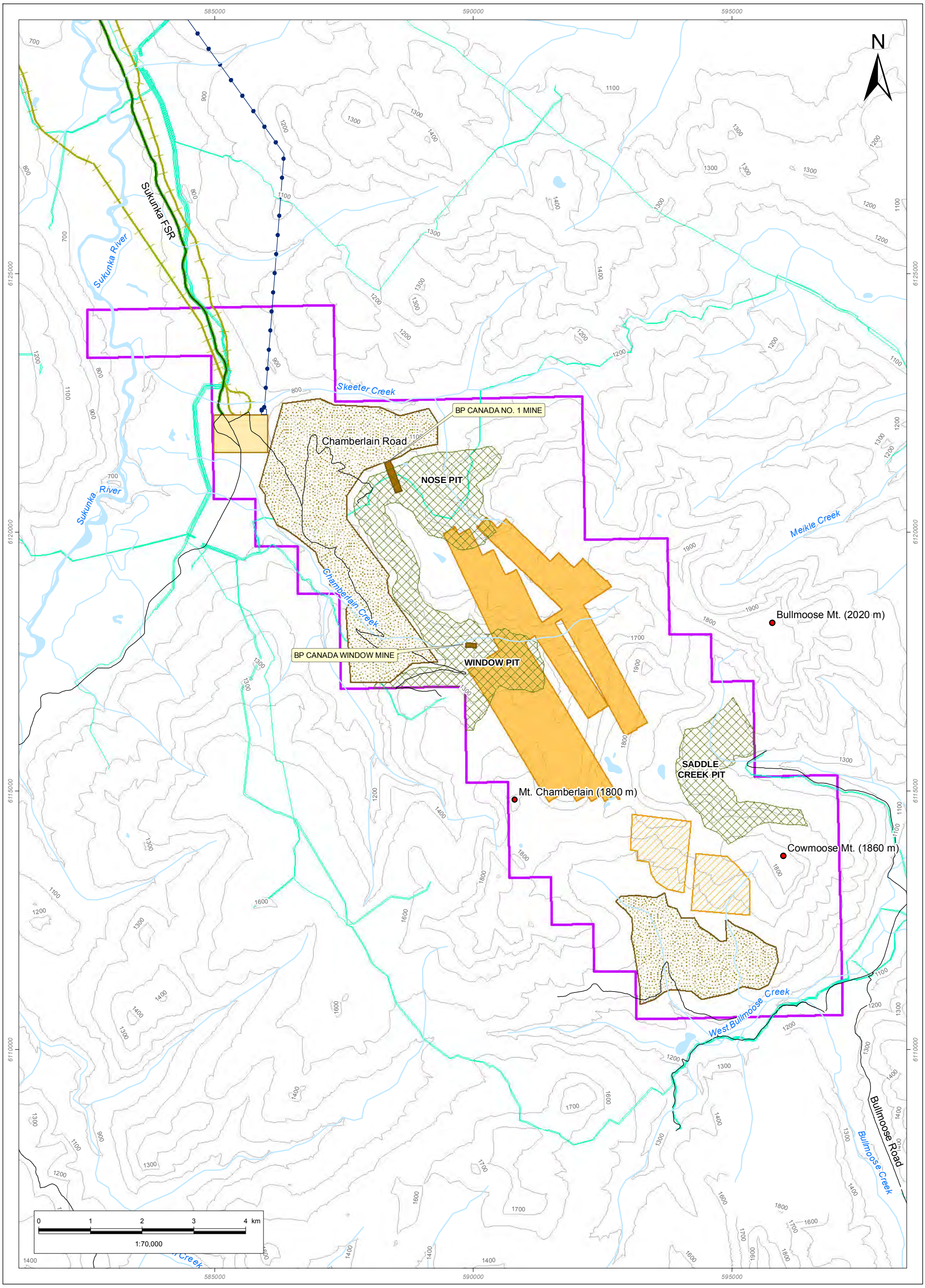
It is anticipated that the Sukunka Project will be subject to an environmental assessment under the British Columbia *Environmental Assessment Act* (BCEAA) and the Canadian *Environmental Assessment Act* (CEAA).

2 Project Overview

2.1 Project Description

XCC's Sukunka Project tenure area consists of approximately 8,050 hectares (ha) of contiguous coal licences near Chetwynd, British Columbia. Previous exploration and mining operations have been on-going in the Sukunka Project tenure area between 1969 and 1985. The companies involved were Brameda Resources, a subsidiary of Teck Corporation, Coalition Mining and BP Canada.

The Sukunka Project will be an integrated surface and underground mining operation and coal processing plant that will produce hard coking coal for export to overseas steel manufacturers. It will consist of two open pits, an underground longwall, engineered waste storage piles, a coal handling and processing plant (CHPP), tailings storage and a rail load-out facility for washed coal (see Figure E–1).



Legend/Légende

- Mountains/Montagnes
- Existing Road/Route existante
- Contour Line (100 meter interval)/ Courbe de niveau (100 mètres d'intervalle)
- Pipeline/Gazoduc
- Proposed Transmission Line/ Ligne de transport d'énergie proposée
- Creeks/ Ruisseaux
- Rivers and Lakes/Rivières et lacs
- Conceptual Open Pit Mine/ Mine à ciel ouvert - conceptuelle
- Closed Underground Mine
- Conceptrual Underground Mine/ Mine souterraine - conceptuelle
- Potential Underground Mine/ Mine souterraine potentielle
- CHPP and Mine Infrastructure Area/ CHPP et zone d'infrastructure minière
- Conceptual Waste Dump/Décharge - conceptuelle
- Sukunka Project Tenure Area/ Terres du projet Sukunka

Haulage Options/ Options de transport

- Option A - Rail Sukunka valley/ Voie ferrée Sukunka Valley
- Option B - Sukunka FSR/ Highway 29

SUKUNKA COAL MINE PROJECT/
PROJET DE MINE DE CHARBON SUKUNKA

PROJECT LAYOUT/ AMÉNAGEMENT DU PROJET

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FIGURE NO:

E-1

The Sukunka Project will initially produce 1.5 to 2.5 million tonnes per year (Mt/y) of washed coal, increasing to approximately 6 Mt/y when underground mining begins. The mine life is expected to exceed 20 years. The Sukunka Project is expected to be subject to review under the BCEAA as production capacity exceeds threshold set out in the Reviewable Projects Regulation (250,000 t/y or more of coal) . It is also anticipated that the Sukunka Project will be subject to an environmental assessment pursuant to the CEAA, as the Sukunka Project's production capacity exceeds the threshold identified in *Regulations Designating Physical* Activities Section 15(d) which states that, "The construction, operation, decommissioning and abandonment of a coal mine with a coal production capacity of 3,000 t/d or more." The Sukunka Project has an anticipated production capacity of 16,400 t/d (equal to 6 Mt/y).

The Sukunka Project requires the transportation of Run of Mine (ROM) coal to the processing plant and washed coal to a rail load-out facility where it will be transported by rail to Prince Rupert, or another suitable West Coast Canadian port, for shipment to overseas markets. Coal haulage options by road and rail have been identified during preliminary studies and a preferred system will be determined during pre-feasibility studies. Additional infrastructure will be required for the Sukunka Project and could include the following:

- Access road upgrades
- Construction and operations camp facility
- Electrical power
- Mine offices
- Equipment repair facility
- Infrastructure facilities and services, including a fuel tank farm, laboratories, potable water supply, sewage treatment and waste disposal facilities, and communication, safety and fire protection systems
- Coal processing, storage and rail load-out facilities
- Erosion and sediment control and water management structures
- Explosives manufacturing and storage facilities

2.2 Project Activities

Environmental baseline studies will include desktop, field and laboratory test work summarized in technical data reports. The study areas will include the Sukunka tenure boundary (which will contain the mining operations and infrastructure), haulage option corridors and additional "far field" monitoring sites in the region. Permits required for exploration drilling to delineate the resources and test coal samples were received in November 2012 and phased drilling will start in December 2012. It is anticipated that the submission of the Application/EIS to the BC EAO and the CEA Agency will occur in Q3 2014. Mine permitting is intended to occur concurrently with the environmental assessment process as much as possible.

Table 2.1 Project Schedule

Phase		Start Date	Completion Date
Environmental Baseline Studies		Q1. 2012	Q2. 2013
Exploration		Q4. 2012	Q4. 2013
Environmental Assessment Process	PD Submission	Q1. 2013	Q1. 2013
	EAC/EIS Submission	Q3. 2014	Q1, 2015
	EA Approval		Q1. 2015
Permitting and EMPs		Q4. 2013	Q2. 2015

Phase	Start Date	Completion Date
Construction	Q3. 2015	Q4. 2016
Operation	Q4. 2016	Q4. 2038
Reclamation	Q1. 2018	Q4. 2043
Decommissioning / Closure	Q1. 2038	Q4 2043

Activities during exploration will include:

- Site clearing and grubbing
- Ground transportation of people, equipment and supplies
- Set up of infrastructure (camp, power, water supply)
- Development of exploration trail network
- Drilling
- Drill pad and trail reclamation

Activities during construction will include:

- Training of construction workers, First Nations and Aboriginal workers (on initial hiring and ongoing)
- Safety and environmental procedures implemented
- Ground transportation of people, equipment and supplies
- Site clearing, grading, and grubbing
- Relocation of three gas wells and associated pipelines
- Construction of sediment control and water management facilities
- Set up of mine infrastructure (camp, power, water supply, office, equipment repair)
- Set up of explosives facility
- Development of haul road network and pit preparation
- Construction of CHPP
- Construction of rail loop and load-out related facilities
- Construction of coal transport facilities from the mine site to the rail load-out facilities

Activities during operations will include:

- Ground transportation of people, equipment and supplies
- Mining, handling and processing of coal
- Deposition of mine rock in rock stockpiles and in-pit placement
- Deposition of coal rejects in mine rock stockpiles
- Operation of sediment control and water management facilities
- Ongoing reclamation of disturbed areas
- Environmental monitoring, supervision and surveillance
- Establishment of the coal transportation system
- Loading of coal into rail cars (including implementation of dust control measures)
- Transport of coal by rail from the mine site to a port facility in Prince Rupert or an alternative port location

As the life of the Sukunka Project is expected to exceed 20 years, decommissioning activities will be conducted in accordance with the applicable regulations at that time.

Construction of the MIA, CHPP, power supply, transport network, and the rail load-out is scheduled to commence in mid-2015 upon receipt of the necessary mining permits. A camp will be setup on site to house the crews during construction and operations. Operations, commencing with excavating and stockpiling topsoil and overburden material for further reclamation, will start in Q4 2016. Concurrent reclamation activities of pits, waste rock dumps and ditches will occur throughout the life of mine, as is currently modelled. Decommissioning of facilities and closure activities will follow completion of the mine.

2.3 Waste Management

Mining activities will release fugitive dust and combustion emissions to the atmosphere. The air contaminant of greatest concern associated with coal mining is usually particulate matter (PM), which is defined in terms of size fractions. Dustfall has the potential to negatively impact water bodies by increasing the sediment load and also causes accumulation of dust that can be a nuisance. Greenhouse gas emissions are also produced from coal mining. Measures will be taken to minimize dust creation and improve air quality at the plant site including utilizing dust collection/suppression devices where practical.

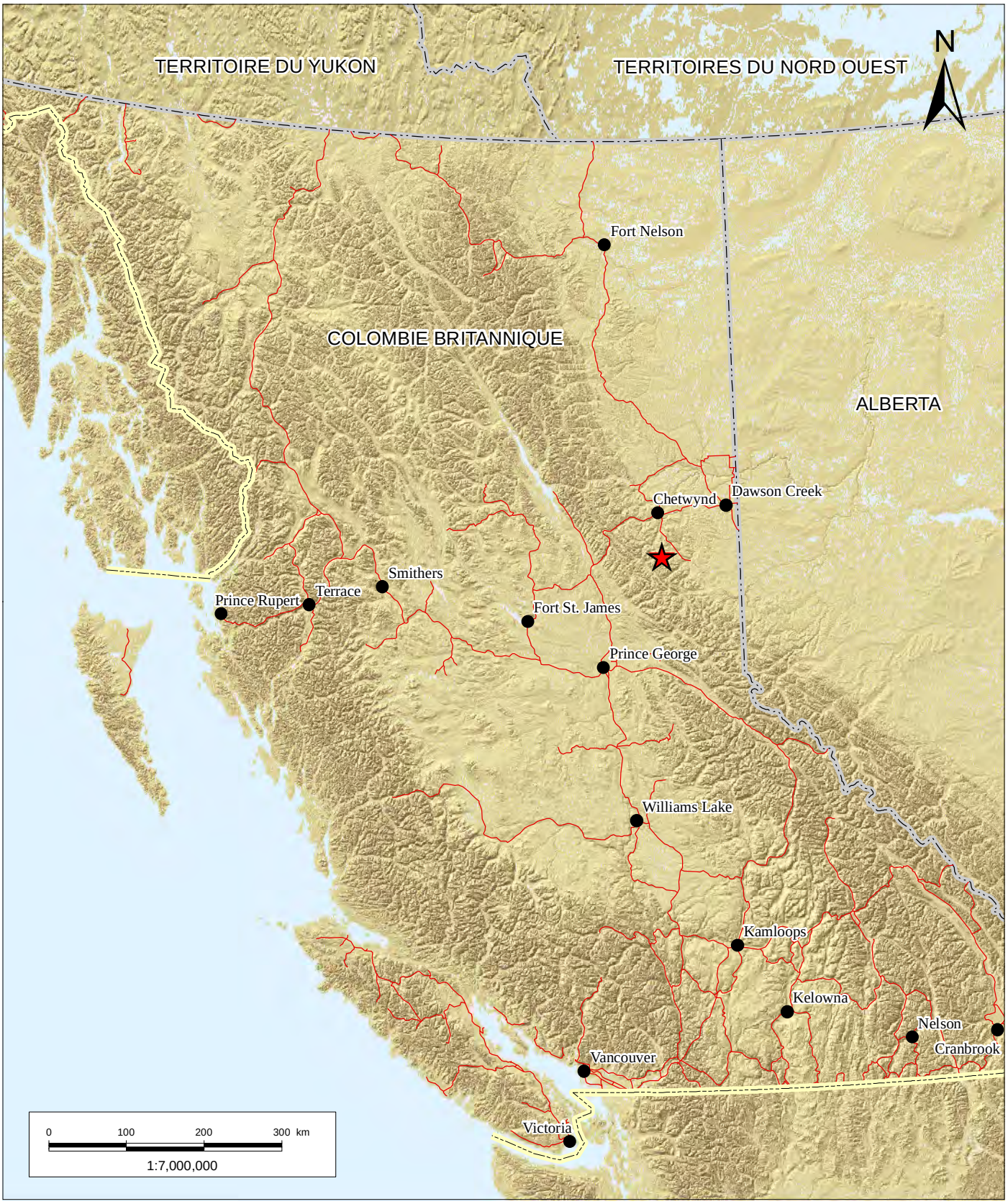
Based on the current mine plan, the majority of mine contact water (runoff from waste rock dumps and other disturbed areas and pit dewatering) generated by the operation will be recycled through the coal washing process. Limiting the disturbance area will be a key design requirement for the open cut. Clean water will be diverted around disturbance areas and mine pits. Any mine contact water will be collected in water management facilities for treatment or re-use prior to discharge in the environment.

General and recyclable waste materials will be taken off-site for disposal either at a licensed land fill or appropriate recycling centre. Fine tailings will be co-disposed with coarse reject in the waste rock dumps or transported to a dedicated tailings storage facility. All hazardous waste will be disposed of off-site at a licensed waste management facility.

3 Project Location

The Sukunka project tenure area is located southwest of the Sukunka River, and northeast of Bullmoose Creek, within Treaty No. 8 Territory and the Peace River Regional District (PRRD) (see Photo E–1). The Sukunka Project is approximately 55 km south of Chetwynd, British Columbia and approximately 40 km west of Tumbler Ridge. The approximate geographic centre is at longitude 121.569° west and latitude 55.1964° north (see Figure E–2). The mine site can be accessed by the Sukunka Forest Service Road (FSR), 26 km southeast of Chetwynd, on Highway 29 (Don Phillips Way). The Sukunka Project is located at km 33 along the Sukunka FSR.

Photo E-1 Sukunka Project Area



Legend/Légende

- Sukunka Project Tenure Area/ Site du project Sukunka
- City or Town/ Ville ou village
- Road/Route
- International Border/ Frontière internationale
- Provincial or Territorial Border/ Frontière provinciale ou territoriale

SUKUNKA COAL MINE PROJECT/
PROJET DE MINE DE CHARBON SUKUNKA

PROJECT LOCATION/ EMPLACEMENT DU PROJET

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PREPARED BY/PRÉPARÉ PAR: Stantec

PREPARED FOR/ PRÉPARÉ POUR: xstrata coal Canada

FIGURE NO:

E-2

An overview of the following features in relation to the Sukunka project area are shown on Figure E–3:

- Watercourses and waterbodies
- Transportation infrastructure
- Archaeological sites
- Nearby communities of Hudson's Hope, Chetwynd, Fort St. John, Taylor, Dawson Creek, Pouce Coupe and Tumbler Ridge
- Reserves for Halfway River First Nation, Saulteau First Nation, West Moberly First Nation, and McLeod Lake Indian Band
- Provincial parks
- Environmentally sensitive areas (wetlands)

Other than the provincial parks and wetlands identified in Figure E–3, no other environmentally sensitive areas are located in the Sukunka project tenure area.

While some waterways in the region are used for recreational and transitional fishing, no commercial fisheries exist.

Zoning in the Sukunka project tenure area is limited to mineral and oil and gas tenures. Agricultural zoning exists in the surrounding region, and nearby settlements have applicable municipal zoning designations.

The Sukunka Project is located on provincial Crown land within the Dawson Creek Land and Resource Management Plan (LRMP). Established in March 1999, the LRMP provides broad direction for the sustainable use of Crown land and resources in the area. This is the only resource management plan in the region.

The Sukunka Project will require the development of lands used by Aboriginal and First Nation communities. Traditional land use will be incorporated into the assessment of effects of the Sukunka Project on biophysical components and on treaty and aboriginal rights and interests.

N

Fort St John
Taylor
Hudson's Hope
Chetwynd
Dawson Creek
Pouce Coupe
Tumbler Ridge

Charlie Lake
Cecil Lake
Williston Lake
Moberly Lake
Butler Ridge Park
Taylor Landing Park
Beatton River Park
Kiskatinaw Park
Moberly Lake Park
Klin-Se-Za Park
East Pine Park
Pine River Breaks Park
Gwillim Lake Park
Gwillim Lake
Sukunka Falls Park
Pine Lemoray Park
Pine Lemoray Park Addition
Hole In The Wall Park
Bearhole Lake Park
Monkman Park
Wapiti Lake Park
Arctic Pacific Lakes Park

29
97
52

British Columbia
Alberta

0 10 20 30 40 km
1:700,000

550000 575000 600000 625000 650000 675000
6250000 6225000 6200000 6175000 6150000 6125000 6100000 6075000 6050000

Legend/Légende

- Airport/ Aéroport
- Archaeological Sites/ Sites archéologiques
- City or Town/ Ville ou village
- Existing Road/Route existante
- Railway/Chemin de fer
- Provincial Border/ Frontière provinciale
- Pipeline/Gazoduc
- Rivers and Lakes/Rivières et lacs
- Provincial Park/Parcs provinciaux
- Wetland/Terres humides (CANVEC & TRIM)
- First Nations Reserves/ Réserves des Premières Nations
- Sukunka Project Tenure Area/ Site du project Sukunka
- Proposed Transmission Line/ Ligne de transport d'énergie proposée
- Existing Transmission Line/ Ligne de transport existante

Haulage Options/ Options de transport

- Option A - Rail Sukunka valley/ Voie ferrée Sukunka Valley
- Option B - Sukunka FSR/ Highway 29

SUKUNKA COAL MINE PROJECT/
PROJET DE MINE DE CHARBON SUKUNKA

PROJECT REGION/ LA RÉGION DU PROJET

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FIGURE NO:

E - 3

4 Federal Involvement

No federal financial support for the Sukunka Project is proposed or anticipated, and no federal lands will be used for carrying out the Sukunka Project.

The following federal permitting requirements for the Sukunka Project are likely be required:

- Fisheries and Oceans Canada
  - *Fisheries Act* Authorization
- Transport Canada
  - *Navigable Waters Protection Act* Approval
- Natural Resources Canada
  - Explosives User Magazine License
  - Mechanical AN/FO License
  - Factory License
- Industry Canada
  - Radio License
- Canadian Transportation Agency
  - Railway Construction Permit

5 Environmental Effects

Interactions between the Sukunka Project and the environment are expected to occur as a result of construction, operations and decommissioning activities. There is potential that the Sukunka Project may affect water quality and aquatic biota, fish and fish habitat, terrain, soils, vegetation, wildlife, air quality, snow, and noise levels. These potential effects and project interactions will be assessed through the environmental assessment process.

5.1 Environmental Setting

Water

The Sukunka project area encompasses the Chamberlain, Skeeter and Bullmoose creek watersheds. Chamberlain and Skeeter creeks both discharge into the Sukunka River and Bullmoose Creek discharges into the Wolverine River. Both the Wolverine and Sukunka rivers eventually discharge into the Pine River.

Chamberlain and Skeeter creeks both flow in a northwesterly direction and Bullmoose Creek flows in a northeasterly direction. The mainstem areas vary with seasonal discharge and are typically about 10 to 20 m wide and 0.3 to 2 m deep. All three creeks are steeper in their headwaters, include larger proportions of cobble and boulder material, and are typified by step-pool, rapid and cascade morphologies. The channel gradients lessen as the creeks flow into the larger and flatter primary mountain valleys.

Surveys to establish baseline characterisation of surface water and groundwater for the Sukunka Project are currently being performed.

Fish and Fish Habitat

Chamberlain, Skeeter and Bullmoose creeks are classified as fish-bearing streams with Chamberlain and Bullmoose creeks supporting trout species and all three creeks supporting other fish species. Fish presence in the main creek tributaries will be determined during baseline studies.

The fish species reported thus far in the Sukunka project area are:

- Arctic grayling (*Thymallus arcticus*)
- Bull trout (*Salvelinus confluentus*)
- Rainbow trout (*Oncorhynchus mykiss*)
- Longnose sucker (*Catostomus catostomus*)
- Mountain whitefish (*Prosopium williamsoni*)
- Dolly varden (*Salvelinus malma*)
- Northern pike (*Esox lucius*)
- Slimy sculpin (*Cottus cognatus*)

A series of falls and cascades have been reported on Skeeter Creek approximately 4 km upstream of the confluence with the Sukunka River. The falls and cascades may define the upper limit of fish presence in Skeeter Creek. In Bullmoose Creek, a resident bull trout population has been reported upstream of impassable falls. The exact location of these reported barriers is still being investigated and will be further evaluated in the environmental assessment.

Wildlife

Ungulates such as moose (*Alces alces*) and mule deer (*Odocoileus hemionus*) are common in the region with smaller populations of Rocky Mountain elk (*Cervus canadensis*) and caribou (*Rangifer tarandus*), which are limited by habitat types and availability. Mountain goats (*Oreamnos americanus*) may occur in nearby steep alpine areas, although not within the Sukunka project area. The coniferous forests typical of the study area provide habitat for furbearers such as American marten (*Martes americana*) and fisher (*Martes pennanti*) as well as large carnivores including lynx (*Lynx Canadensis*), cougar (*Puma concolor*), grey wolf (*Canis lupus*), grizzly (*Ursus arctos*) and black bears (*Ursus americanus*).

A variety of bird species also commonly utilize the mature conifer forests for breeding and nesting, including Golden-crowned Kinglet (*Regulus satrapa*), Mountain Chickadee (*Poecile gambeli*), Pine Siskin (*Spinus pinus*), Great Gray Owl (*Strix nebulosa*) and Red-tailed Hawk (*Buteo jamaicensis*).

A number of species listed under the federal *Species at Risk Act* (SARA) are potentially present in the region including Woodland caribou, western toad and a number of breeding birds. Swainson's Hawk (*Buteo swainsoni*), northern long-eared myotis (*Myotis septentrionalis*), wolverine (*Gulo gulo*), fisher and grizzly bear are all listed provincially as either red or blue. Northern Goshawk (*Accipiter gentilis*), although not rare, is a regionally important bird species.

Vegetation and Ecosystems

The Sukunka Project lies within the Hart Foothills Ecosection of the Central Canadian Rocky Mountains Ecoregion of the Sub-Boreal Interior Ecoprovince. This ecosection consists of low, rounded mountains and wide valleys on the east side of the Hart Ranges of the Rocky Mountains and is located in a rain shadow of easterly flowing Pacific air coming over the main Hart Ranges. Biogeoclimatic units, geographic areas influenced by similar regional climate, include:

- BWBS ecosystem units/plant communities—24,368 ha (75 percent of the Sukunka project area)

- ESSF ecosystem units/plant communities—7,013 ha (21 percent)
- BAFA ecosystem units/plant communities occupy a small area—911 ha (3 percent)
- SBS ecosystem units/plant communities cover a very small area—335 ha (1 percent)

The dominant vegetation within the Sukunka project area consists of boreal black and white spruce forests in lowlands and lower slopes with subalpine fir and Engelmann spruce forest on mid to upper slopes. Wetlands within the Sukunka project area are estimated to cover approximately 500 ha and are concentrated in the flatter parts of river valleys and large creeks along the Sukunka River valley.

Pointed broom sedge (*Carex scoparia*), a BC blue-listed plant species, is recorded in the BC CDC database as occurring in two location in the Sukunka project area. There is potential for more than 40 provincially listed red- and blue-listed plant species to occur in the Sukunka project area. Vegetation species will be determined during baseline studies.

Soils and Terrain

The Sukunka project area is dominated by the Sukunka River valley and its associated terrain in the north, as well as Bullmoose Mountain and its classical alpine glaciation features in the south. Elevations range from 750 m within the broad 2-km wide Sukunka valley to 2,020 m atop Bullmoose Mountain. The Sukunka River valley is characterized by fluvial and alluvial fan deposits from a number of unnamed tributary streams of the Sukunka River. Bullmoose Mountain is dominated by bedrock-controlled ridges and plateaus. A very small area of poorly drained topography has been identified, associated with the Sukunka valley floor.

Air Quality, Snow, Climate and Noise

There is intensive forestry and oil and gas activity in the area of the Sukunka Project; however, there are no known, currently operating, large sources of emissions within 10 km of the Sukunka Project. Therefore baseline air quality is expected to be at or near background levels. In addition, there are no known residences within 10 km of the proposed mine site.

The climate of the region is classified as northern temperate. Daily mean temperatures range from a maximum of 7 degrees Celsius (°C) to a minimum of minus 6°C; extreme temperatures range from 32°C to minus 48°C. The climate in the Sukunka project area is classified as continental, with cool winters and warm summers. The climate is dictated by a variety of factors such as mountainous topography (causing orographic uplift) and air masses (i.e., the moist, unstable and mild maritime Pacific air mass; and the dry, stable and cold continental arctic air mass).

The Sukunka project area is mountainous, and primarily undeveloped with scattered timber harvesting and natural gas development. Environmental noise levels are currently expected to reflect natural sources of sound such as wildlife and wind generated noise. The region would have experienced intermittent industrial noise from timber harvesting, gas well drilling, and mining activity in the past.

5.2 Environmental Change

Fish and Fish Habitat

The potential effects on fish, fish habitat and aquatic species include effluent ingress and alterations in flow and habitat. Alterations to habitat may include harmful alteration, disruption, or destruction (HADD) or permanent alteration and destruction (PAD) of habitat through these interactions. Activities creating a HADD or PAD will require a *Fisheries Act* Authorization.

Potential effects include:

- Entry of sediment-laden water to fish habitat increasing the turbidity and causing deterioration of habitat quality
- Direct effects on the existing watercourses as a result of construction of various mine components (open pit, processing plan, etc.) may affect the available habitat quantity
- Alteration of natural discharge from watercourses or groundwater flow reductions in the project area may cause a decrease in the quantity of available fish habitat
- Potential effects on existing fish habitat (i.e., direct effects on watercourses and effects on habitat quantity) may reduce productive capacity
- Fish habitat quality and quantity may be affected by construction of stream crossings

Aquatic Species

Deviations from background levels of metals, turbidity and nutrients may occur in Chamberlain, Skeeter and Bullmoose creeks and possibly extend to Sukunka River and Bullmoose Creek. Similarly, increases in metal concentrations and shifts in benthic communities may also occur in these watersheds. These potential changes could have effects on aquatic species.

Selenium has been identified as a contaminant of potential concern in several coal mining operations in northeast British Columbia, particularly in surface and groundwater, due to release from seleniferous waste rock. Therefore, this element is a regional element of concern for the receiving aquatic environments and specific analysis will be conducted to assess the potential effects on aquatic species.

Migratory Birds

Potential effects on migratory birds are the same as potential effects for all wildlife in the Sukunka project region. The potential effects of the proposed Sukunka Project on wildlife, including migratory birds, could include changes in:

- Habitat availability due to vegetation clearing for the Sukunka Project and sensory disturbance from project activities during construction and operations
- Wildlife population dynamics due to alteration of predator prey relationships and cumulative landscape changes
- Wildlife mortality risk associated with vegetation clearing and potential interactions with traffic associated with transportation routes
- Wildlife movement patterns
- Wildlife health

5.3 Environmental Changes on Federal and Other Lands

As a result of carrying out the Sukunka Project, no environmental effects are anticipated on federal lands, in a province other than the province in which the Sukunka Project is proposed to be carried out, or outside of Canada.

5.4 Effects of Environmental Changes on Aboriginal Peoples

Effects of environmental changes on First Nations and Aboriginal groups in the project region could include human health effects, socio-economic effects and effects on heritage resources. First Nations and Aboriginal groups could also be affected by changes in wildlife and vegetation among species important to them. Potential effects could include:

- Human Health

- Degradation of ambient air quality leading to potential inhalation-based health effects to local people
- Deposition of contaminant-laden dust into the terrestrial environment leading to potential uptake by humans through consumption of local plants and animals or incidental soil ingestion
- Discharge of mine-affected waters, effluents and non-intentional release of such waters through seepage and leakage into the surrounding groundwater and surface waters, leading to potential health effects to humans consuming local waters
- Discharge of mine-affected waters, effluents and non-intentional release of such waters through seepage and leakage into the surrounding groundwater and surface waters, leading to potential health effects to humans consuming local country foods connected trophically to aquatic systems

- Socio-economics
  - Economic benefits for First Nations and aboriginal communities, including employment and contracting opportunities
  - Sensory disturbances such as noise affecting rural lifestyle values
  - Potential effects from increased traffic along Highway 97 and local roads
  - Potential effects on use of traditional territories
  - Potential effects on hunting, trapping and gathering
  - Potential effects on tourism, business development, and recreational opportunities
  - Potential effects on visual landscape values
  - Potential cumulative effects
- Heritage Resources
  - Damage to or destruction of terrestrial archaeological or heritage sites as a result of ground disturbing construction activities (grading, trenching, excavation, terraforming, blasting, vehicle/heavy machinery traffic)
  - Destruction of culturally modified tree (CMT) sites as a result of clearing and/or grubbing during construction activities
- Wildlife
  - Change in habitat availability due to vegetation clearing for the Sukunka Project and sensory disturbance from project activities during construction and operations
  - Change in wildlife population dynamics due to alteration of predator prey relationships and cumulative landscape changes
  - Change in wildlife mortality risk associated with vegetation clearing and potential interactions with traffic associated with transportation routes
  - Change in wildlife movement patterns
  - Change in wildlife health
- Vegetation
  - Loss of vegetation due to clearing and grubbing associated with Sukunka project activities
  - Changes in abiotic conditions necessary for vegetation development due to the direct effects of ground disturbance and the indirect effects of changes to hydrological conditions (e.g., drainage patterns, water quality and quantity)

- Changes in the structure, composition or function of vegetation communities due to the direct effects of clearing and a variety of indirect effects occurring in edge areas adjacent to project disturbance and areas of activity (e.g., vegetation management, dust deposition, wind throw, introduction of invasive species)

6 Engagement and Consultation with First Nations and Aboriginal Groups

XCC has implemented a phased approach to engagement with First Nations and aboriginal groups.

Phase 1 has entailed discussions with chief and council of West Moberly First Nations, Saulteau First Nations, McLeod Lake Indian Band, Doig River First Nation, and Halfway River First Nation, covering issues such as business opportunities, training and employment, consultation protocols, and capacity funding. Members of each of these groups have been and are invited to continue to participate in the environmental baseline collection being conducted for the Sukunka Project. The proposed Sukunka Project is also within the claimed territories of aboriginal groups at Kelly Lake; XCC plans to engage with these groups once the environmental assessment process is initiated.

Phase 2 will involve presentation of the refined mine concepts and plans, in order to incorporate the input of First Nations and aboriginal groups into the mine design.

Phase 3 will build on the two initial phases, and enable further incorporation of First Nations' and aboriginal groups' traditional knowledge and will enable continued dialogue during feasibility studies.

Phase 4 will involve continued engagement and consultation activities during the environmental assessment review and permitting processes.

The key comments and concerns expressed by Aboriginal and First Nation communities are:

- Employment and training opportunities
- Support for First Nation communities
- Financial support for resources such as land officers
- Impacts on caribou habitat and other wildlife
- Water management

Consultation with Aboriginal and First Nation communities is ongoing. XCC will continue to work with these groups and respond to their concerns.

6.1 Traditional Land Use

Traditional land use (TLU) studies specific to the Sukunka project area planned to be collected as part of the baseline study. TLU information that will be collected will inform the assessment with regard to the following:

- Traditional activities that relate to treaty rights and aboriginal rights, such as hunting, fishing, and trapping
- Locations of harvestable natural resources
- Animal presence, movement patterns and habitat use
- Locations of human receptors and their spatial relationship to the Sukunka Project
- Human habitation sites, and sites of archaeological and heritage significance
- Travel and movement patterns
- Ceremonial and spiritual values
- Activities of First Nations and other Aboriginal groups within the Sukunka Project vicinity and surrounding areas

7 Consultation with the Public and Other Parties

Public consultation for the Sukunka Project will also take a four-phased approach. The Sukunka Project is currently in Phase 3.

Phase 1 involved identifying parties with interests in the project region, and increasing each other's awareness of activities in the area. Initial contact has been made with some land owners, other tenure holders and land users in the area with regard to land access for environmental surveys and types and areas of land use. XCC has also been in discussion with a number of businesses operating in the region regarding information and infrastructure sharing.

Phase 2 made information about the refined mine concept plan available.

Phase 3 will involve consultation with municipal governments regarding the mine plan and potential environmental effects of the Sukunka Project.

During Phase 4, the public will have opportunities to provide input on the Sukunka Project through open houses and online resources during the public comment periods of the environmental assessment review and permitting processes. If enough stakeholders are interested, a Community Reference Group may be formed in this phase.

To date during baseline studies no key concerns have been expressed by stakeholders.

XCC will need to apply for permits, licenses, approvals and authorizations to construct and operate the proposed Sukunka Project. Consultation with provincial agencies in Phase 3 will be to establish how the BCEAA applies to the Sukunka Project and to identify the required permits and approvals before requesting concurrent review of permit applications in Phase 4. Similarly, consultation with federal departments in Phase 3 will be to introduce the proposed Sukunka Project to identify required federal approvals and determine the level of review appropriate for the Sukunka Project. XCC will also consult with the District of Chetwynd and the PRRD to exchange information about the Sukunka Project and its potential effects.