

MOUNT KLAPPAN COAL PROJECT
Draft Terms of Reference
for FORTUNE COAL LIMITED'S
Application
for an Environmental Assessment Certificate
pursuant to
the *Environmental Assessment Act*

Prepared by Fortune Coal Limited

November, 2006

Background to Terms of Reference

Fortune Coal Limited (Proponent) is proposing to develop the Mount Klappan Coal Project (Project) in northwestern British Columbia. The Project is located approximately 100 kilometres south of Iskut, 150 kilometres northeast of Stewart and 1,050 kilometres northwest of Vancouver (See Figure 1 for location of the Project).

The Project is a 1.5 million tonne, open-pit anthracite coal mine with coal being crushed and washed at the mine site, loaded on to trucks and hauled to the Port of Stewart along a new proposed access route. The new route would be from the Project site and travel in a southwest direction to the Hodder Creek Forest Service Road, connecting to Highway 37 near Bell II. The new route would reduce the round trip from the Project site to the Port by approximately 314 km.

Presently, access to the property is by road along a BC Rail right-of-way and the Ealue Lake Road off Highway 37. The Proponent is proposing to upgrade the existing access and use this route during construction and to move employees, equipment and supplies during operation. Figure 2 identifies the existing access to the Project and new proposed access route.

The Proponent estimates the Project's capital cost is \$275 million Canadian, which includes the costs of upgrading the existing access and constructing new road access. This figure will be refined as the Project is further defined and will likely change prior to the submission of the Application for an environmental assessment certificate (Application).

The Project is located on provincial Crown land and falls within the area covered by the Cassiar Iskut-Stikine Land and Resource Management Plan, approved by the provincial government in 2000. The mine site and proposed access road lie within the traditional territory claimed by the Tahltan Nation.

The mine site is within the unincorporated Stikine Region. A portion of the proposed access route falls within the Regional District of Kitimat-Stikine, within the northern boundary of the Nass Area as set out in the Nisga'a Final Agreement, and the northern edge of the claimed traditional territory of the Gitksan Hereditary Chiefs, including the Skii km Lax Ha.

The Project is being reviewed under British Columbia's *Environmental Assessment Act, S.B.C. 2002, c.43* (BCEAA) and the *Canadian Environmental Assessment Act, SC 1992, c.37* (CEAA). The Proponent entered BC's environmental assessment (EA) process on October 8, 2004 when the Environmental Assessment Office (EAO) issued an order pursuant to section 10 of BCEAA indicating the Project requires an environmental assessment certificate before it can proceed. Since entering the environmental assessment (EA) process, the Proponent has been undertaking engineering studies to further define the Project and environmental, socio-economic, archaeological and traditional use studies, to characterize the baseline conditions in the Project area and along the proposed access route.

The Canada/British Columbia Agreement on Environmental Assessment Cooperation, signed in March 2004, provides for harmonized reviews when an EA is required under both Acts. The Agreement also provides for the EAO to lead harmonized reviews of proposed projects.

This document constitutes the terms of reference (TOR) for Fortune's Application. The TOR identifies the information that must be provided, and the issues that must be addressed, by the Proponent in the Application. Federal departments have not yet determined the scope of the assessment under CEAA. Appendix A identifies federal information requirements for both screening and comprehensive study reviews.

EAO has initiated a 30-day public comment period on the TOR. EAO will consider comments received during the public comment period before issuing the final TOR.

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Scope of the Project

The scope of the Project and the process and procedures for undertaking the EA, are outlined in an order issued pursuant to section 11 of BCEAA by the EAO on October 9, 2006. The scope of the Project includes the following components and activities associated with the construction, operation/maintenance, and closure (decommissioning and reclamation) of these components:

- 1.5 million tonne open pit mine;
- coal wash plant and loadout facility;
- tailings storage facility and tailings management, including dewatering and containment;
- mine haul roads on the mineral property;
- coal and marginal coal storage;
- waste rock dumps, borrow pits, overburden and topsoil storage;
- erosion and sediment control and water management structures;
- reagent handling and storage;
- process water management;
- power plant consisting of diesel generators;
- construction and operations camp;
- infrastructure facilities and services, including a fuel tank farm, and support facilities such as laboratories, safety and environmental control, potable water and sewage treatment facilities, solid waste management, communication and fire protection;
- explosives manufacturing and storage facilities;
- upgrade surface of the Little Klappan airfield;
- new access road from the Project site to Highway 37 where the Hodder Creek Forest Service Road connects to Highway 37;
- upgrade of the Ealue Lake Road and BC Rail right-of-way to the Little Klappan airfield; and
- transportation of coal by truck from Bell II along Highway 37 to the Port of Stewart.

If the Proponent amends the description of the Project during the EA review, it may be necessary to amend the scope of the Project identified in the section 11 order to reflect any changes in the Project.

Preface

This section will indicate in general terms why the Application is being prepared and how it has been developed. It will indicate that the Project is subject to review under BCEAA and the CEAA. It will identify the parties involved in developing the Application.

Executive Summary

The Application will include an Executive Summary that provides an overview of the EA. It will briefly describe:

1. the Project's on-site and off-site facilities and associated activities;
2. the Proponent's information distribution and consultation activities involving First Nations, government agencies and the public;
3. the issues raised during consultations and solutions suggested during these consultations;
4. key effect issues and recommended impact mitigation and management measures; and
5. the Proponent's conclusions from the EA.

Abbreviations

A list of abbreviations will be included in the Application. The list provided below refers to abbreviations used in the TOR.

Application	Application for an environmental assessment certificate under the British Columbia <i>Environmental Assessment Act</i>
BCEAA	British Columbia <i>Environmental Assessment Act</i>
CEE	cumulative environmental effects
CEAA	<i>Canadian Environmental Assessment Act</i>
CEA Agency	Canadian Environmental Assessment Agency
CIS-LRMP	Cassiar Iskut-Stikine Land and Resource Management Plan
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
EA	environmental assessment
EAO	British Columbia's Environmental Assessment Office
EMP	Environmental Management Plan
EMS	Environmental Management System
ML/ARD	metal leaching/acid rock drainage
PM	particulate matter (e.g. PM ₁₀ or PM _{2.5} ; the number referring to the particle size in microns)
Project	Mount Klappan Coal Project
Proponent	Fortune Coal Limited
Fortune	Fortune Coal Limited
RA	Responsible Authority
SARA	Canada <i>Species at Risk Act</i>
TOR	Terms of Reference
VEC	Valued Environmental Component (includes both "human" and "natural" environment)
VOC	Volatile Organic Compounds

Glossary of Terms

The Application will include a glossary of terms.

Section 1 • Introduction

1.1 Project Overview

The Application will describe the Project and its purpose, location and setting, including the regional context, site-specific. The Application will include maps at appropriate scales to illustrate the regional setting and the Project's location.

The Application will identify the on-site and off-site project components, including the activities and phases associated with the construction, operation, reclamation and decommissioning of the Project, and access to the Project site. Site plans, sketches and photographs will be used as necessary to indicate project components, site features and activities.

The Application will describe the socio-economic benefits of the Project, including an estimate of direct labour force requirements during construction (in person years) and operation (total permanent, temporary, full-time, part-time jobs per year at full-scale operation), predicted benefits and estimated capital cost of the Project.

1.2 The Proponent

The Application will describe the Proponent, including information on the history of the Proponent and contact information (i.e., name, address, phone, fax and email). The Application will provide information on the nature of the Proponent's management structure and organizational accountability for:

- the design, construction, operation, modification and decommissioning of the Project;
- the implementation of mitigation measures and monitoring; and
- the management of potential adverse effects.

1.3 Project History

The Application will provide a summary of mineral exploration activity on and around the Mount Klappan coal property since its initial discovery.

1.4 Ownership and Tenure

The Application will describe the ownership status and development rights held for the Mount Klappan coal property, including a listing of existing coal tenures and their status, and other coal tenures, if any, held in the vicinity of the Project.

1.5 Regulatory Framework

The Application will summarize relevant provincial and federal regulatory and policy requirements governing the Project, identify the local government and any applicable local government Official Community Plan, applicable local government planning body and zoning requirements. The Application will briefly explain federal and provincial EA processes, including any legal orders issued pursuant to the BCEAA relating to the review of the Project and describe the role of the Application in the process. The Application will outline the permits, licences, approvals and authorizations required for Project, and which of these approvals, if any, the Proponent will apply for concurrent review.

Relevant statutes may include most (if not all) of the following, and others may also apply:

- *Fisheries Act* (Canada)
- *Migratory Birds Convention Act* (Canada)
- *Species at Risk Act* (Canada)
- *Navigable Waters Protection Act* (Canada)
- *Canadian Environmental Protection Act* (Canada)
- *Explosives Act* (Canada)
- *Transportation of Dangerous Goods Act* (Canada)
- *Mines Act* (BC)
- *Coal Act* (BC)
- *Environmental Management Act* (BC)
- *Water Act* (BC)
- *Wildlife Act* (BC)
- *Land Act* (BC)
- *Forest Act* (BC)
- *Forest and Range Practices Act* (BC)
- *Highway Act* (BC)
- *Health Act* (BC)
- *Heritage Conservation Act* (BC)

1.6 Land Use Context

The Application will identify land uses in the Project area, including other resource development, fishing, recreational use, and registered hunting, trapping and guiding and how project activities will interact with the objectives of the CIS-LRMP. The Application will include information on traditional uses by First Nations, such as hunting and food gathering, and traditional sites where this information is readily available.

The Application will describe third party tenures within the Project area and First Nation land claims covering the Project area.

Section 2 • Information, Distribution and Consultation

Involvement of interested parties (First Nations, government agencies, stakeholders and other members of the public) is a central objective of the EA process. Public consultation measures must comply with BC's Public Consultation Policy Regulation, BC Reg 373/2002 and with requirements set out in the section 11 order issued pursuant to the BCEAA.

2.1 First Nations Consultation

The Application will describe consultations undertaken with the First Nations that are likely to be affected by the Project. The Application will describe the objectives of First Nations' consultations, the methods used, issues raised during these consultations and the ways in which the Proponent has addressed the issues.

2.2 Government Agency and Local Government Consultation

The Application will describe consultations undertaken with provincial and federal government agencies, the Regional District of Kitimat-Stikine and other local governments, the Dease Lake Advisory Planning Commission, and other relevant community groups. The Application will describe the objectives of these consultations, the methods used, issues raised during these consultation and the ways in which Fortune has addressed the issues.

2.3 Stakeholder Consultation

The Application will describe consultations undertaken with stakeholders (e.g., guide outfitters, trappers, forestry, mining and outdoor recreational interests and other tenure holders). The Application will describe the objectives of these consultations, the methods used, issues raised during these consultations and the ways in which Fortune has addressed the issues.

2.4 Other Public Consultation

The Application will describe public consultation undertaken by the Proponent prior to submitting the Application. This description will identify the objectives of the consultation, outline the methods used, and summarize the issues raised by the public, and the ways in which Fortune has addressed the issues.

2.5 Proposed Consultation Activities

The Application will describe consultation activities proposed with government agencies, local governments, First Nations, stakeholders and the public during the review of the Application. The Application will also propose process(es) for resolving issues during the Application review.

Section 3 • Project Description

The Application will describe the location of the Project and all on-site project components and associated on-site and off-site infrastructure to be developed for the Project. The Application will include maps at appropriate scales that indicate both the regional setting and the site layout of project components and activities. The Application will describe phases of the Project as it is planned through construction, operations and decommissioning. The description will include a timelines for all phases of the Project. The Environmental Management Program (EMP) will be described in a separate section of the Application (Section 7.2).

3.1 Geology

The Application will provide a description of the regional geology and property geology, including a description of the deposit geology.

3.2 Coal Resources

The Application will provide a detailed accounting of the defined coal resource including measured, indicated and inferred categories for each zone and the property as a whole. Information provided will include a review of geostatistical evaluations of the drill hole database and block models. Representative geologic sections will be included for areas that will be alienated from open pit mining by mine infrastructure, rock dumps, and plant site. Coal properties and their variability in areas to be mined will also be provided, as well as evaluation of seams that will be disturbed but not processed and planned proportions of coal seams mined that will end up as waste rock. Accounting of estimates for the range of run-of-mine feed properties to the coal preparation plant that affects mining dilution and/or concentration and size of degradation in coal handling from the mine to the plant will be provided.

3.3 Mine Development

The Application will identify major mine components or structures that are likely to have a high failure consequence during operation and closure and where monitoring efforts will be required for the purposes of risk analysis. Mine development components include:

- i) open pit development plan including location, design and production scheduling;
- ii) waste rock development plan which will identify the location, preliminary designs, preliminary data on geotechnical properties and foundation conditions, seepage and surface water control;
- iii) identification and management of ML/ARD rock;
- iv) identification and management of selenium, including potential leaching from overburden, coal seam partings, footwall material, coal rejects and tailings;
- v) marginal coal stockpile;
- vi) overburden salvage and storage;
- vii) topsoil salvage and storage for reclamation;
- viii) mine dewatering, treatment and storage;
- ix) washing and conveying coal;
- x) mine roads;
- xi) erosion and sediment control plan, collection and treatment;

- xii) explosives factory and magazines;
- xiii) heavy equipment fuel and lubrication facility;
- xiv) waste dump and de-watered tailings storage facility plan which will identify the location, preliminary designs, preliminary data on geotechnical properties and foundation conditions, seepage and surface water control, and impacts of waste material on geochemical and drainage characteristics of the various waste rock dumps (where applicable, as per BC Mine Waste Rock Pile Research Committee, Interim Guidelines);
- xv) hazardous material manufacturing, storage and/or distribution;
- xvi) water collection, storage and recycling (where applicable, as per Canadian Dam Association, Dam Safety Guidelines);
- xvii) borrow sources for dam construction (water reservoir location to be finalized in third quarter 2006 in consultation with relevant agencies); and
- xviii) construction materials for roads and impoundments.

3.3.1 Coal Wash Plant

The Application will describe the coal wash plant, including the following components:

- i) coal storage;
- ii) dewatered tailings characterization;
- iii) washing;
- iv) heavy media separation/cyclone circuit;
- v) dewatering/drying;
- vi) reagent handling and storage;
- vii) coal handling, storage and load-out facility;
- viii) dewatered tailing storage facility;
- ix) process water storage reservoir, intakes, pipeline and distribution;
- x) coal wash plant effluent characterization;
- xi) water treatment options;
- xii) plant run off and sedimentation control facilities; and
- xiii) coal quality assay laboratories.

3.3.2 Maintenance, Administrative and On-Site Support Facilities

The Application will describe the maintenance, administrative and on-site support facilities which include the following:

- i) heavy mobile equipment shops;
- ii) mill maintenance shop;
- iii) electrical and instrumentation shop;
- iv) carpenter, paint and sheet metal shops;
- v) tire shops; and

- vi) small vehicle maintenance shop.

Administration Facilities:

- i) main administration facility;
- ii) safety, first aid and training facility;
- iii) fire prevention system and control facility;
- iv) geology and engineering facility; and
- v) environmental and community relations facility.

On-site Support Facilities:

- i) airstrip upgrade;
- ii) permanent camp, kitchen and recreation facilities;
- iii) sewage treatment plant;
- iv) potable water treatment;
- v) electrical distribution centre;
- vi) power plant (diesel genset at max. 4 – 5 MW);
- vii) fuel storage facility;
- viii) communications system;
- ix) incinerator operations and putrescibles handling;
- x) secure landfill;
- xi) hazardous waste disposal, handling and storage; and
- xii) prevention/mitigation strategies built-in to infrastructure design.

3.4 Off-Site Support Infrastructure for Mine Development and Operations

Support infrastructure for mine development and operations associated with the Project include the proposed access road and the transport of coal to the Port of Stewart. The Application will describe off-site infrastructure, such as construction staging areas, and provide details on potential environmental effects.

3.4.1 Existing Access by Road

The existing northern access route via Ealue Lake and the BC Rail Right-of-way will be upgraded as required for use during mine construction and to move equipment, materials and employees to the mine site during operation. The Application will describe:

- i) the size and type of vehicles to be used;
- ii) an estimate of the types and quantities of goods to be moved, including fuel products or other hazardous material;
- iii) the frequency and approximate timing of trips, including trucks carrying coal, fuel to supply the diesel genset and other supplies;
- iv) any changes to the existing alignment;
- v) construction scheduling;
- vi) upgrades for short term access;

- vii) the location(s) and description of the facility where the cargo would be loaded and off-loaded;
- viii) contingency plans for hazardous spills; and
- ix) plans for handling hazardous materials and petroleum products, and the prevention of hazardous materials releases, and petroleum product spills, at the construction staging area.

The Application will describe the need for and preferred location for a staging area to facilitate the construction process.

3.4.2 New Road Access

The Application will describe the proposed access route and all relevant design criteria. Terrain hazard mapping, geotechnical assessment, road design parameters, engineering design deliverables, stream crossing structures and design will be evaluated for the proposed southern route. The Application will identify proposed borrow sources for road construction and plans for road maintenance and/or closure for the post-mining period of the proposed haul-road. The Application will also describe how access would be controlled during mine operations and consider the potential for the road to provide access for forest operations during the life of the mine.

3.4.3 Air Access

The Application will describe air access to the mine-site, including a description of the following:

- i) upgrade of the surface of the Little Klappan airfield;
- ii) the size and type of aircraft to be used;
- iii) the frequency and approximate timing of trips; and
- iv) location and description of the facility where cargo would be loaded and off loaded.

3.4.4 Power Supply

The Application will identify the power supply for the Project and the options considered to provide power to the mine site.

3.4.5 Transport of Coal to Port of Stewart

The Application will describe the transport of coal from the mine site to the Port of Stewart, including size, type and vehicle configuration to be used. The Application will identify the anticipated average number of truck trips per day (both to the port and returning from the port) and anticipated load and fuel capacity of coal trucks. The Application will also provide a review of background dust levels along selected portions of the proposed transportation corridor plus dust control and prevention methods to be implemented.

3.4.6 Stewart Port Facilities

The Application will evaluate the capacity of the Port to accommodate coal from the Project and will address coal storage plus drainage collection, environmental monitoring and discharge requirements.

3.5 Project Development Schedule

The Application will provide a timetable and schedule for each phase of the Project with an estimate of timing to reach commercial production.

3.6 Need For and Purpose of the Project

The Application will identify the need for and the purpose of the Project. In this context, the Application will present the rationale for proceeding with the Project at this time within the context of regional, provincial and federal economies, as well as global implications of supply and demand on coal mines and markets.

The Application will include a summary of the economic feasibility of mining the Mount Klappan coal deposit. This analysis will identify key commercial assumptions used in the analysis such as coal prices and shipping charges. A brief sensitivity analysis will be provided which will indicate the impact on mine economics assuming fluctuations in coal and fuel prices, plus fluctuations in the Canadian and American exchange rates and resultant impacts, if any, on the overall mine plan.

3.7 Project Design Alternatives

The Application will assess technically and economically feasible options, in particular, those associated with the following:

- i) access (trucking vs. rail);
- ii) mining methods;
- iii) target extraction volumes;
- iv) coal processing;
- v) waste rock and tailings management;
- vi) mine water management;
- vii) explosives manufacturing and storage;
- viii) energy production (i.e. hydropower grid, diesel generation);
- ix) decommissioning, closure and reclamation;
- x) mine production rates;
- xi) employee work schedules and transportation to/from site; and
- xii) mine development scheduling.

Section 4 • Environmental Assessment Methodology

The Application will describe the methods used to conduct the EA. Where provincial RISC standards are applicable to the work being undertaken they will be followed. In cases where standards are not followed appropriate rationale will be provided.

The Application will contain baseline information to enable prediction of positive and negative effects and to demonstrate the extent to which negative effects may be mitigated and positive effects augmented by mine design and construction, operational and reclamation practices, and environmental management plans. The Application will demonstrate how the data is used to identify potential impacts pathways and risks.

Explicit documentation of the assumptions, models, information sources used, as well as information limitations and associated levels of uncertainty will support all steps of the Application. Where professional or traditional knowledge expertise is applied, a description of the methodology used to arrive at those views will be given.

The analysis will be quantitative where data are available, including appropriate statistical analyses. Where third party data is identified but either not located or deemed inappropriate, the reasons for such will be described and any impacts on the resulting analysis will be assessed. However, where data or models are lacking, best professional judgement and/or traditional knowledge may be used. The approach and methodologies used to identify and assess cumulative environmental effects will be explained.

4.1 Spatial Boundaries

Figure 3 identifies the physical extent of the study area used for the EA. Setting spatial boundaries for the environmental assessment have considered each ecosystem component that is likely to be affected by the Project. This should be done on a case by case basis for each component and the spatial boundaries are normally based on the “zone-of-influence” beyond which the effects of the action have diminished to a negligible state. The Application will present the rationale for the boundaries used for the EA.

4.2 Temporal Boundaries

The Application will identify and present the rationale for the temporal boundaries used for the EA. The Application will include an assessment of the effects for all phases of the Project including construction, operations, closure and post-closure.

4.3 Valued Environmental Components

The Application will describe the general criteria used to identify VECs that may be affected by the Project. The Application will identify the methods used to predict and assess the effects of the Project on VECs, and will explain the criteria used to assign significance ratings to any predicted adverse effects. The Application will include sufficient detail to address the relevant impact issues on VECs over the entire temporal scope of the development and distinguish between biological, physical, social, cultural and economic parameters.

Section 5 • Description of the Existing Environment

The Application will describe the existing biophysical environment, socio-economic/community, and First Nation and public health settings of the Project including surrounding areas within the zone of potential influence of the Project. The description of the existing project setting will be presented using maps at appropriate scales to permit the identification, assessment and determination of the significance of potentially adverse effects that may be caused by the Project and to adequately identify and characterize the positive effects of the Project.

All existing reports and documents will be appropriately referenced. The Application will clearly and succinctly describe the following components as they relate to the proposed development:

- i) climate and meteorology including annual climatic conditions in the Project area and how factors such as air temperature, relative humidity, precipitation, wind speed and direction, solar radiation and extreme weather events may be expected to change with the seasons;
- ii) precipitation gradient for the proposed access route based on mine site and regional precipitation data plus snow course monitoring (2 sites) along the route;
- iii) air quality including ambient air quality with emphasis on emissions from the mine including emissions from mining, operating equipment, vehicles, ventilation, heating, road, crusher and other facilities;
- iv) surface water and groundwater quality including physical characteristics for all potentially affected waters in the Project area (e.g., Little Klappan River, Didene Creek, Fox Creek, Klappan River, Craven Creek, and Konigus Creek) as well as potential reference areas for environmental effects monitoring;
- v) surface water and groundwater quantity that has the potential to be changed during all Project phases and affect Project design, including information from hydrogeological studies of groundwater regimes in the Project area, including aquifers, groundwater levels and flow, and hydraulic gradients and properties of the surficial and bedrock geologic units and hydrology, and hydrology of affected watersheds (e.g., Little Klappan River, Fox Creek and Didene Creek);
- vi) aquatic organisms and habitat and fish populations;
- vii) wildlife identified as at risk (including species on Schedule 1 of SARA, COSEWIC-listed endangered, extirpated or species of special concern, and provincial red- and blue-listed species), of concern, or of economic value, as well as limiting habitats, specifically for identified ungulates and grizzly bear;
- viii) vegetation and plant communities that may be affected by the Project, including a description of Terrestrial Ecosystem Mapping, Predictive Ecosystem Mapping, biogeoclimatic zones, rare plants and species of potential concern;
- ix) terrain, soils, sediments, surficial geology, bedrock and structural geology, seismicity, glaciation, gossans, geological hazards such as slope stability, regional seismic risk, landslides, and natural hazards such as avalanches. This description will include the ground conditions at the mine site, ancillary facilities and access road, including a description of surface soils and geology;

- x) mineralogy and geochemistry of the principal units of the deposit which will be disturbed or mined, results of mineralogical analyses, and of static and kinetic geochemical testing¹;
- xi) water bodies and navigable waters including data on location (latitude and longitude), depth, width and any navigation uses where a component of the Project is placed on, under, over, in, through or across that waterbody;
- xii) heritage and cultural resources, including archaeological sites;
- xiii) land use including traditional, historic and current uses of lands and resources in areas potentially affected by the Project; and
- xiv) social, economic, health and cultural profiles of the communities potentially affected by the Project, including descriptions of the local public health setting, including health and social services (e.g., type, location and capacity of clinics and treatment facilities), as well as infrastructure and transport routes.

In providing baseline information on the environment, the Application will include data collected over a such a period of time as to permit establishment of annual norms, trends, and extremes, to the extent that predictions can be made. The Application will comment on the quality and reliability of these data and their applicability for the purpose used, and identify gaps, insufficiencies, and uncertainties, especially those that should be remedied for monitoring purposes.

¹ For guidance see “Policy for Metal Leaching and Acid Rock Drainage at Mine Sites in British Columbia” and “Guidelines for Metal Leaching and Acid Rock Drainage at Mine Sites in British Columbia.”

Section 6 • Assessment of Project Effects, Mitigation Measures and Residual Effects

The Application will analyze potential effects on both the physical and human environments. This will include environmental, economic, health, social and heritage effects of the Project; including cumulative environmental effects, the potential for accidents and malfunctions which could affect the natural environment, and the effects of the environment on the Project. The effects will be described so that they can be comprehended and rationalized with respect to the implications on future generations in the north-western region of British Columbia. For the purposes of the federal environmental assessment final determination of significance of environmental effects rests with the Responsible Authorities (RAs).

The Application will report on the effects resulting from the Project on the physical, chemical and biological components of the environment following proposed mitigation. The Application will identify monitoring programs during both the operational and post-closure periods for all environmental components included in this section.

The Application will contain all pertinent data and assessment methodologies. Information gaps will be identified along with reasonable suggestions on how to remedy them.

Mitigation

The Application will identify technically and economically feasible measures to mitigate potentially adverse effects of the Project and to enhance the beneficial effects. The Application will describe proposed mitigation measures and identify equipment needs and procedures (including monitoring requirements) and policies associated with the proposed measures. The Application will evaluate the effectiveness of the proposed measures and assess the risk of mitigation failure and the potential severity of the consequences. The Application will propose impact mitigation measures such as compensation where effects cannot be mitigated on-site. Where there is significant uncertainty or a residual risk, the Application will outline contingency planning.

Significance of the Residual Adverse Environmental Effects

The Application will assess residual effects which include beneficial effects and those adverse environmental effects which cannot be avoided or mitigated through the application of environmental control technologies or other acceptable means, including emergency response and contingency plans. The Application will assess the significance of predicted effects according to the following criteria:

- i) magnitude;
- ii) geographic extent;
- iii) timing;
- iv) duration;
- v) frequency;
- vi) irreversibility of impacts;
- vii) ecological resilience and anticipated resiliency timeframe; and
- viii) probability of occurrence and confidence level.

It will be important to distinguish between ecological parameters and social-cultural parameters.

For further guidance see "Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects" (CEA Agency 1994).

6.1 Physical Environmental Effects

The Application will report on the effects resulting from the proposed development on the physical, chemical and biological components of the environment following proposed mitigation that is technically and economically feasible. The Application will identify monitoring programs during both the operational and post-closure periods for all environmental components included in this section (a list of monitoring programs is provided in section 7). The Application will contain all pertinent data and assessment methodologies.

6.1.1 Climate and Meteorology

The Application will describe the climate and meteorological conditions at the Project site based on the baseline climate monitoring program and applicable regional climatic information. Climate will include not only the average or mean values but also the extremes that can be expected. The full range of weather conditions will be investigated.

6.1.2 Air Quality

The Application will report on the impacts of all phases of the proposed development on air quality. The analysis will include a discussion of measures considered to minimize the release of air contaminants (dust - both emissions and fugitive, particulate exhaust fumes, greenhouses gases and other air contaminants). This will include coal transport to and off-loading in the Port of Stewart. The analysis will include:

- i) atmospheric dispersion of emissions assessed with dustfall collectors deployed at the mine site and along the right-of-way to establish baseline conditions;
- ii) an estimate of annual greenhouse gas emissions from the operation of combustion equipment and from methane release from coal mining.
- iii) acid deposition and impact of the acidic precipitation resulting from release of gasses such as NO_x and SO_x;
- iv) impact on biological receptors such as vegetation, fish, and wildlife; and
- v) demonstrate compliance with applicable federal and provincial air quality standards.

6.1.3 Geology, Geomorphology and Soils

The Application will provide a detailed description of the ground conditions at the mine site, ancillary facilities and access road, including a description of the terrain, surface soils and geology.

The Application will analyze the impacts on the environment when surficial geology, bedrock or soils are disturbed or used for construction purposes. The analysis will include:

- i) the proposed Project's impact including:
 - a) erosion in relation to altered drainage;
 - b) ground freezing occurrences and effects on containment structures;

- c) frost heave on the mine site and access roads; and
- d) water content contained in waste rock dumps and the potential for pore-water drainage during melt periods.
- ii) borrow pits and aggregate use with resulting terrain disturbance;
- iii) rock types, including mineralogy and geochemistry, plus ML/ARD and selenium potential;
- iv) soil characterization including chemical and physical properties within the upper metre from the surface;
- v) ML/ARD and seepage potential associated with movement of material and use for foundations, dikes, dams, borrow sites and construction of the proposed access road;
- vi) seismicity and natural erosion potential;
- vii) remedial actions at the mine site (waste dumps, tailings); and
- viii) volume and characteristics of material stockpiled for reclamation and changes to stockpiled material over time.

As the waste dumps could be the location for the disposal of a variety of materials, including solid inert waste, sewage sludge, mine rock and mill clean-up residue, the Application will identify the potential impacts on the environment of the interaction of these materials, including long term monitoring and management plans for ensuring the stability of the material. A dedicated area and/or blending strategy for landfill (industrial and human waste) within the waste dumps will be identified and segregation and recovery of materials (e.g., metals) will be considered.

6.1.4 Vegetation and Plant Communities

The Application will analyze impacts of the proposed Project on:

- i) local plant communities (classified as vegetation cover types);
- ii) rare or highly valued plant species and plant communities;
- iii) COSEWIC, SARA, and BC CDC-listed plant species;
- iv) long-term, direct and indirect, habitat loss or alteration, including access routes; and
- v) potential for invasive, noxious plants, as defined in the province's *Weed Control Act*.

6.1.5 Surface Water and Groundwater Quality and Quantity

The Application will provide an analysis of proposed development impacts on surface and ground waters. Impact conclusions will be based on predicted water quality of all waste streams and containment ponds throughout the Project, including mine water, seepage, surface runoff and collection ponds, process plant discharges, the open pit dewatering settling pond, and the sewage treatment facility. This analysis will include the impacts on water quality and quantity and catchment areas in relation to:

- i) blasting and its associated residues, in particular, total nitrogen, nitrate, nitrite and ammonia;

- ii) water from open pits and other mine workings and site runoff:
 - a) a detailed characterization of geochemical influence on inflowing groundwater from all potential sources, including: mine rock exposed on pit walls, materials temporarily stored (coal, marginal coal stockpile and waste rock); and water released or leached from tailings dam and other structures particularly with respect to coals, nutrients and major significant ions; and
 - b) a description of the predicted mine inflows and hydrogeology, water handling procedures, water balance predictions and contingencies for potential higher than expected inflows, impacts of discharges on the hydrology of the area and water balances for waste water containment facilities including contingencies and excess holding capacities and will adhere to specific design criteria identified by the permitting agency.
- iii) water quantity, including changes in timing, volume and deviation of peak and minimum flows resulting from the Project;
- iv) water quality including:
 - a) a detailed description of predicted mixing zones in Little Klappan River, Fox Creek, Didene Creek and/or any other aquatic receiving environment for any effluents discharged from the Project. The Application will provide an assessment of water quality (metals, nutrients, major ions, process chemicals, physical characteristics) within and at the boundaries of the mixing zone and criteria used to establish the mixing zone;
 - b) a description of the predicted impacts of releases of any effluents, surface runoff and seepages that may be directed to land (including consideration of surface ponding), with particular attention to impact linkages on vegetation, soil and wildlife; and effects to aquatic organisms, including acute and sub-lethal bioassays; and
 - c) treated sewage flows to associated wetlands (if applicable) and downstream waters.
- v) siltation effects (e.g., runoff along mine site roadways, proposed access routes, and drainage ditches);
- vi) dewatering of open pit and resulting impacts on the sedimentation pond water balance, water level, outflow rates, etc.;
- vii) development on the watershed, including:
 - a) detailed description of the hydrology of the Mount Klappan area including an overview of the basin hydrology of all impacted rivers (e.g., including Little Klappan River and Didene Creek);
 - b) use of berms for water containment, including impacts of berm materials and seepage through the berm;
 - c) water chemistry impacts of surface runoff;
 - d) effects of dewatered tailings contained in the storage area;
 - e) water chemistry impacts of sediment pond water overflow on the receiving environment;

- f) waste rock including water quality and ML/ARD impacts; and
- g) drinking water quality (as per Canadian Drinking Water Quality Guidelines).

All parameter estimates (e.g., water balance), reported in the Application will include sources of information (either estimates or empirical), assumptions built into the data, and data reporting that includes ranges and confidence estimate for parameters.

Water Balance

A water balance will be prepared that incorporates all components of the proposed development under a range of climatic conditions. Winter flows will be considered if and where such data can be collected.

General Water

The assessment of proposed development impacts on water quality will consider:

- i) contaminant loading and dispersion (including airborne contaminants);
- ii) ML/ARD and geochemistry, including selenium;
- iii) dewatered tailings toxicity and implications for aquatic life; and
- iv) water quality throughout the mine footprint and affected areas.

The assessment will consider the potential effects on surface and groundwater quantity and quality within the Nass watershed, subject to the availability of data.

6.1.6 Aquatic Environment

The Application will describe potential effects on aquatic organisms and their habitat taking into account the direct impacts from project components, including the proposed access road. The predicted water quality and quantity impacts, and their associated effects on fish, fish habitat, and local drainage patterns will be described. The analysis will include:

- i) primary production of aquatic systems during all project phases;
- ii) impact on all streams that may experience changes to fisheries resources² including, but not limited to the Little Klappan River, Spatsizi River and relevant feeder streams plus affected streams along the proposed new route;
- iii) habitat loss or alteration;
- iv) impacts on fish passage;
- v) rare and/or sensitive fish species and habitat;
- vi) COSEWIC/SARA-listed species;

² Note that impacts should be assessed on all water bodies likely to be impacted by the Project, not just lakes and water bodies with fishery resources. It is important to note that the *Fisheries Act* applies to all waters of Canada where fish or fish habitat are present, the latter which is defined as “*spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes*”.

- vii) mortality (includes fishing);
- viii) impacts of long-range blasting through tremor effects on fish and fish habitat in local aquatic systems;
- ix) impacts on fish population, including the extent of knowledge on said populations;
- x) impacts on all creeks and rivers and associated food webs and water use potential that may be impacted by changes in water chemistry (suspended solids, nutrients, major ions, coal) due to runoff or discharges from the development;
- xi) mitigation and/or compensation requirements; and
- xii) physical and chemical changes to sediment quality.

The Application will include an overview of how DFO's 1986 principle of "No Net Loss" (of fish habitat) will be achieved during the construction, operation, care and maintenance and closure stages of the proposed development and the support infrastructure including road and possible power transmission corridor.

6.1.7 Wildlife and Wildlife Habitat

The Application will provide an analysis of the proposed development's impacts, both direct and indirect, on wildlife and wildlife habitats, including migratory birds³, giving consideration to, and demonstrating linkages between, predicted physical and biological changes resulting from the proposed development.

The assessment will consider effects at different ecological levels with local population impacts being the focus of primary concern. The assessment will be based on best available knowledge of species behaviour, presence and distribution, and population biology and ecology.

A VEC approach will be taken that focuses the assessment on species that either have conservation status provincially (i.e., red and blue listed) or under COSEWIC or SARA (i.e., are listed as "endangered", "threatened", "extirpated", or of "special concern") or are regionally occurring species that have particular cultural, economic or ecological importance to First Nations, the province or other Canadians. The analysis will include:

- i) a quantitative and/or qualitative determination of overall loss or alteration of terrestrial habitat that will result from project development. Where possible, this will include a ranking of habitat quality for each VEC species so that the relative loss of high quality versus low quality habitat can be assessed in relation to the regional availability of habitat. Regional boundaries for assessment of relative habitat loss will be based on major watershed boundaries and eco sections;
- ii) a qualitative assessment of possible physical hazards and attractants for wildlife (i.e., assessment of the potential impacts of roads including Highway 37 and 37A, transmission lines, pits, conveyor systems and other structural features on wildlife feeding, migration and movement, denning and refuge, reproductive behaviour and success, and direct mortality);

³ See the *Migratory Birds Convention Act, 1994*, which protects migratory birds, including the sperm, eggs, embryos, tissue cultures and parts of the bird.

- iii) a qualitative assessment of possible chemical hazards and attractants for wildlife (i.e., assessment of the potential impacts of identified contaminants of potential concern on wildlife feeding, migration and movement, denning and refuge, reproductive behaviour and success, and direct mortality);
- iv) a qualitative assessment of possible sensory disturbance causing wildlife attraction or deterrence (i.e., assessment of the potential impacts of noise, light, odours, and human presence on wildlife feeding, migration and movement, denning and refuge, reproductive behaviour and success, and direct mortality);
- v) a qualitative assessment of the potential for local population level impacts to VEC species resulting from the combined impacts of:
 - a) habitat loss or alteration;
 - b) physical hazards;
 - c) chemical hazards; and
 - d) sensory disturbances.
- vi) propose mitigation, monitoring, and compensation programs for avoiding, minimizing, tracking, and compensating project related impacts on wildlife.

6.1.8 Wetland Ecosystems

The Application will provide an analysis of the Project's effects on wetland ecosystems. Impact conclusions will be based on federally identified wetland functional values.

The wetland ecosystem analysis will address impacts of the Project on:

- i) local wetlands and wetland complexes (classified as wetland associations);
- ii) regionally rare and/or unique wetlands and wetland complexes;
- iii) long-term, direct and indirect, wetland ecosystem loss or alteration; and
- iv) wetland functions and associated values.

The Application will include a description of the hierarchical sequence of mitigation alternatives. It will relate mitigation alternatives to different phases of the Project. The objective is to meet the target of "no-net-loss" to wetland functions as established by the Federal Policy on Wetland Conservation (Environment Canada, 1996).

6.2 Human Environmental Effects

The Application will report on direct and indirect social, economic and heritage effects.

6.2.1 Traditional Knowledge and Culture

The Application will include information, where available, on traditional uses of wildlife, fish, plants and vegetation, landscapes, country foods and cultural heritage. This analysis will include information on culturally significant plants and animals. The Application will present both scientific and traditional perspectives on predicted impacts wherever both types of information are available. Where traditional knowledge is not available or not provided to the Proponent in a timely manner despite reasonable diligence, the Application will describe the efforts undertaken by the Proponent to obtain this information.

6.2.2 Archaeological Resources

The Application will describe potential effects of the Project on archaeological resources and consider all other requirements of the *Heritage Conservation Act*, R.S.B.C. 1996, c. 187. The Application will identify mitigation measures for any sites identified during the archaeological impact assessment where impacts cannot be avoided.

6.2.3 Land and Resource Use

The Application will analyze and describe the Project's potential impacts on land and resource uses, taking into account the overall management objectives and strategies of the CIS-LRMP.

Maps and/or descriptions of existing and past land and resources uses in relation to the proposed development will be included. The Application will include the following land and resource uses:

- i) important areas traditionally-used by First Nations;
- ii) seasonal camp areas;
- iii) country foods harvesting;
- iv) hunting, trapping, outfitting, recreational, tourism, commercial and sport fishing areas;
- v) other tenure holders; and
- vi) Parks and Protected Areas adjacent to the coal lease and the proposed Project.

6.2.4 Economy

The Application will describe the economic effects of the Project, including the following considerations:

- i) wage and salary employment by skills category over the life of the proposed development, including estimates of local participation;
- ii) availability and use of skilled workers to meet job requirements;
- iii) opportunities for local and regional businesses to supply goods and services both directly to the proposed development and to meet the demand created by the expenditure of contractors and new employees;
- iv) barriers to employment, advancement, and retention of local workers, including the training or retraining necessary for sections of the local workforce to meet Fortune's employment standards;
- v) opportunities for economic diversification and sustainable development in northwestern BC;
- vi) potential impacts on the subsistence economy of First Nations;
- vii) federal and provincial revenues and costs;
- viii) impacts on the national and provincial Gross Domestic Product (GDP);
- ix) probability and any effects of employee migration into or out of northwestern British Columbia communities;
- x) inflation and the cost of living impacts; and
- xi) impacts of changing coal prices on mine operation.

The Application will, for the resources included within the scope of the EA, report on the following:

- i) estimated total resource value and present day Canadian dollars;
- ii) planned annual resource extraction rates, and present day Canadian dollars; and
- iii) impact of planned extraction rates and total resource extraction over the life of the proposed mine on the items above.

6.2.5 Social

The Application will analyze the Project's effects on the following:

- i) Tahltan Nation;
- ii) Nisga'a and Gitksan, including Skii km Lax Ha;
- iii) residents within the Project study area, including the communities of Dease Lake, Iskut, Telegraph Creek, and Stewart;
- iv) potentially affected businesses within Project study area; and
- v) trappers, guide outfitters and recreational users that are currently active in the Project study area.

The Application will analyze the possible effects of the Project on the following:

- i) Current and future socio-community environment, including:
 - a) population and demographic indicators;
 - b) projected population changes, and associated changes to demands for services;
 - c) migration patterns and associated demographic changes;
 - d) social and community issues and the potential adverse and positive effects related to the mine development;
 - e) social and community services, their ability to meet current demand and ability to meet changing and projected needs in relation to the Project; and
 - f) residential and business proximity to the Project and potential effects.
- ii) Current environmental setting related to the socio-community environment, including:
 - a) noise quality and quantity;
 - b) visual quality; and
 - c) air quality.
- iii) Road safety:
 - a) road use of potential ore haul routes including volume and type of traffic; and
 - b) road hazards/road infrastructure and seasonal changes for the potential haul routes.

6.2.6 Infrastructure

The Application will include an assessment of the impacts of the Project on existing social, institutional and community services, transportation facilities and services, and permanent changes to the infrastructure and services arising from the Project.

6.2.7 Noise

The Application will include an assessment of the impact of the Project resulting from changes to ambient noise levels, and the effect of these changes on humans and wildlife. The assessment of noise effects will include the construction and operation phases of the Project, point and mobile sources of noise, and tonal and impulsive noise. Effects on noise receptors such as workers in the camp will be assessed. The Application will also identify measures to mitigate noise effects, as appropriate.

6.2.8 Visual and Aesthetic Resources

The Application will include an assessment of the visual and aesthetic impact of the proposed development. The Application will describe design components that mitigate visual and aesthetic impacts.

6.3 Human Health Effects

The Application will examine the potential effects of the Project on public health with consideration of relevant physical environment and social health determinants. The information presented in other areas of the Application (e.g., socioeconomic assessments, Traditional Knowledge (TK), transportation and related infrastructure, etc.) will be used to assess the Project's impacts on human health.

The Application will assess potential impacts on human health due to changes in environmental media from contamination that may arise from leachates, effluents, spills, accidents and malfunctions, etc. This will include a human health impact assessment on water (potable, surface and/or ground-water), edible plants and berries, fish and wild game.

Air quality impacts on humans to be assessed and included in the Application include effects on humans as measured by: fine particulates such as PM₁₀ and PM_{2.5}, gaseous air contaminants such as SO₂, NO₂, and diesel emissions; based on estimation of gross annual emissions.

A country foods assessment will also be provided in the Application. Information will be drawn from the TK study and supplemented with surface-water, soils and plant chemical analyses.

6.4 Transportation

The Application will assess potential effects on humans of transporting coal from the mine, via Highway 37 to the Port of Stewart. Any proposed mitigation measures will be identified, including those relevant to the Nass Wildlife and Fisheries Management Areas. The Application will provide a discussion of anticipated use of the Little Klappan River airfield and air traffic control measures including acceptable flight paths and resultant impacts to wildlife and local communities.

An assessment of the risk of increased traffic accidents along Highway 37 will be provided in the Application with a focus on high-risk locations. An analysis of the potential impact of traffic from the Project to whichever access point onto Highway 37 is chosen will be undertaken. A risk analysis of accidents and spills will also be included. Potential effects of increased truck traffic on the town of Stewart will be assessed.

6.5 Accidents and Malfunctions

The Application will identify the potential for accidents or malfunctions which could lead to environmental impacts, and their likely potential effects on the receiving environment or local community settings. Proposed mitigation measures and contingency plans will be provided in the Application as well as a preliminary Environmental Management Plan (EMP) for project start-up that will address potential accidents and malfunctions and provide general approaches to deal with such.

6.6 Effects of the Environment on the Project

The Application will describe the potential effects of extreme events such as avalanches, landslides, debris flows, ice storms, fires, floods and earthquakes directly on the Project and indicate any measures proposed to mitigate such effects. Analysis will focus on potential effects on the integrity of the proposed development infrastructure, particularly the refuse containment facility, water retention dikes and impoundment, road operation and waste rock dumps

6.7 Effects on Navigable Waters

The Application will identify the impacts on use of navigable waters and the options for mitigating any obstruction to navigability. The definition of a navigable water body will be as per Transport Canada pursuant to the *Navigable Waters Protection Act*.

6.8 Residual Adverse Effects

The Application will summarize the findings of residual effects assessments for each separate VEC. The Application will include compensation plans for addressing adverse residual environmental effects.

6.9 Cumulative Environmental Effects

The Application will describe the approach, methods and information used to identify and assess the CEE of the Project. The Application will consider existing forecasting models of cumulative infrastructure development, where such models are available, and can be calibrated to the regional ecosystem encompassing the proposed development. The models considered will be explained in the Application.

The CEE assessment considers the residual effects of the Project in combination with the effects of other past, present or reasonably foreseeable projects and/or activities within the zone of influence (or zone of potential effects) of the Project. At minimum, other identified developments such as the Eskay Creek mine, Forrest Kerr hydro, Red Chris mine, proposed Galore Creek mine project, possible extension of the BC Hydro grid from Meziaden, as well as existing tourism operations in the region, will be considered in the CEE assessment. The assessment will include all proposed projects under review in the EA process that are within the area potentially affected by the Project, subject to availability of relevant data. Potential effects associated with increased commercial shipping traffic in the Portland Canal will be assessed by building upon the assessment presented in the Application for the Swamp Point Aggregate Project. The CEE on the Port of Stewart will also be included in this analysis.

The Application will identify any information limitations and associated levels of uncertainty with regard to the CEE. The analysis will present data and analyses that are verifiable in nature and quantitative, where data are available. In the absence of verifiable knowledge, best professional judgment or expert opinion should be used, whether that is from traditional or scientific sources. Any mitigation measures identified for cumulative effects and follow-up programs will be included in the discussion of cumulative effects.

In assessing the cumulative effects of the Project in combination with other projects and/or activities, the Application will identify any changes in the original environmental effects and significance

predictions for the individual Project. The Application will discuss the effectiveness of proposed mitigation, as well as the implications for monitoring and follow-up programs as described in sections 7 and 8.

Where it is predicted that the Project will have a residual effect on a VEC, the residual effect will be brought forward into the CEE. Where it is predicted that there is not likely to be a residual effect on a VEC, after the application of appropriate mitigation, VEC will not require consideration in the CEE assessment. Assessment of CEE may extend to the health and socio-economic conditions, traditional uses and heritage resources, if a biophysical effect of the Project impacts these values.

All methodologies used for the cumulative effects assessment will follow guidelines set out by the CEA Agency in "Addressing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act*" (CEA Agency 1999).

6.10 Sustainability

The Application will consider the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of present and future generations. The Application will identify the renewable resources that may be affected by the Project and the criteria used in determining whether their sustainable use will be affected. Sustainable use may be based on ecological considerations such as integrity, productivity, and carrying capacity.

Section 7 • Environmental Management System

The Application will include an Environmental Management System (EMS) for the Project, to be finalized in discussions with relevant permitting agencies before the start of construction. The objective of the EMS is to provide a consistent approach to environmental management through resource allocation, the assignment of responsibilities and ongoing evaluation of environmental practices, procedures and processes. The EMS is part of the overall corporate management system which includes organizational structure, planning activities, staff responsibilities, practices, procedures and resources for developing, implementing, reviewing and maintaining environmental policies associated with the Project.

Environmental Management Plans (EMPs) are an important component of the EMS. EMPs will identify Fortune's approach to project planning and the development of protection measures to mitigate potential environmental effects and other impacts. The EMPs will describe the environmental practices and procedures to be applied during planning, construction and operation of the Project. The Application will describe general approaches to individual EMPs within each of the project stages and include relevant regulations or guidelines plus criteria on appropriate skill levels and reporting structures as/where needed.

Monitoring plans are required to determine if the EMS is functioning as planned. Relevant monitoring plans will be provided in the Application.

7.1 Habitat Mitigation and Compensation Plan

The Application will include conceptual habitat impact mitigation and compensation plans. A wildlife and fisheries/aquatic assessment will be completed which identifies impacts and prescribes preliminary fish and wildlife habitat impact mitigation and compensation measures that may be required to satisfy section 35(2) of the *Fisheries Act* and/or management issues pertaining to fish and wildlife.

7.2 Construction and Operational EMPs

The Application will describe general approaches to individual EMPs and include preliminary outlines of EMPs as required. Preliminary outlines for EMPs will be developed in the following areas for both construction and operational phases:

- i) agency reporting procedures and plans for environmental supervision;
- ii) mine, processing operations, tailings dewatering and impoundment plus other containments and maintenance facilities;
- iii) hydrocarbon containment;
- iv) dangerous goods and hazardous materials and waste, construction and operational waste, explosives manufacture, storage and handling;
- v) maximum, most-likely spill incident and response plan(s) options for access routes;
- vi) surface water quality and sediment control;
- vii) ML/ARD;
- viii) freshet and storm-water runoff;
- ix) aquatic life and fisheries management and monitoring plans;

- x) air quality and dust control;
- xi) landscape design and restoration/reclamation;
- xii) archaeological;
- xiii) noise attenuation measures;
- xiv) vegetation including invasive plant strategy;
- xv) wildlife/adaptive management and monitoring plan;
- xvi) access management, including road maintenance;
- xvii) vehicle servicing plan; and
- xviii) landscape design and restoration/reclamation.

7.3 Environmental, Health & Safety Management

The Application will include an overview of the environmental, health and safety (EH&S) management program planned for the construction and operational phases. Accidents and equipment malfunctions that have a reasonable probability of occurring will be identified. Potential consequences, worst case scenarios and impacts to human health and the environment will be described. Preventative and remediation measures will be presented, including training, safety equipment, clean-up and emergency response resource requirements.

7.4 Closure, Decommissioning and Reclamation

The Application will describe the regulatory framework and requirements, industry standards, and government agreements that are needed with respect to the closure and reclamation phase of the Project, including plans for mitigating the social and economic impacts of mine closure. The Application will include a temporary closure plan at a conceptual level. Where regulatory requirements, industry standards or government agreements exist, their minimum standards, and/or criteria will be reported.

The Application will provide a conceptual site closure and reclamation plan for the Project site. Closure, decommissioning and reclamation, components and activities will be listed. Components of the reclamation and closure plan will include:

- i) reclamation methods relative to drainage control, land stability, soil salvage, soil replacement, re-vegetation and interim land management;
- ii) criteria for and estimation of volumes of soil available for salvage based on availability and suitability of soils;
- iii) identification of reclamation and land use objectives and how the reclamation plan will meet those objectives;
- iv) a re-vegetation plan, including seed mixes, timing, monitoring, interim land management (erosion control) and weed control; and
- v) a site diagram showing post reclamation site conditions including topography, surface drainage, final vegetation and other significant features, and comparison to pre-development conditions.

7.5 Monitoring

The Application will provide an overview of the proposed monitoring programs to be incorporated into each phase of the Project. Final details of these long-term monitoring programs will be developed during the permitting stage.

The Application will outline feedback procedures including proposed monitoring programs. The intent is to ensure that remedial actions are taken if the results of a monitoring program deviate from any established operational standards on environmental performance, or predictions on environmental impacts. The Application will describe the approach, objectives and proposed methodologies that will be used in proposed monitoring programs. Follow-up programs will include the following:

- i) environmental effects monitoring, including sediment quality, ground water and surface water quality, aquatic life (including metal levels if required) and effluent quality, and lethal and sub-lethal toxicity;
- ii) air quality;
- iii) hydrology;
- iv) archaeology;
- v) wildlife monitoring, including tissue metal levels, if required;
- vi) geotechnical stability of waste and water management facilities;
- vii) geochemical stability of waste rock, refuse impoundments and pit walls (ML/ARD monitoring);
- viii) overall success in meeting objectives of fish habitat compensation; and
- ix) overall success in meeting objectives of the re-vegetation and reclamation programs.

7.6 Follow-Up Program

The Application will identify follow-up requirements. The purpose of the follow-up program is to verify the accuracy of the assessment of the Project and determine the effectiveness of mitigation measures.

Section 8 • Conclusion

The Application will summarize the effects of the Project, mitigation measures and commitments. The Application will include a conclusion from the assessment of effects, cross-referencing the findings from Chapter 6.

Section 9 • Presentation

The Application will be formatted and presented as discussed below.

9.1 Conformity

The Application will include a conformity table ("Table of Concordance") cross referencing the areas in the report (including appendices and technical reports) that address the information set out in the approved TOR.

9.2 Format

The Application will generally be presented in an order similar to the approved TOR. Using a table format, an overview of potential effects and related mitigation will be presented for each project component.

9.3 Data Presentation

Information will be presented in the Application in the clearest language possible. Where technical language is used a glossary defining technical words and acronyms will be included. The Application will contain charts, diagrams and maps wherever useful to clarify the text. Where possible, maps will be of common scale and orientation to allow for comparison and overlap of mapped features. The Application will be provided to the EAO in electronic format (e.g., CD-ROM). All files will be submitted as PDF formatted digital files of all documents in sizes suitable for downloading from the Internet. The Application will be provided in hard copy with full size maps in appropriate numbers as directed by the EAO.

Section 10 • List of References and Supporting Documents

The Application will include sources of information (either estimates or empirical) including a list of all submissions and identify all references cited in the Application. The following is a list of references for the TOR.

Canadian Environmental Assessment Agency. 2003. Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners. Available from: www.ceaa-acee.gc.ca

Canadian Environmental Assessment Agency. 1999. Addressing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act*. Available from: www.ceaa-acee.gc.ca

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Section 11 • List of Qualified Professionals

Any Qualified Professionals that participated in the data collection and assessment will be identified, including a description of the components that each individual worked on.

Appendix 1 • CEAA Information Requirements

Project Factor	Section of Application	Description
Environmental effects arising from the Project	Section 6	<ul style="list-style-type: none"> Describe any change the Project may cause in the environment including: land, water, air, organic and inorganic matter, living organisms, and the interaction of natural systems.
Species at Risk	Section 6.1.7	<ul style="list-style-type: none"> Describe any effects that the Project may cause to a listed wildlife species, its critical habitat or residences of individuals of that species, as those terms are defined in subsection 2(1) of the <i>Species at Risk Act</i>.
Indirect social and economic effects	Sections 6.2.4 & 6.2.5	<ul style="list-style-type: none"> Describe the effects of a project-related environmental change on: health and socio-economic conditions; physical and cultural heritage; the current use of lands and resources for traditional purposes by aboriginal persons; and any structure, site or thing that is of historical, archeological, paleontological or architectural significance.
Mitigation	Section 6	<ul style="list-style-type: none"> Describe any measures that are technically and economically feasible to be taken that would mitigate identified environmental effects.
Significance of effects	Section 6	<ul style="list-style-type: none"> Describe the significance of any residual environmental effects arising from the Project after mitigation.
Public comments	Section 2.4	<ul style="list-style-type: none"> Address any issues raised by the public during review of the Project.
Cumulative environmental effects	Section 6.9	<ul style="list-style-type: none"> Describe the cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out.
Effects of the environment on the Project	Section 6.6	<ul style="list-style-type: none"> Evaluate the effects of the environment on the Project or project components such as global warming, avalanche, storm events, earth quakes etc.
All phases of the development	Sections 5 & 6	<ul style="list-style-type: none"> Describe the environmental effects that may result from all phases of the Project (construction, operation, modification, abandonment and decommissioning)
Accidents and malfunctions	Sections 6.5	<ul style="list-style-type: none"> Describe the environmental effects of accidents and malfunctions that may occur in connection with the Project.
Any other matter	Addendum	<ul style="list-style-type: none"> Provide information on any other matter that the responsible authority deems to be relevant such as the need for the Project, alternatives to the Project, community knowledge and aboriginal traditional knowledge.

(continued)

Project Factor	Section of Application	Description
Additional Requirements for a Comprehensive Study		
Purpose	Section 1.1	<ul style="list-style-type: none"> Describe the purpose of the Project.
Alternative means of carrying out the Project	Addendum	<ul style="list-style-type: none"> Describe the various means of carrying out the proposed Project that are technically and economically feasible, including the various components as appropriate, and the environmental effects of any such alternative means.
Follow-up program	Addendum	<ul style="list-style-type: none"> Describe the requirements of a follow-up program which would be used to determine the accuracy of environmental assessment conclusions and the efficacy of required mitigation measures.
Capacity of renewable resources	Addendum	<ul style="list-style-type: none"> Describe the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future.