

MORRISON COPPER-GOLD PROJECT

Terms of Reference

**As Approved by the
Environmental Assessment Office**

**On
May 21, 2009**

**For
Pacific Booker Minerals'
Application for an Environmental Assessment
Certificate**



**BRITISH
COLUMBIA**

The Best Place on Earth

PROJECT BACKGROUND TO THE DRAFT APPLICATION TERMS OF REFERENCE

The Morrison Copper/Gold Mining Project (Project) proposed by Pacific Booker Minerals Inc. (PBM or the Proponent) is subject to review under the British Columbia Environmental Assessment Act, S.B.C. 2002, c.43 (BCEAA). Project review under the Canadian Environmental Assessment Act, SC 1992, c.37 (CEAA) has yet to be determined. The Canada/British Columbia Agreement on Environmental Assessment Cooperation, signed in March 2004, provides for harmonized reviews when Environmental Assessments (EA)s are required under both Acts. The Agreement also provides for the Environmental Assessment Office (EAO) to lead harmonized reviews of proposed Projects.

To ensure reviews are harmonized, the EAO and Canadian Environmental Assessment Agency (CEA Agency) develop a work plan to agree on the overall timelines for the EA review. Federal and provincial agencies and departments are involved in developing the Terms of Reference (TOR) to ensure the requirements of both the CEAA and the BCEAA are met and addressed in a proponent's application for an environmental assessment certificate (Application). The TOR has been prepared as if the Project is subject to a comprehensive study as part of the federal environmental assessment.

The contents of this document constitute the TOR for the Proponent's Application. The TOR identifies the issues to be addressed and the information that must be provided by the Proponent in its Application. The final TOR once reviewed and approved by the EAO, will incorporate comments from federal, provincial and local government agencies, First Nations and the public. The process and procedures for conducting the environmental assessment will be formalized in an order to be issued by the EAO pursuant to Section 11 of the BCEAA. The Section 11 order will stipulate the scope of the Project, the scope of the assessment and the procedures and methods for assessing the Project.

The Application will include a table of concordance, which cross-references the information presented in the Application with the information requirements in the TOR.

PREPARATION AND REVIEW OF THE APPLICATION

Conformity

The Application will include a Table of Concordance that cross-references the approved TOR with the Application (including appendices and technical reports) so that points raised in the TOR are easily located in the Application.

Format

The Application will generally be presented in an order similar to the approved TOR and represent the most current Project information available.

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 accurate, clear and concise charts, diagrams, figures and maps whenever useful to clarify the text. Where possible, maps will be of common scale and orientation to allow for comparison and overlap of mapped features.

PROJECT LOCATION, DESCRIPTION AND SCOPE

Pacific Booker Minerals Inc. (PBM or Proponent), a publicly traded company, owns the mineral rights to the Morrison property located in Central British Columbia, Canada. The Morrison property is located in north-central British Columbia, Canada approximately 65km northeast of Smithers and 35 km north of the village of Granisle (Fig. 1). The property is within 30 km of two former copper/gold/silver producing mines, Bell and Granisle. Coordinates of the Morrison property are 55° 11' 24" N Latitude and 126° 19' 7" W Longitude, or UTM coordinates 6119215 N, 670691 E, UTM Zone 9.

The Morrison property contains a porphyry copper/gold/molybdenum deposit for which a 43-101 compliant mineral resource estimate was completed May 4, 2007. On March 12, 2009, a Feasibility Study was completed for the total mineable reserve, classified as proven and probable at Net Smelter Return (NSR) cut-off value of \$CDN5.60/t, of 224.25Mt with an average grade of 0.330% Cu, 0.163g/t Au and 0.004% Mo.

PBM proposes an open-pit mining and milling operation utilizing conventional truck and shovel equipment for the production of copper/gold/molybdenum concentrate from the Morrison deposit. The ore production rate will be 30,000 tonnes per day or approximately 11 million tonnes of ore per year. The proposed treatment process is a conventional crushing, grinding and flotation system resulting in the production of approximately 130,000 tonnes of concentrate per year containing copper and gold. A separate molybdenum concentrate will be produced. Construction is expected to commence in 2009 with production in 2011. Expected mine life is 21 years.

The Morrison Property has the advantage of existing regional infrastructure. The regional infrastructure includes a deep-sea shipping terminal at the Port of Stewart, a high speed forestry road network, hard surface highways, nearby electrical high voltage power (approximately 25 km from Project site) and full service communities (Village of Granisle, Communities of Topley, Houston and Smithers) within daily commuting distance from the Project site and a regional airport at Smithers.

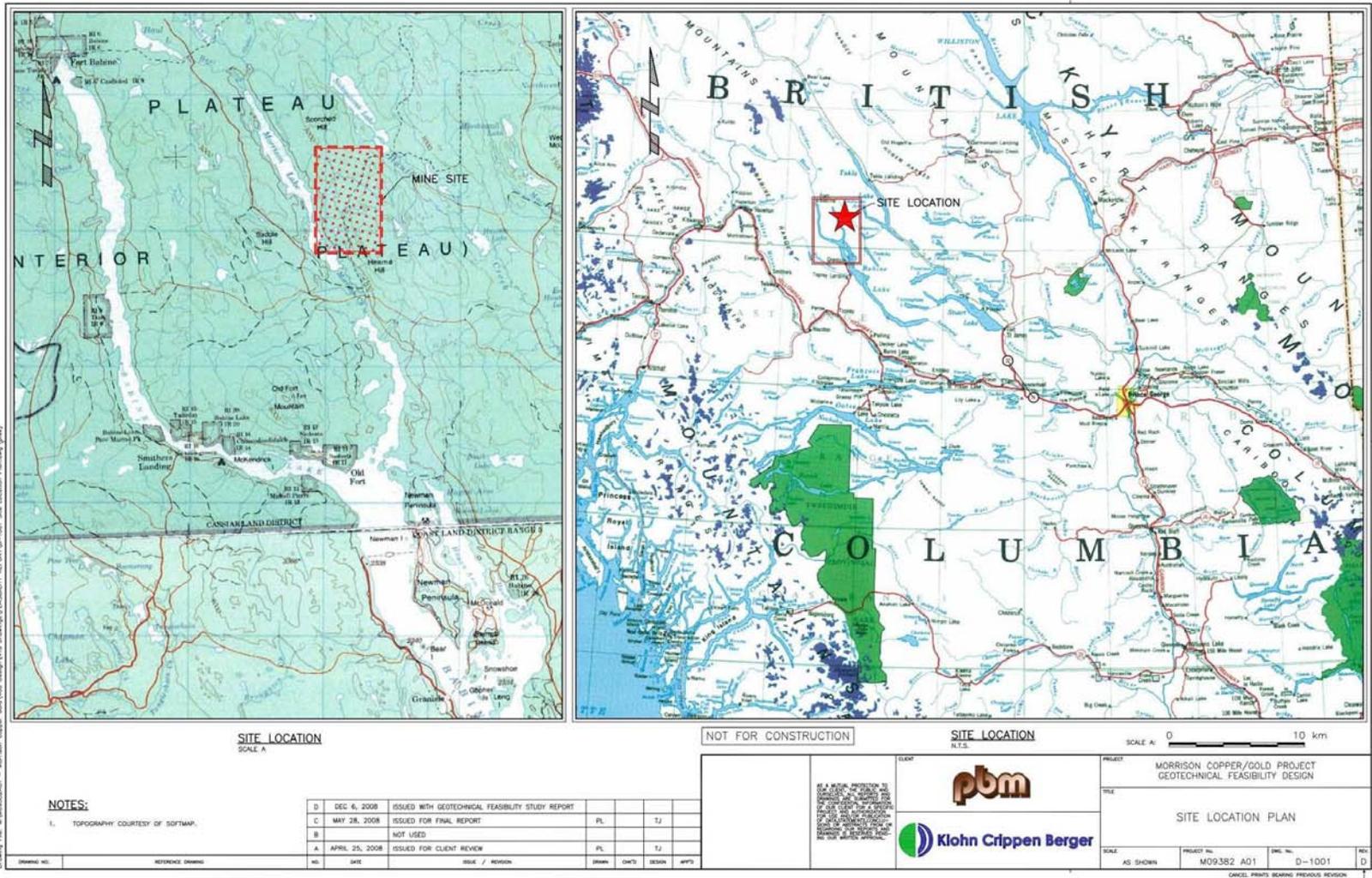


Figure 1 - Morrison Copper/Gold Project Location Map

PREFACE

This section of the Application will identify the purpose of the Application and state the following:

- (a) the Project is subject to the BCEAA, pursuant to an order issued under Section 10 of the BCEAA; and
- (b) the Project is/is not subject to review under the CEAA. Triggers that may apply to the Project are *Navigable Waters Protection Act*, *Fisheries Act* and/or *Explosives Act*. The CEAA may require a comprehensive study depending on whether federal Responsible Authorities scope the mine into the federal scope of assessment.

A list of federal, provincial and municipal agencies, First Nations, community and other key stakeholders involved in the Project will be provided.

EXECUTIVE SUMMARY

The Executive Summary will provide an overview of the Application including a brief description of the major Project components and activities; key issues considered in the Application; related mitigation measures; significant positive or negative residual environmental, social, cultural, economic or health effects; and the overall conclusions of the Application. The Executive Summary will contain a succinct description of the proponent's consultation efforts and information sharing with the First Nations, public, stakeholder, local government, and government agencies over the duration of Project development, and a summary of issues raised and solutions suggested. The Executive Summary will include key conclusions of the impact assessment.

TABLE OF CONTENTS

PROJECT BACKGROUND TO THE DRAFT APPLICATION TERMS OF REFERENCE.....	ii
PREPARATION AND REVIEW OF THE APPLICATION	iii
PROJECT LOCATION, DESCRIPTION AND SCOPE	iv
PREFACE	vi
EXECUTIVE SUMMARY	vii
ABBREVIATIONS AND ACRONYMS	11
GLOSSARY.....	12
1.0 INTRODUCTION.....	13
1.1 Project Setting	13
1.2 The Project.....	13
1.3 The Proponent.....	13
1.4 Need For and Purpose of the Project	13
1.5 Project History	14
1.6 Proponent Ownership and Tenure.....	14
1.7 Regulatory Context.....	14
1.8 Land Use	14
2.0 INFORMATION DISTRIBUTION AND CONSULTATION	15
2.1 First Nations Consultation	15
2.2 Government Agency and Local Government Consultation.....	16
2.3 Public and Stakeholder Consultation	16
2.4 Proposed Consultation Activities.....	17
3.0 PROJECT DESCRIPTION AND SCOPE OF PROJECT	18
3.1 Project Description, Rationale and Scope	18
3.2 Location of Project and Mapping	18
3.3 Geology and Mineralization	19
3.4 Mineral Resources.....	20
3.5 Mine Development.....	20
3.5.1 Maintenance Facilities	21
3.5.2 Administration Facilities.....	21
3.5.3 On-site Support Facilities	22
3.5.4 Off-Site Support Infrastructure	22
3.5.5 Permanent Access to the Mine-site	22
3.5.6 Power Access to the Mine-site.....	23
3.5.7 Transport of Concentrate to Port.....	25
3.5.8 Stewart Port Facilities	25
3.6 Project Development Schedule	25
3.6.1 Project Permits and Development Commitments	25
3.7 Hazardous Materials.....	25
3.8 Decommissioning Activities.....	26
3.9 Assessment of Alternative Options	26

4.0	ENVIRONMENTAL ASSESSMENT METHODOLOGY	28
4.1	Spatial Boundaries	29
4.2	Temporal Boundaries	29
4.3	Valued Ecosystem Components (VECs)	29
5.0	DESCRIPTION OF THE EXISTING ENVIRONMENT	33
5.1	Atmosphere and Climate.....	33
5.2	Air Quality.....	33
5.3	Geology and ML/ARD	34
5.4	Terrain, Soils and Overburden.....	36
5.5	Terrain Hazard Assessment	36
5.6	Hydrology and Surface Water Quality and Quantity.....	37
5.7	Hydrogeology and Groundwater Quality and Quantity	38
5.8	Aquatic Biology and Fisheries.....	39
5.9	Wetlands.....	40
5.10	Wildlife and Wildlife Habitat	40
5.11	Ecosystem and Vegetation	40
5.12	Navigable Waters	41
5.13	Archaeology and Heritage Resources.....	41
5.14	Traditional Ecological Knowledge (TEK)	42
5.15	Land Use	42
5.16	Socio-economics	42
5.17	Country Foods	43
5.18	Access and Infrastructure.....	43
5.19	Noise	43
5.20	Visibility and Aesthetics.....	43
6.0	ASSESSMENT OF PROJECT EFFECTS, MITIGATION MEASURES AND SIGNIFICANCE OF RESIDUAL PROJECT EFFECTS	44
6.1	Atmosphere and Climate.....	46
6.2	Air Quality.....	46
6.3	Geology and ML/ARD	47
6.4	Terrain, Soils and Overburden.....	49
6.5	Terrain Hazard Assessments.....	49
6.6	Hydrology and Surface Water Quality and Quantity.....	49
6.7	Hydrogeology and Groundwater Quality and Quantity	52
6.8	Aquatic Biology and Fisheries.....	53
6.9	Wetlands.....	54
6.10	Wildlife and Wildlife Habitat	54
6.11	Ecosystem and Vegetation	55
6.12	Navigable Waters	56
6.13	Archaeology and Heritage Resources.....	56
6.14	Traditional Ecological Knowledge (TEK)	57
6.15	Land and Resource Use	57
6.16	Socio-economics.....	58

6.17	Country Foods	59
6.18	Access and Infrastructure	60
6.19	Noise	60
6.20	Visual and Aesthetic Resources	60
6.21	Human Health.....	60
6.22	Transportation	61
6.23	Accidents and Malfunctions	61
6.24	Sustainability	61
6.25	Residual Adverse Effects Summary	61
7.0	EFFECT(S) OF THE ENVIRONMENT ON THE PROJECT.....	62
8.0	CUMULATIVE EFFECTS	63
9.0	ENVIRONMENTAL MANAGEMENT SYSTEM.....	65
9.1	Construction and Operational EMPs	65
9.2	Habitat Mitigation and Compensation Plan	67
9.3	Closure, Decommissioning and Reclamation	67
9.4	Monitoring.....	68
10.0	SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES	70
10.1	Summary of Commitments and Assurances	70
11.0	FOLLOW-UP PROGRAMS.....	71
12.0	CONCLUSION.....	72
13.0	CORPORATE COMPLIANCE.....	73
	APPENDIX 1 CEEA Information Requirements.....	74
	APPENDIX 2 List of References and Supporting Documentation.....	76

LIST OF FIGURES

Figure 1 - Morrison Copper/Gold Project Location Map	v
Figure 2 – Morrison Copper/Gold Project General Site Arrangement	24
Figure 3 – Morrison Copper/Gold Project Select Spatial Study Area Boundaries	32

LIST OF TABLES

Table 1 Morrison Copper/Gold Project Valued Ecosystem Components (VECs).....	30
--	----

ABBREVIATIONS AND ACRONYMS

A list of Abbreviations will be provided in the Application. It will be based on the following list developed for the Term of Reference document.

ABA	Acid Base Accounting
AP	Acid Potential
AQ	Air Quality
ARD	Acid Rock Drainage
BCEAA	BC Environmental Assessment Act
BCEAO	BC Environmental Assessment Office
BCRISC	BC Research Information Standards Committee
CEA	Cumulative Effects Assessment
CEAA	Canadian Environmental Assessment Act
CEA Agency	Canadian Environmental Assessment Agency
CCME	Canadian Council of Ministers of the Environment
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Federal Department of Fisheries and Oceans
EA	Environmental Impact Assessment
EAO	Environmental Assessment Office
EC	Environment Canada
EC	Electrical Conductivity
Eh	Reduction Potential
EMP	Environmental Management Plan
EMPR	BC Ministry of Energy, Mines and Petroleum Resources
EMS	Environmental Management System
GPS	Global Positioning System
HADD	Harmful Alteration, Disruption or Destruction (of fish habitat)
ILMB	Integrated Land Management Bureau
ISO	International Organization for Standardization
LBN	Lake Babine Nation
MAL	Ministry of Agriculture and Lands
MEMPR	Ministry of Energy, Mines and Petroleum Resources
ML	Metal Leaching
ML/ARD	Metal Leaching /Acid Rock Drainage
MLRMP	Morice Land and Resource Management Plan
MOE	Ministry of Environment

MOF	Ministry of Forests
NHA	Northern Health Authority
NNP	Net Neutralizing Potential
NO ₂	Nitrogen Dioxide
Non PAG	Non Potentially ARD generating
NOX	Mono-Nitrogen Oxide
NP	Neutralizing Potential
NRCan	Natural Resources Canada
NSR	Net Smelter Return
PAG	Potentially ARD generating
PEM	Predictive Ecosystem Mapping
pH	measure of acidity or basicity of a solution
PM2.5	Particulate Matter 2.5 µm
PM10	Particulate Matter 10 µm
QA	Quality Assurance
QC	Quality Control
RISC	Resource Inventory Standards Committee
SARA	Species At Risk Act
SO ₂	Sulphur Dioxide
TEK	Traditional Ecological Knowledge
TEM	Terrestrial Ecosystem Mapping
TK	Traditional Knowledge
TOR	Terms of Reference
TU	Traditional Use
VECs	Valued Ecosystem Components
VSECs	Valued Socio-Ecosystem Components

GLOSSARY

A Glossary of terms will be provided in the Application. It will include the commonly used terms in the Application to ensure their meanings are consistently applied.

1.0 INTRODUCTION

The Application will include an Introduction to orient the reader to the Application by introducing the geographic setting, the Project, the underlying rationale for the Project, the Proponent, and the purpose, content and format of the Application.

1.1 Project Setting

The Application will describe the geographic setting in which the Project is proposed to take place and include maps at appropriate scales to illustrate the regional setting and clearly locate the Project within that setting. Site plans, sketches and photographs will be used as necessary to indicate Project components, on-site and off-site features and activities.

1.2 The Project

The Application will summarize the Project, location, scale, on-site and off-site components, activities, scheduling and costs. Maps at appropriate scales to indicate both the regional setting and the layout of Project components and activities will be included. The Application will identify labour force requirements (direct jobs only) broken down by construction and operation, the benefits of the Project, and estimated capital cost of the Project.

1.3 The Proponent

The Application will describe the Proponent, including information on the Proponent's history, contact information and corporate philosophy with respect to environmental stewardship and role of First Nations. The Application will provide information on the nature of the Proponent's management structure and organizational accountability for:

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

1.4 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 development at this time within the context of regional, provincial and federal economies, as well as global implications of supply and demand on metal mines and markets.

The Application will include a summary of the economic feasibility of mining the Morrison deposit. This analysis will identify key commercial assumptions used in the analysis such as metal prices and concentrate shipping and refining charges.

1.5 Project History

The Application will provide a summary of the history of exploration activity on and around the Morrison property since its initial discovery. It will summarize the Project planning and Project review history to date, as well as any legal orders or agreements applying to the review of the Project.

1.6 Proponent Ownership and Tenure

The Application will provide a description of the ownership status and development rights held for the Morrison property, including a listing of existing mineral tenures and their status, and other mineral tenures, if any, held in the vicinity of the Project.

1.7 Regulatory Context

The Application will identify federal and provincial government policies, regulations, and land use plans that have a bearing on the Project as well as the need for the EA under the CEAA and BCEAA. The Application will briefly explain the EA processes and describe the role of the Application in the overall EA process. The Application will summarize any legal orders issued pursuant to the BCEAA relating to the review of the Project. The Application will identify provincial and federal legislation, and international treaties, agreements and conventions applicable to the Project. The Application will identify statutory licenses, permits and other authorizations that may be required for the Project, and which of these, if any, will be requested for concurrent review with the Application.

1.8 Land Use

The Application will describe the current land use context and address how proposed Project activities will interact with the objectives and strategies established in the Morice Land and Resource Management Plan. The Application will describe the land uses in the Project area, including resource development, recreational use, fishing and registered hunting, trapping and guiding. The Application will describe third party tenures adjacent to the Project.

The Application will also identify the claimed traditional territories of First Nations in the vicinity of the proposed Project, and briefly summarize available information on the First Nations interests in, and use of, the area potentially affected by Project development.

2.0 INFORMATION DISTRIBUTION AND CONSULTATION

Project information distribution, and public and First Nation participation in EAs are important aspects of Project reviews. Public consultation measures must comply with the “Public Consultation Policy Regulation”, BC Reg. 373/2002 and the requirements set out in the Section 11 order issued pursuant to the BCEAA.

The Application will demonstrate how the Proponent has consulted with interested parties that are likely to be affected by the proposed Project, and other parties who may be interested in the proposed Project (First Nations, public, stakeholders, government and government agencies). At a minimum the residents of Granisle, Topley, Houston, Burns Lake, Smithers, Fort Babine, Old Fort, Woyenne, Tachet and Smithers Landing will be consulted about the Project. Consultations with the Lake Babine Nation may require translation support to ensure all residents have an opportunity to be involved.

This section of the Application will summarize the Proponent’s past and proposed notification and consultation activities in accordance with the consultation provisions of BC Regulations, the Section 11 order and all applicable government policies regarding consultation with First Nations. This section will include an issues-tracking table that states Project comments and questions and how they were addressed.

A list of all agencies, First Nations, communities, individuals and others who received copies of the Application for review and the form in which it was provided will be appended to the Application.

2.1 First Nations Consultation

The Application will:

- (a) describe how Project-related information was distributed and consultations undertaken with the Lake Babine Nation and the details of any jointly developed consultation plan;
- (b) include a detailed consultation log that describes direct consultation activities undertaken by the Proponent with LBN, including formal notification; distribution of Project materials; meetings with LBN leaders, Band Council and individuals; field visits; contributions to investigations; letters; phone calls and emails; objectives of each consultation activity; issues and concerns raised by LBN; the degree to which LBN considered its concerns addressed or resolved; and details of consultation agreements and protocols between LBN and the Proponent;
- (c) include an issues tracking table that states Project comments and questions and how they were addressed;
- (d) describe any consultation agreements reached with First Nations that are likely to be affected by the Project, especially those with asserted traditional territory in the vicinity of the Project; this description will include a summary of the history of the Proponent’s relationship with First Nations with respect to the pre-application

stage of the Project;

- (e) describe consultations undertaken to understand the nature of First Nations' interests in the Project area, and will include the Lake Babine Nation elected officials and the communities of Fort Babine, Old Fort, Tachet and Woyenne – no other First Nations have expressed interest in the Project;
- (f) describe the Proponent's proposed notification of and information dissemination to the Lake Babine Nation and consultation programs to be undertaken during the formal "public comment period", to be scheduled within the 180-day regulatory review period following submission of the Application;
- (g) identify community meetings, presentations and any other methods of consultations to be undertaken during the public comment period;
- (h) ensure there are sufficient opportunities for meaningful consultation and accommodation between the Proponent and the First Nations incorporated into the Environmental Assessment process, as per Application guidelines and timelines;
- (i) describe the Proponent's engagement with First Nations with respect to ensuring that all possible and practical alternatives are considered to avoid, minimize and mitigate any adverse effects of the Project on First Nation's communities and their interests;
- (j) describe consultation with LBN with respect to conducting baseline studies and the extent of First Nations involvement in conducting the studies; and
- (k) describe measures taken to accommodate LBN concerns with respect to protection of cultural and heritage resources and mitigation of potential effects on these resources.

Notwithstanding the above, in the event First Nations are not prepared to provide the Proponent with any or all information otherwise required in the Terms of Reference, the Proponent will describe, in detail and in the appropriate section of the Application, efforts made to collect the information, and to provide any information they were able to obtain from those efforts in the Application.

2.2 Government Agency and Local Government Consultation

The Application will describe consultations undertaken with government agencies and local governments. The Application will describe the objectives of these consultations, the methods used, issues raised during the consultations and the ways in which the Proponent has addressed these issues, using a concordance table.

2.3 Public and Stakeholder Consultation

The Application will describe public and stakeholder consultation undertaken by the Proponent prior to submitting the Application. This description will identify the

objectives of the consultations, outline the methods used, and summarize the issues raised by the public, local stakeholders (e.g. tenure holders) and the ways in which the Proponent has addressed these issues, using a concordance table.

2.4 Proposed Consultation Activities

The Application will describe consultation activities with federal and provincial government agencies, local governments, First Nations, other stakeholders and the public during the review of the Application. The Application will also propose a process for resolving issues during the Application review.

3.0 PROJECT DESCRIPTION AND SCOPE OF PROJECT

The Application will describe the Project facilities including all on-site and off-site components and the activities associated with them for all relevant stages of the Project development, construction, operations/maintenance, and decommissioning/reclamation and post-closure in sufficient detail to allow a meaningful assessment of the Project effects.

If the Project is subject to a review under CEAA, the scope of the Project is determined by the Cabinet Directive on Implementing the CEA Act, which includes federal mandates. Although the scopes may differ between the federal and provincial EA processes, a joint EA review will be conducted and the approved TOR will identify both federal and provincial information requirements. It should however be noted that the TOR has been finalized prior to a determination by federal departments as to what Project components may be subject to review under CEAA. In the interim, federal information requirements have been identified in the TOR. Nothing in this document should be taken to indicate that a decision has been made on the federal Project scope or the appropriate process to take to complete a federal environmental assessment.

Appendix 1 identifies CEAA information requirements.

3.1 Project Description, Rationale and Scope

This section of the Application will provide a detailed Project description including:

- (a) a history of Project planning and development including mining history and exploration activity;
- (b) the rationale for the Project and description of the Project's objectives;
- (c) any sustainability principles that have guided Project planning;
- (d) a summary of site selection studies and alternative locations assessments for the mine-site, load-out access and other major facilities;
- (e) a description of the major phases and scheduling of Project development and estimates of the duration of each phase; and
- (f) if applicable, a federal scope statement on the Project where this is determined through the harmonized process to differ from the provincial scope of Project.

3.2 Location of Project and Mapping

The Application will:

- (a) show the location of the Project and the UTM coordinates and latitude and longitude of the site;

- (b) describe the physiography and geologic hazards in the Project area and vicinity;
- (c) describe the mineral tenures and land status in the vicinity of the Project;
- (d) contain maps, plans, figures and photographs at appropriate scales, including air photos and satellite images if appropriate, that indicate the regional setting of the Project and the site layout of on-site and off-site Project components and activities;
- (e) include maps defining the various study areas for all physical, biological, land-use and socio-economic investigations for the Project, including streams and watersheds, and defining the project area in relation to these study areas;
- (f) describe the proximity to designated environmentally sensitive areas or cultural sites, such as national/provincial/regional parks, ecological reserves, heritage sites and other sensitive areas; and
- (g) provide maps showing the locations of Lake Babine Nation communities and traditional territories and, where applicable or where authorized by Lake Babine Nation, the locations of traditional fishing grounds and country food harvest areas.

3.3 Geology and Mineralization

The Application will:

- (a) describe the regional geology and property geology, including a description of the deposit geology, as well as mineralization, alteration and structural controls;
- (b) provide geologic cross-sections, including at least one pair of perpendicular cross-sections, to show the geology of the proposed open pit;
- (c) provide a summary of how field data was used to develop descriptions of deposit geology, mineralization, alteration and structural controls;
- (d) provide information on relevant sampling, testing and laboratory programs. Any geologic information gleaned from historical sources will be fully referenced;
- (e) discuss deposit geology and its relationship to ML/ARD potential for all geologic units disturbed during mine development, including mineralogy, alteration assemblages, material volumes and the relationship between the geology and the mine development;
- (f) describe the geologic structures in the Project area that may affect the proposed infrastructure through development, operation and closure;
- (g) describe the potential for differential weathering, and describe how this information was used to select the appropriate kinetic cells and the potential for water quality impacts;

- (h) describe the potential for ML/ARD based on variable primary mineralization features, (e.g. disseminated pyrite vs. stock work vs. vein as the predominant mode of occurrence) and how this information was used to design the kinetic test program;
- (i) include condemnation drilling reports acceptable to MEMPR;
- (j) present plan views of the site relating geology, mine infrastructure, drill hole locations and cross-section locations;
- (k) present plans and sections of the pit at variable time intervals throughout the life of the mine (e.g. five year increments) and at closure; and
- (l) illustrate expected lithologies, alteration assemblages or mineralization zones to be exposed at each development stage and determine the influence on effluent discharge quality from ML/ARD if the project was halted for each of the incremental development stages.

3.4 Mineral Resources

The Application will provide the defined mineral resource and/or reserves, including measured, indicated and inferred categories for each zone and the property as a whole. A review of geo-statistical evaluations of the drill-hole database and block models at various cut-off grades will also be included. The Application will include summary information on mine sequencing and materials handling throughout the life of mine.

3.5 Mine Development

The Application will contain sufficient detail to be able to identify all on-site and off-site mine components (Fig. 2), including those 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. Risk assessment shall include the potential for ML/ARD. The sequencing and scheduling of mine development will be provided including the following components:

- (a) open pit development plan including location, design and production scheduling; and operations;
- (b) identification and management of ML/ARD rock;
- (c) low grade ore stockpile;
- (d) crushing and conveying ore;
- (e) all components of the mill and processing plant including flotation cells, reagent handling and storage, and associated infrastructure such as tailings and water pipelines;
- (f) concentrate stockpile and load-out;

- (g) waste rock development plan;
- (h) waste rock and tailings storage facility plans which will identify the location, preliminary designs, preliminary data on geo-technical properties and foundation conditions, seepage and surface water control;
- (i) water management activities and structures including diversions, mine dewatering, treatment and storage;
- (j) mine roads and drainage control;
- (k) heavy equipment fuel, lubrication and maintenance facility;
- (l) explosives magazine, ammonium nitrate and emulsion silos;
- (m) dangerous goods and hazardous material handling, storage and/or distribution;
- (n) overburden storage;
- (o) organic material storage for reclamation;
- (p) condemnation drilling plan in areas of proposed permanent mine structures;
- (q) borrow sources for dam construction; and
- (r) construction materials for roads and impoundments.

The geotechnical components: waste rock pile, tailings storage facility, overburden storage and borrow sources for dam construction, will include a qualitative risk assessment of the most likely mode and most severe impact of failure.

3.5.1 Maintenance Facilities

Maintenance facilities include:

- (s) heavy mobile equipment;
- (t) mill;
- (u) electrical and instrumentation;
- (v) carpenter, paint and sheet metal;
- (w) tires ; and
- (x) small vehicles .

3.5.2 Administration Facilities

Administration facilities include:

- (y) main administration;
- (z) safety, first aid and training;
- (aa) fire prevention system and control;
- (bb) geology and engineering;
- (cc) assay and environmental laboratory; and
- (dd) environmental and community relations.

3.5.3 On-site Support Facilities

On-site support facilities include:

- (ee) sewage treatment plant;
- (ff) potable water treatment;
- (gg) electrical distribution system;
- (hh) ancillary power plant;
- (ii) fuel storage;
- (jj) communications system;
- (kk) putrescibles handling;
- (ll) sanitary landfill; and
- (mm) dangerous goods and hazardous materials storage and disposal.

3.5.4 Off-Site Support Infrastructure

Support infrastructure for mine development and operations associated with the Project include the access road and the transport of concentrate to Stewart BC, or an alternate transshipment terminus. The Application will provide information on the siting of any construction camps and/or transmission line routing in the area. The Application will also contain sufficient detail to describe off-site infrastructure to identify where effects monitoring will be required for the purpose of risk assessment and response plans and to provide details on potential environmental effects.

3.5.5 Permanent Access to the Mine-site

The Application will describe the preferred access route and all relevant design criteria. The Application will also evaluate terrain mapping, hazard mapping, road design parameters, use requirements, construction scheduling, engineering design deliverables, stream crossing structures and design. The Application will describe

proposed mitigation measures if terrain hazards are identified along the access road. The Application will also identify proposed borrow sources for road construction, the use by First Nations and others of any pre-existing roads, the owner of the road, and any road use agreements, and a summary of potential design upgrade requirements.

3.5.6 Power Access to the Mine-site

The Application will identify the options considered to provide power to the mine-site and will describe the preferred option, including a description of power transmission line right-of-way(s). The Application will describe potential terrain hazards and proposed mitigation measures if terrain hazards are identified along the power transmission line.

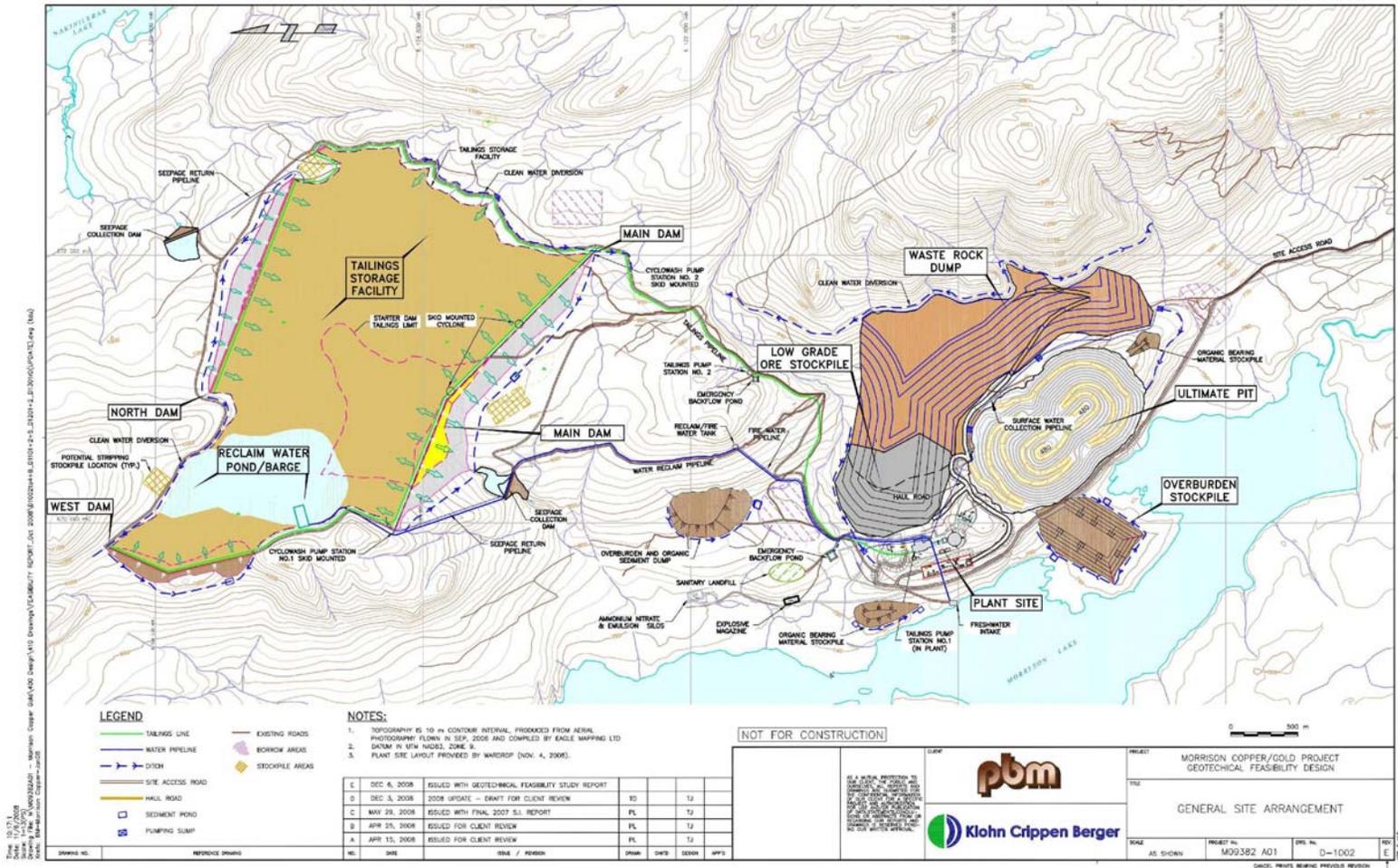


Figure 2 – Morrison Copper/Gold Project General Site Arrangement

3.5.7 Transport of Concentrate to Port

The Application will describe the transport of concentrate from the mine-site to a load-out facility (railhead or the Port of Stewart). The Application will identify the anticipated average number of truck trips per day (both to the port and returning from the port) and the anticipated load and fuel capacity of the trucks used to transport the concentrate. The Application will also provide a review of background dust levels along the proposed transportation corridor.

3.5.8 Stewart Port Facilities

The Application will evaluate the capacity of the Port to accommodate concentrate from the Project if the concentrate is to be shipped from this terminus. The Application will not be required to conduct a cumulative effects analysis of all future proposed mining shipments of concentrate from other mining projects through the Port of Stewart during the life of the Morrison mine.

3.6 Project Development Schedule

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

3.6.1 Project Permits and Development Commitments

The Application will provide a summary list of the relevant permits required, the purpose, and authorizing agency, along with the possible timing of their application or need. Opportunities for concurrent permitting will be identified and a plan proposed. The Application will also provide a summary of commitments, including those related to the management of environmental effects during the construction phase.

3.7 Hazardous Materials

The Application will:

- (a) describe the handling, storing, use and disposition of hazardous materials as part of the proposed development;
- (b) provide the storage location of each of the reagents used in mill circuits;
- (c) List the maximum volume and concentration of reagents to be stored on site;
- (d) describe the transport of petroleum products and other hazardous materials to and from the mine site;
- (e) include a rationale for site selection of storage areas; and
- (f) describe measures taken to protect the immediate environment from spills

and/or leakage including the use of on-site containment features such as concrete pads and dykes, and detection systems used for early warning of spills, if applicable.

3.8 Decommissioning Activities

The Application will:

- (a) provide the expected lifetime of the Project and of any temporary Project components;
- (b) provide a description of the regulatory framework and requirements, industry standards, and government agreements that are needed with respect to the closure phase of the proposed development (including temporary and permanent closure), including plans for mitigating the social and economic impacts of mine closure;
- (c) report minimum standards and criteria, where they exist, of regulatory requirements, industry standards or government agreements;
- (d) provide a clear visual and textual description of the proposed development site at closure and after reclamation;
- (e) describe conceptual decommissioning or reclamation plans including removal of structures and ancillary equipment, and site remediation;
- (f) provide a list of closure, decommissioning and reclamation components, including access roads and activities;
- (g) include plans for the long-term maintenance of permanent facilities;
- (h) describe the monitoring program for permanent infrastructure, including tailings storage facility and its components, after mine closure; and
- (i) provide a list of rationale and alternatives that were considered and rejected (e.g. the removal of all material from site versus partial or total burial), including costs and associated environmental issues; and
- (j) include a summary of commitments and a schedule for the post-development phase.

If applicable, implementation of contingency plans will be ensured through the placement of sufficient financial bonds. The decommissioning plan will be reviewed and updated with relevant agencies and the Lake Babine Nation as necessary.

3.9 Assessment of Alternative Options

The Application will include a description of alternative procedures, designs or component locations considered for the Project including:

- (a) access;
- (b) mining methods;
- (c) mine production rates;
- (d) target extraction volumes;
- (e) mine development scheduling;
- (f) waste rock storage;
- (g) tailings management;
- (h) water management;
- (i) energy production (i.e. hydropower grid, diesel generation);
- (j) employee work schedules and transportation to/from site;
- (k) decommissioning, closure and reclamation; and
- (l) long-term collect-and-treat systems.

The Application will include a rationale for the waste and water management strategies chosen, including a discussion of mitigation requirements (e.g. covers, collection and treatment, etc.), monitoring and maintenance requirements, short and long-term environmental risks and liability, and financial costs.

Where alternatives that would mitigate impacts on the environment and/or enhance the socio-economics of the Project are deemed economically or technically non-feasible, the economic, environmental and technical analysis to determine feasibility will be summarized in the Application.

The Application will reference the CEAA document *Addressing "Need for", "Purpose of" "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act (October, 1998)*.

4.0 ENVIRONMENTAL ASSESSMENT METHODOLOGY

The term 'environment' is used extensively throughout the Application to include biophysical, social, cultural, economic and health aspects, unless context and wording indicate otherwise.

The Application will describe the methodology used to conduct the Environmental Assessment, including the general steps in the EA process; spatial and temporal scoping; identification Project components; description of environment and identification of VECs; identification and description of Project-VEC effects; application of appropriate mitigation; and identification of residual effects.

The information collected will be gathered and analyzed by qualified professional scientists, engineers and consultants using sound scientific principles, and will be presented according to the relevant BC or federal government standards, including RISC standards. The Application will include a full explanation of baseline study design, and will present scientifically defensible data with Project design and statistical considerations clearly outlined. The Application will contain a sufficient level of baseline information to predict positive and negative impacts and will demonstrate the extent to which negative impacts may be mitigated and positive effects augmented by mine design and construction, operational and reclamation practices, and environmental management plans.

In providing baseline information on the environment, the Application will include data collected during the baseline study program including norms, trends and extremes, to the extent that predictions can be made. will be designed so that sufficient baseline data is collected in order to statistically estimate biologically and environmentally significant changes in the receiving environment should the Project be developed. The Application will comment on the quality and reliability of data collected and their applicability for the purpose used; and identify gaps, insufficiencies and uncertainties, especially those that should be remedied for monitoring purposes. The Application will present a quantification of data quality, adequacy and reliability using statistical analysis such as gap analysis, uncertainty analysis and statistical confidence. Explicit documentation of the assumptions, models, and 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 necessary to evaluate the effects of the Project. 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 judgment 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

The Application will identify and present spatial boundaries used for the EA that are consistent with CEAA guideline document approach. Spatial boundaries will be identified using the following criteria:

- (i) the physical extent (aquatic and terrestrial) of the Project, including any off-site facilities or activities;
- (ii) the extent of aquatic and terrestrial ecosystems potentially affected by the Project;
- (iii) the extent of potential socio-economic, environmental and other biophysical effects arising from the Project;
- (iv) input from federal and provincial governments, First Nations and stakeholders;
- (v) spatial boundaries for water quality cumulative effects assessment, which will include the receiving environment around the former Bell and Granisle mines;
- (vi) the rationale for selected hydrometric station locations as they relate to proposed Project infrastructure and the operational requirements, which will be provided along with a table of sampling programs; and
- (vii) Traditional Use and Ecological Knowledge Study, which inform baseline studies and determine spatial boundaries, if appropriate, if available, and to the extent approved by LBN.

Different studies may have different spatial boundaries. Figure 3 shows the spatial boundaries for PEM, TEM, wildlife and aquatic studies. The Application will describe the criteria used to determine the extent of spatial boundaries for aquatic and terrestrial ecosystems.

4.2 Temporal Boundaries

The Application will identify and present the rationale for the temporal boundaries used for the EA, informed by input from federal and provincial governments, First Nations and stakeholders. Temporal boundaries will include the development, construction, operations/maintenance, decommissioning/reclamation, and post-closure phases. Long term temporal boundaries will include sufficient time for ARD and water quality predictions to play out.

4.3 Valued Ecosystem Components (VECs)

The Application will identify VECs that may be affected by the Project using established guidelines for VEC identification. Table 1 presents the VECs identified for the Project. The Application will:

- (a) describe the general criteria used to identify VECs, including the cultural and

economic value of an ecosystem component to LBN;

- (b) identify the methods used to predict and assess the effects of the Project on VECs;
- (c) explain criteria used to assign significance ratings to predicted adverse effects;
- (d) 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;
- (e) include an impact pathway assessment that contains an inventory of potential physical and chemical pathways;
- (f) identify the degree to which receiving environment receptors are exposed to proposed discharges;
- (g) include cumulative effects assessment; and
- (h) use TEK to inform selection of VECs, if appropriate, if available and to the extent approved by LBN.

Table 1 Morrison Copper/Gold Project Valued Ecosystem Components (VECs)

Discipline	Final VECs
Climate, Meteorology	1. Meteorology 2. Climate Change
Air Quality	1. Air Quality
Surface Water Quantity	1. Surface Water Quantity
Surface Water Quality	1. Surface Water Quality
Groundwater Quantity	1. Ground Water Quantity
Groundwater Quality	1. Ground Water Quality
Aquatic Resources	1. Aquatic Resources 2. Sediment Quality
Fish and Fish Habitat	1. Rainbow Trout 2. Pacific Salmon 3. Fish Habitat 4. Lake Trout 5. Dolly Varden 6. Other Fish
Navigable Waters	1. Navigable Waters
Wetlands	1. Wetland Extent and Function

Discipline	Final VECs
Ecosystems and Vegetation	<ol style="list-style-type: none"> 1. Rare Ecosystems 2. Sensitive Ecosystems 3. Undesignated Ecosystems 4. Country Foods
Terrain and Soils	<ol style="list-style-type: none"> 1. Soils
Terrain Hazards	<ol style="list-style-type: none"> 1. Terrain
Wildlife and Wildlife Habitat	<ol style="list-style-type: none"> 1. Grizzly Bear 2. Moose 3. Mule Deer 4. American Marten 5. Fisher 6. Western Toad 7. Waterfowl 8. Forest Birds 9. Raptors
Archaeology and Heritage	<ol style="list-style-type: none"> 1. Archaeological and heritage sites protected by the HCA
Socio-Economic	<ol style="list-style-type: none"> 1. Employment and Income 2. Education, Skills and Training 3. Population and Demographics 4. Business Opportunities and Economic Development 5. Cultural Identity and Sustainability 6. Community Well-being 7. Services and Infrastructure 8. Land Based Livelihoods
Land and Resource Use	<ol style="list-style-type: none"> 1. Access 2. Quality of Experience 3. Quantity of Resources 4. Cultural Value of Land 5. LRMP Land Management Objectives
Visual Resources and Aesthetics	<ol style="list-style-type: none"> 1. Visual Quality
Noise	<ol style="list-style-type: none"> 1. Noise (Includes noise modeling, which will then be incorporated into other assessment (e.g. health, wildlife))
Human Health	<ol style="list-style-type: none"> 1. Human health (Includes effects of noise, air quality, water quality, and country foods)

Table completed.

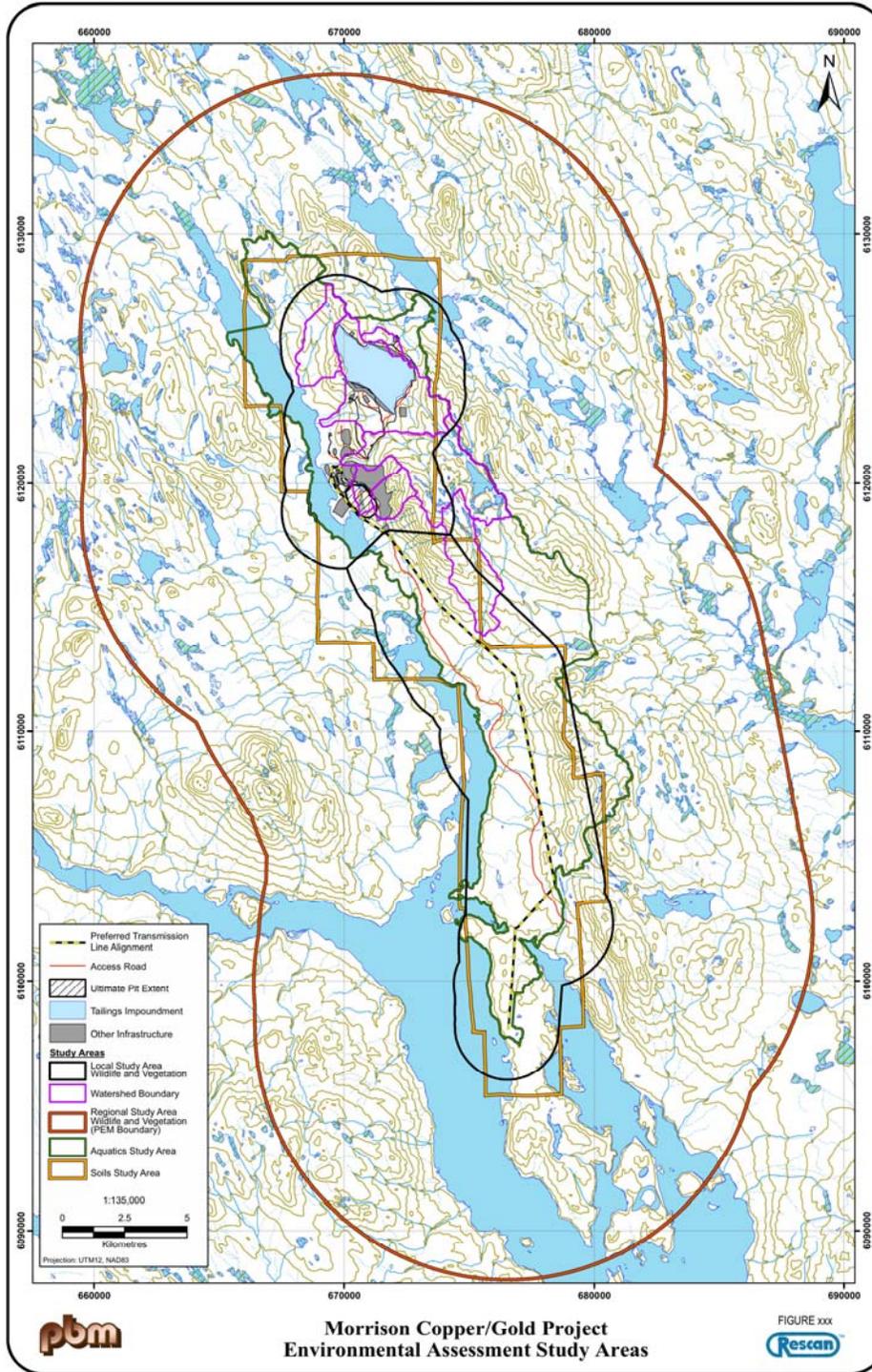


Figure 3 – Morrison Copper/Gold Project Select Spatial Study Area Boundaries

5.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

The Application will describe the existing biophysical, socio-economic and human health setting of the Project. The existing environment includes the resources being extracted over the predicted life of the mine, affected components of the existing environment and related ecological processes, and contemporary and/or past land use and occupancy in the region, whether industrial, aboriginal or other stakeholders. The description of the existing Project setting will be presented in sufficient detail 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. The Application will describe and incorporate pertinent environmental features identified in TEK and TU studies, where appropriate and approved by LBN.

Baseline information collected for the Application will be gathered, analyzed, and presented using the relevant BC government and RISC standards and generally accepted procedures of good scientific practice. Approaches and methodologies for each baseline study will be described. Baseline studies and the Application will also include a discussion of data quality, error and uncertainties. All reports and documents used will be appropriately referenced.

Baseline studies will be used to identify VECs and inform the selection of VECs. The Application will clearly and succinctly describe the following components in baseline studies as they relate to the proposed development:

5.1 Atmosphere and Climate

The Application will describe the 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. The Application will clearly state how climate parameters were derived from regional climate station and on-site climate station data. Climate data and evaporation pan data will continue to be collected throughout Project planning, construction, operations, closure and post-closure. Climate and meteorological data will be used as inputs for water balance modelling to allow for proper design of water management structures and to model potential aquatic environment and dust dispersion effects of the Project.

5.2 Air Quality

The Application will document ambient air quality, including PM_{2.5}, NO₂, and SO₂, and provide a comparison with applicable provincial and national air quality objectives and standards. The Application will describe the baseline air quality as well as the expected air quality during construction and operations including emissions from mining, operating equipment, vehicles, ventilation, heating, roads, the crusher and other facilities.

5.3 Geology and ML/ARD

The Application will describe bedrock and structural geology at the mine site and environs. The Application will describe the mineralogy and geochemistry of the principal units of the deposit that will be disturbed or mined, and the results of any mineralogical analyses.

The Application will reference the “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”, and contain:

- (a) a description of ML/ARD static and kinetic test work conducted and the details of any on-going and future programs including a rationale for and description of sample selection;
- (b) methodologies for all test work, including details of population assessments, sample calculations and clear interpretations and conclusions for all of the collected data;
- (c) raw baseline and predictive data from the ML/ARD assessment programs;
- (d) water chemistry for all toxicity samples, where available;
- (e) results of ML/ARD assessments including pH, total sulphur, percent sulphide sulphur, percent sulphate sulphur, AP, NP, NNP, range, average, median and standard deviation;
- (f) a description of mineralogical sources of neutralizing potential, including differentiation between calcium and magnesium carbonate NP and other forms of NP and a discussion of proposed NP sources to determine the availability of NP and its rate of production;
- (g) a discussion of possible worst case and median case scenarios for ML/ARD potential, including a worst-case kinetic test to capture potential worst-case ML-ARD from exposed pit walls;
- (h) graphic representations of ABA and kinetic test work in industry-standard formats and at appropriate scales to maximize legibility and allow for interpretation of data points;
- (i) data analysis and separate descriptions of waste and ore;
- (j) a discussion of metal leaching potential of disturbed or exposed materials including metals in the material, elements of possible concern under the expected geochemical conditions and soluble constituents;
- (k) a map of humidity cell sample locations;
- (l) a comparison of the geology and mineralogy of the Morrison deposit with the former Bell and Granisle mines and assess their similarities and differences in

regards to ARD using published information and government reports; and

- (m) a description of methodologies used for ABA and calculation of NP and the relative merits and drawbacks of these and possibly other ABA and NP methodologies.

In addition:

- (n) static ML/ARD tests will be conducted to characterize the ML/ARD potential of disturbed materials (waste rock, ore, overburden), including construction materials such as roads, berms, dams, lay-downs, etc.;
- (o) kinetic tests will characterize the ore, waste, tailings and overburden; and
- (p) kinetic studies will include, where applicable, leaching under neutral or near neutral conditions.

For the waste rock, the Application will contain:

- (q) a characterization of waste rock in terms of mine sequencing, ARD potential and mitigation strategies;
- (r) a discussion of implications for waste rock storage at closure;
- (s) a tabulation of waste units in practical terms (e.g. bench heights or equipment specifications) to quantify practical material segregation and handling programs;
- (t) a description of management systems to be utilized for materials' handling at the mine site, (e.g. GPS, ISO quality assurance standards and protocols, etc.) and how they will be implemented;
- (u) profiles for proposed waste rock dumps showing current topography, final dump height and configuration;
- (v) a description of projected volume, thickness and source for intermediate and/or final till caps, if proposed;
- (w) a discussion of the sources and economics of any off-site neutralizing materials, if required;
- (x) a description of dump material composition, predicted drainage quality and quantity, mitigation measures and dump hydrology, including drainage collection and the separation of dump surface run-off from dump seepage; and
- (y) a description of ML/ARD potential of waste material to be used for construction.

For the tailings storage facility, the Application will contain:

- (z) design details for the production rate considered for the Project;
- (aa) a determination of the expected location and rates of seepage from the tailings

impoundment, characterization of seepage quality, and proposed mitigation strategies;

- (bb) a characterization of tailings in terms of static and kinetic ARD prediction tests, mineralogy, particle size, sulphide content, and other parameters; and
- (cc) a characterization of geochemistry of cycloned tailings sands, if proposed for the tailings dam construction, and water chemistry of the cycloned product.

For the ore stockpile, the Application will contain:

- (dd) an assessment of the time for ARD onset and severity of oxidation and its impacts on runoff water quality including a projection of the volume and quality of stockpile runoff;
- (ee) a description of operational plans for the collection and containment of runoff and a discussion of the impact of runoff on tailings supernatant and/or pit water quality; and
- (ff) an assessment of the ability to mill ore after oxidation processes have occurred and the impact on the closure plan in the event that milling is not an option, including contingency plans for the permanent disposal of un-milled ore.

For the overburden, the Application will contain:

- (gg) a description of what is considered acceptable overburden in terms of geochemistry, grain size and other characteristics;
- (hh) a description of overburden types and their location, potential use, ML/ARD potential; and
- (ii) an description of drainage characteristics, expected cover performance, hydraulic conductivity and particle size for material that may be used as cover material.

Some of the information listed above will be discussed in the section of the Application dealing with Closure, Decommissioning and Reclamation.

5.4 Terrain, Soils and Overburden

The Application will describe the surficial geology including terrain units, soils and glacial sediments for on-site components and off-site components including the power transmission line.

5.5 Terrain Hazard Assessment

The Application will describe geological hazards such as slope stability, seismicity, regional seismic hazard, and other natural hazards such as soil and rock landslides and

snow avalanches for on-site and off-site components including the power transmission line. The Application also will describe the geotechnical conditions and slope stability conditions of hills immediately east and southeast of the proposed mine site.

5.6 Hydrology and Surface Water Quality and Quantity

The Application will describe the baseline surface water quality including physical characteristics for all potentially affected waters in the Project area (e.g., Morrison Creek), as well as potential reference areas for environmental effects monitoring. The surface water quantity baseline study will include:

- (a) a discussion of how regional hydrologic data was used to generate estimates of site parameters, including descriptions of the selected regional stations and comparisons with the on-site watersheds; and
- (b) annual hydrographs, median elevations and other characteristics to augment the comparison of regional and on-site watersheds.

The Application will:

- (c) clearly describe the objectives of baseline water sampling;
- (d) the QA/QC program and results;
- (e) contain maps of locations of all surface water monitoring and sampling stations;
- (f) compare current and historic water quality data, where possible, and include in the interpretation reference to improvements in detection limits and sampling quality assurance;
- (g) provide comment on the quality and reliability of baseline data and its applicability for the intended purpose of the EA;
- (h) identifying any gaps, uncertainties and insufficiencies;
- (i) discuss the statistical design of the baseline water quality program;
- (j) present sufficient data to capture spatial and temporal variations in water quality, including seasonal and annual variations;
- (k) include all data used in appendices;
- (l) provide a detailed tabular and/or graphical representation and summary of key statistical parameters (mean, minimum, maximum, 95 percentile, standard deviation, confidence intervals) of baseline water quality data from each of the main receiving environment monitoring locations;
- (m) provide reference to exceedances and conformity with respect to the British Columbia Water Quality and Aquatic Life Guidelines and the Canadian Council

- of Ministers of the Environment (CCME) guidelines;
- (n) present and discuss baseline sediment data;
 - (o) qualitatively discuss the relationship and partitioning of trace elements between water and sediment media for key receiving environments; and
 - (p) establish appropriate metrics for benthic invertebrate monitoring.

5.7 Hydrogeology and Groundwater Quality and Quantity

The Application will describe the baseline groundwater quality and quantity in the Project area that has the potential to be changed during all Project phases and affect Project design. This includes information from hydro-geological studies of groundwater regimes in the Project area, aquifers, groundwater levels, flow and hydraulic gradients, properties of the surficial and bedrock geologic units (including porosity) and hydrology of affected watersheds. The Application will:

- (a) describe the methodology used to determine hydraulic conductivity and other hydraulic parameters;
- (b) characterize the current groundwater-surface water interactions in and around the study area;
- (c) discuss how groundwater aquifers in the study area are connected to aquifers in surrounding areas;
- (d) identify recharge and discharge areas within the study area and environs;
- (e) discuss the methodologies of groundwater quality and quantity investigations, including study design, sampling frequencies, sample locations and analytical methods;
- (f) discuss numerical and statistical estimates of confidence intervals and standard errors for all estimated parameters, rating curves and return period estimates;
- (g) characterize baseline groundwater quality data using tests for standard drinking water parameters including major cations, major anions, nutrients, relevant minor and trace constituents and metals, as well as alkalinity, temperature, pH, Eh and electrical conductivity (EC);
- (h) provide reference to exceedances and conformity in relation to the British Columbia Water Quality and Aquatic Life Guidelines and the Canadian Council of Ministers of the Environment (CCME) guidelines;
- (i) provide maps of locations of all baseline groundwater monitoring and sampling stations;
- (j) identify all recharge and discharge areas within the study area and in the surrounding areas;

- (k) present and discuss sufficient data to capture spatial and temporal variations including seasonal and annual trends in water quality;
- (l) discuss the statistical design of the baseline groundwater quality program; and
- (m) present all relevant data in the text or in appendices.

5.8 Aquatic Biology and Fisheries

The Application will describe the aquatic organisms and habitat and fish populations in the study area. The Application will:

- (a) document all water-bodies in the vicinity of the Project components, including on-site and off-site components;
- (b) describe fish (species and life stage) use, sediments, benthic invertebrates, periphyton, and habitat characteristics of all watercourses that could be affected by Project components;
- (c) describe aquatic species at risk, including benthic invertebrates and periphyton, if applicable;
- (d) include appropriate metrics for benthic invertebrate monitoring;
- (e) describe the risks to benthic invertebrates and periphyton, and discuss stressors, receptors and exposure pathways;
- (f) determine seasonal fish use and migration patterns;
- (g) describe any fish species listed of concern by COSEWIC and SARA in the Project area potentially affected by the Project components;
- (h) measure or estimate the productivity of fish habitat where impacts or losses to fish habitat are anticipated;
- (i) provide information on flow/habitat relationships for fish habitat where flow alterations are a likely outcome of Project impacts;
- (j) provide information that can be used to develop habitat compensation options if habitat losses are anticipated;
- (k) provide photographic records of fish habitat;
- (l) describe background metals levels in fish tissue;
- (m) describe methods used and discuss the quality and reliability of data;
- (n) discuss spatial and temporal variability; and
- (o) identify any gaps, uncertainties and insufficiencies.

Water-bodies will be identified as Non-Fish Bearing after multiyear sampling using a variety of techniques with sampling occurring at different times of the year.

5.9 Wetlands

The Application will identify, characterize and quantify wetland habitat, including:

- (a) wetland type and classification;
- (b) wetland hydrology;
- (c) sediment analysis;
- (d) aquatic resources; and
- (e) species of potential concern.

RISC mapping standards will be followed.

5.10 Wildlife and Wildlife Habitat

The Application will describe wildlife and wildlife habitat, including migratory birds with respect to the *Migratory Birds Convention Act*, amphibians, reptiles and wildlife populations, migration routes, wintering grounds, breeding areas and travel corridors of terrestrial wildlife, particularly ungulates and grizzly bears; and wildlife identified as at risk (including species on Schedule 1 of SARA, COSEWIC-listed species at risk and provincially red/blue-listed species) and their habitats. VECs will be determined within the EA process. The Application will describe potential Project effects on wildlife of importance to LBN, including those identified in TEK studies. Certain bird species and species groups will be surveyed in the field. If applicable, suitable mitigation, monitoring, or compensation plans will be included in the Application.

5.11 Ecosystem and Vegetation

The Application will describe the vegetation and plant communities that may be affected by the Project, including:

- (a) terrestrial ecosystems;
- (b) rare plants and ecosystems (provincially-listed, and COSEWIC and SARA-listed);
- (c) other plant species of potential concern; and
- (d) plant species of importance to LBN, including those identified in TEK studies.

Terrestrial Ecosystem Mapping (TEM) and Predictive Ecosystem Mapping (PEM) will be completed to characterize the distribution of ecosystems. Also, samples of vegetation will be taken for baseline metals analysis. Plant community information will be collected for wildlife habitat modelling and re-vegetation planning. Plants will be sampled and

analysed for metals, and baseline metal levels will be established to provide basis for monitoring programs and assessment of effect on human health.

RISC standards will be followed. Informal QA/QC of PEM mapping for the purposes of wildlife habitat suitability will be completed.

5.12 Navigable Waters

The Application will describe the water bodies and navigable waters in the study area including data on location (latitude and longitude), depth, width, area and any navigation uses.

5.13 Archaeology and Heritage Resources

The Application will describe the heritage and cultural resources including archaeological sites. The Application will clearly describe design, methodologies and results of archaeological field surveys in order to identify potential heritage, cultural and archaeological resources that may be affected by the Project. The Application will:

- (a) contain a review of the Provincial Heritage Register to determine locations and characteristics of recorded archaeological sites within the vicinity of the Project area;
- (b) contain a review other available databases of recorded archaeological and cultural resources;
- (c) describe the design, methodologies, and results of archaeological field surveys, and LBN involvement therein, including LBN involvement in the Archaeological Impact Assessment (AIA) in order to identify heritage, cultural or archaeological resources that may be affected by the Project;
- (d) describe the heritage, cultural and archaeological resources identified in land use and TEK studies, providing the results of TEK studies are released by LBN;
- (e) describe the results of the Archaeological Overview Assessment (AOA) to evaluate potential locations for unrecorded heritage resources and artefacts in the vicinity of the Project area;
- (f) describe how First Nations were consulted in performance of AOA;
- (g) describe the scope of work for conducting AIA and how First Nations were consulted in developing the scope of work;
- (h) cite the Heritage Inspection Permit acquired for the study under Section 14 of the Heritage Conservation Act from the Archaeology and Registry Services Branch;
- (i) describe how field investigations were coordinated with local First Nations, and how First Nations were consulted in these site location evaluations;

- (j) describe subsurface investigations analysis, results of any AIA, and how First Nations were consulted in performance of AIA;
- (k) provide a list of notes, maps or photographs for each archaeological site provided to LBN and record when copies of these materials were distributed to LBN; and
- (l) evaluate the legislative protection status and archaeological significance of any identified sites to determine whether they are protected under the Heritage Conservation Act or other legislation.

5.14 Traditional Ecological Knowledge (TEK)

The Application will present traditional perspectives on Aboriginal traditional land use (TU) and ecological knowledge. TU/TEK will be gathered using standardized interview and mapping techniques with participation, input and collaboration of Lake Babine Nation leadership. TU/TEK will be incorporated into other parts of the Application where appropriate and approved by Lake Babine Nation.

5.15 Land Use

The Application will describe tenured and non-tenured land uses including traditional and non-traditional uses, historic and current uses of lands and resources in areas potentially affected by the Project. Tenure types that will be considered include: guide outfitters, trap line holders, wilderness lodging, forestry, mineral claims and angling. Past and contemporary Lake Babine Nation land and resource use will be described as completely as possible. The Application will describe the survey/interview methodology used to gather land and resource use information.

The Application will describe any written policies and practices of LBN, including any land use plans, that were provided to the Proponent and that would inform the environmental assessment and potential project development.

5.16 Socio-economics

The Application will describe the social, economic and cultural characteristics of communities potentially affected by the Project and the Project's associated infrastructure and transport routes. Study communities of various scales will be considered including local communities surrounding the Project through to the wider region and province. The existing socio-economic conditions and dynamics of communities in closest proximity to the Project will be profiled in the most detail. Community information will be provided on population and demographics, education, skills and training, employment, income and earnings, economic and business environments, health and social characteristics, and infrastructure and housing.

The Application will describe First Nations social, economic, community and cultural information. Information will be provided on Lake Babine Nation culture and society,

government and treaty negotiations, social and health characteristics, and business environment.

5.17 Country Foods

The Application will describe the use of country foods in the footprint area. Studies will identify species having food or cultural significance and will describe how LBN was meaningfully involved in the studies. Samples will be taken to establish baseline levels of metals for use in monitoring activities, and to inform the potential effects to Human Health.

5.18 Access and Infrastructure

The Application will describe access to and within the mine site and associated infrastructure. The Application will also describe the evaluation of selected routes and determination of the costs of use for concentrate haulage.

5.19 Noise

The Application will describe current noise levels in the Project area, including areas in the proximity to inhabited cabins and residences and along the access roads where there are residences, if any.

5.20 Visibility and Aesthetics

The Application will describe visibility and aesthetics in the study area and will identify viewpoints from which visual quality monitoring will be completed.

6.0 ASSESSMENT OF PROJECT EFFECTS, MITIGATION MEASURES AND SIGNIFICANCE OF RESIDUAL PROJECT EFFECTS

The Application will analyze potential environmental, economic, health, social and heritage effects of the Project, including cumulative environmental effects and the potential for accidents and malfunctions that could affect the natural environment, and the effects of the environment on the Project.

For the purposes of meeting the environmental effects assessment of CEAA agencies, “environmental effects” means, in respect to the Project,

- 1) any change that the Project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*, and any change to water quality or the aquatic environment;
- 2) any effect of any change referred to in (a) on:
 - a) health and socio-economic conditions;
 - b) physical and cultural heritage;
 - c) the current use of lands and resources for traditional purposes by aboriginal persons;
 - d) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; or
- 3) any change to the Project that may be caused by the environment.

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 all phases for all environmental components included in this section subject to requirements of regulatory agencies during operational and post-closure phases. For each category of effects in this section, the Application will describe the potential environmental effects of the Project on resources identified in TEK and TU studies, providing the results of TEK and TU studies have been released by LBN.

The Application will clearly and concisely present all pertinent data and describe assessment methodologies. Information will be provided on magnitude and frequency of effects and the identification of stressors, receptors and exposure pathways in the effects assessments including those related to water quality and the aquatic environment. The Application will ensure the Project effects, mitigation measures and significance of residual Project effects are accounted for during all phases of Project development.

Information gaps will be identified along with reasonable suggestions on how to remedy

them. The Application will provide the statistical basis for the assessment of probabilities and confidence limits provided, except for some social and cultural studies that may use qualitative data.

The proposed end land use of the mine site once operations have ceased will also be described.

Mitigation

The Application will:

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

Significance of the Residual Adverse Environmental Effects

The Application will assess residual effects, which include beneficial effects and those adverse environmental effects that 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) reversibility 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. The Application will follow the “Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects” (CEA Agency 1994).

6.1 Atmosphere and Climate

The Application will identify potential effects on local climate and meteorology. The analysis will document greenhouse gas emissions in a manner consistent with guidance from “Incorporating Climate Change Considerations in Environmental Assessment General Guidance for Practitioners” (CEA Agency, 2003). 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 in the Application.

The Application will also describe:

- (a) the effect of climate warming and climate variability on mine design and impact assessment;
- (b) greenhouse gas assessment including expected greenhouse gas emissions over all phases of the Project;
- (c) the Projects’ marginal contribution to total national and provincial emissions on an annual basis;
- (d) the intensity of greenhouse gas emissions per unit of energy produced and how it compares with industry and technology performance;
- (e) describe and quantify direct effects on large scale carbon sinks (i.e., vegetation loss due to the mine-site and road building), if any, including best practices for greenhouse gas emissions or emissions intensity and specific approaches towards managing emissions over the lifetime of the Project; and
- (f) the Project’s sensitivity to changes of specific climate and related environmental parameters, including total annual rainfall, total annual snowfall frequency and/or severity of precipitation extremes and stream-flows.

6.2 Air Quality

The Application will identify potential effects on air quality associated with all phases of the Project, including point and mobile sources such as vehicle exhaust and particulates and the potential effects from blasting and ore concentrate transport. 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);
- (b) atmospheric dispersion of emissions with emphasis on PM2.5 and PM10 on a local and regional scale;

- (c) acid deposition and impact of the acidic precipitation resulting from release of gasses such as NO₂ and SO₂;
- (d) the impact on biological receptors such as vegetation, fish, wildlife and human health; and
- (e) a demonstration of compliance with applicable federal and provincial air quality standards.

6.3 Geology and ML/ARD

The ML/ARD prediction and prevention program will take a “phased” approach that has been initiated in advance of the Application and will continue to be carried out and modified throughout the various phases of the Project in order to characterize all geochemical materials to be disturbed or created during mining. The Application will be developed in accordance with BC ML/ARD Policy and Guidelines.

The Application will include:

- (a) descriptions of geology, mineralization and alteration;
- (b) description of geochemistry; and
- (c) an assessment of the seismicity of the mine site; and
- (d) a demonstration that sufficient geochemically suitable materials are available to meet projected construction requirements of the Project.

The Application will contain analyses or discussions of ML/ARD potential for:

- (e) open pit;
- (f) ore;
- (g) waste rock;
- (h) tailings and any seepage that may be associated with the tailings dams;
- (i) overburden;
- (j) construction material;
- (k) material stockpiled for reclamation, including its volume and characteristics; and
- (l) the impact of mitigative actions at the mine site (waste dumps, tailings).

The Application will:

- (m) clearly describe terms and methods used in the geochemical modeling (including the use of geochemical analogues);
- (n) assess the time to ML/ARD onset for all potentially ARD generating materials

and utilize this information in the development of management plans;

- (o) discuss material volumes, mine sequencing, segregation potential and/or disposal methods; and
- (p) mitigation and management plans, contingency plans, and concepts for operational and post-closure monitoring and maintenance plans.

If waste rock segregation is proposed, the Application will:

- (q) assess the feasibility of successfully segregating PAG and non-PAG waste materials during operations;
- (r) propose geochemical segregation criteria and identify operational methods that will be required to achieve geochemical characterization during operations; and
- (s) will include a sensitivity analysis to assess the effects of imperfect segregation of waste rock.

If water cover is proposed for ML/ARD management, the Application will include:

- (t) identification of the type, volume and geochemistry of mine waste to be flooded;
- (u) the time to onset of ML/ARD for mine waste to be flooded;
- (v) the disposal methods and location;
- (w) the time until full flooding will occur;
- (x) demonstration that mine waste will remain flooded in extreme climatic events;
- (y) measures to mitigate soluble contaminants that could effect water quality;
- (z) an assessment of geochemical stability under flooded conditions; and
- (aa) monitoring and maintenance requirements to ensure geochemical and physical security of flooded mine wastes.

If engineered cover systems are proposed, the Application will:

- (bb) provide a conceptual design including design objectives and principles, characteristics and volumes of cover materials required;
- (cc) describe construction methods;
- (dd) assess the expected performance and long-term effectiveness under the expected range of climatic conditions; and
- (ee) describe monitoring and maintenance requirements and contingency plans.

If drainage collection and treatment is proposed as a mitigation strategy for the Project, the Application will:

- (ff) contain a conceptual design including location, characterization of influent and effluent chemistry and flow, and capital and operating costs;
- (gg) a discussion of the effectiveness of the drainage collection and holding system and conceptual design information on the treatment process including predicted reagent use;
- (hh) assess the predicted performance under the expected range of flow and climatic conditions;
- (ii) describe conceptually the sludge disposal plan; and
- (jj) describe the operating, monitoring and maintenance requirements to ensure successful treatment is sufficient to achieve long-term environmental protection requirements.

The Application will include an assessment of conceptual ML/ARD prevention/management strategies under a temporary or early closure scenario.

6.4 Terrain, Soils and Overburden

The Application will identify the potential impacts on the environment when surficial geology, bedrock or soils are disturbed or used for construction purposes. The analysis will include the proposed Project's impact including:

- (i) impact of erosion in relation to altered drainage, and
- (ii) impacts of borrow pits and aggregate use.

The Application will reference published reports on geochemistry for the region to obtain information on background metal concentrations.

6.5 Terrain Hazard Assessments

The Application will analyze the impacts on the environment due to potential terrain hazards, landslides and seismicity. Impacts of the Project on the slope stability of Hearne Hill will also be discussed.

6.6 Hydrology and Surface Water Quality and Quantity

A numerical water model will be prepared that incorporates all components of the Project throughout all of the Project's development phases and under a range of climatic conditions. All parameter estimates (e.g. precipitation, evaporation, stream flows, groundwater flows, soil permeability, hydraulic roughness, water balance) reported will include the source of information (either estimates or empirical) and make reference to measurement standards or collection protocols used, assumptions built into the data, and data reporting that includes ranges and confidence estimates for parameters.

The Application will integrate results of the ML/ARD prediction work and surface hydrology and water balance information to develop water quality predictions for input into the impact assessment work, to determine materials handling procedures and to assess and develop ML/ARD mitigation/management requirements for the Project.

The Application will outline the effects on surface water quality from proposed Project activities using the numerical water model. The Application will provide a detailed assessment and prediction for all site water discharges including volumes, water quality, discharge structures and location, potential impacts on the receiving environment and the description of any treatment processes. The characterization will include a consideration of changing ML/ARD influences over time. Geochemical modeling will be presented in a clear and transparent manner and the assumptions and rationale used to estimate water quality will be explained.

The Application will identify potential effects of the Project on surface water quantity and quality. Effects conclusions will be based on predicted and modeled water quality of all waste streams and containment ponds throughout the Project, including (where applicable) mine water, seepage, surface runoff and collection ponds, process plant discharges, the open pit dewatering pond and sewage treatment facility.

The Application will provide:

- (a) information describing how current baseline and ongoing surface water quality and flow rates are anticipated to be altered by individual mine components. Information will focus particularly on the open pit, ore stock piles, waste rock pile and tailings impoundment;
- (b) an assessment and prediction of water quality for major mine components (waste rock dumps, open pit, ore and low grade ore stockpile, tailings impoundment etc.) and all on-site surface water discharges for important times (i.e. operations, closure, post-closure). The assessment will include volumes, water quality, discharge structures and location, potential impacts on the receiving environment and the description of any mitigation strategies and/or treatment processes required to prevent and/or manage ML/ARD; and will describe contingency plans if there are significant uncertainties or risks associated with the predicted water quality, and for dealing with excessive run-off events and drought conditions, if necessary;
- (c) a prediction of the surface run-off rate, predicted quality, control and mitigation strategies for surface run-off from the various mine components, (e.g. pits, waste rock dumps);
- (d) a description of potential effects on surface water quantity, including changes in timing, volume and deviation of peak and minimum flows resulting from the proposed Project and dewatering of open pit and resulting impacts on the tailings pond water balance, water level and outflow rates;
- (e) a description of the predicted mine inflows, water handling procedures, water balance predictions and contingencies for potential higher-than-expected

inflows;

- (f) a description of potential effects of the Project on the study area watersheds, including a detailed description of the hydrology of the Morrison Creek watershed, and water chemistry impacts of surface runoff;
- (g) a prediction of the seepage rate and water quality and description of the control and mitigation strategies for all potential seepage sources, including tailings impoundment, waste dumps, open pit and other components, where applicable;
- (h) a description of how any effluent is predicted to mix in the receiving environment in Morrison Lake and Creek and any 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) through concepts such as plume delineation;
- (i) details of water requirements for the tailings storage facility, including impacts of tailings water overflow on the water and stream sediment chemistry of the receiving environment during operations, in the short-term after closure, and in the long-term post closure period; contingency plans for possible excessive runoff events and drought; and potential changes to groundwater-surface water interactions resulting from Project activities;
- (j) a discussion of tailings toxicity and implications for aquatic wildlife, birds and amphibians;
- (k) a discussion of the potential effects on water quality, including treated sewage flows to associated wetlands and downstream waters;
- (l) a description of siltation and water chemistry effects (e.g., runoff along mine site roadways, proposed access routes, transmission lines and drainage ditches);
- (m) a discussion of waste rock chemistry, runoff characteristics and the implications for wildlife and downstream water quality;
- (n) a description of potential contaminant loading and dispersion, including surface runoff;
- (o) a description of the effects of blasting and its associated residues, in particular, nitrogen, nitrate, nitrite and ammonia on fish and non-fish bearing water sources, including possible trophic status changes in the receiving environment and, if necessary, ways to reduce or eliminate nutrient input; and
- (p) a description of mitigation strategies to separate non-contaminated drainage from potentially contaminated drainage, and how erosion and sediment discharge will be prevented during the construction, operational and closure phases.

The Application will provide a profile of the pit illustrating the levels to which flooding can be achieved based on hydrology, structural influences, backfilling (if applicable), in-pit

contours, and with respect to seasonal variability of flooding levels. The Application will characterize impacts to pit water quality over time as the pit fills and pit wall oxidation products become available.

For the Environmental Effects Monitoring Program, the Application will include a power analysis for key parameters of concern using existing baseline data to develop a graph of power vs. sample size for effect sizes determined by identifying critical effects thresholds.

6.7 Hydrogeology and Groundwater Quality and Quantity

The potential effects on groundwater quantity and quality and groundwater-surface water interactions resulting from proposed Project activities will be discussed. Effects conclusions will be based on predicted and modeled water quality and quantity of all waste streams and containment ponds throughout the Project, including mine water, seepage, surface runoff and collection ponds.

The Application will provide maps showing direction of groundwater flow. Information available on the extent, nature and characteristics of faults in the pit and environs will be presented in the Application, including an assessment of the hydraulic connectivity between the pit and adjacent watercourses.

The Application will outline the effects on groundwater quality from proposed Project activities based on the numerical groundwater model, including all assumptions, data needs and modelling software used. The model will integrate the water management infrastructure including the mill, open pit, tailings impoundment and all other associated infrastructure, inputs, outputs and receiving environment flows to allow for the assessment of flow-path capacity and receiving environment dilution. The groundwater model will outline effects on groundwater quantity and quality for average conditions on site.

The groundwater model will be calibrated with on-site data. Input parameters, boundary conditions and limitations of the model will be discussed. The accuracy of predictions will be explicitly stated. All parameter estimates (e.g. precipitation, evaporation, stream flows, groundwater flows, soil permeability, hydraulic roughness) reported will include the source of information (either estimates or empirical) and will make reference to measurement standards or collection protocols used, assumptions built into the data, and data reporting that includes ranges and confidence estimates for parameters. Details will be provided with respect to the water balance model on the transition from baseline to construction and operations. The groundwater model will also consider various closure scenarios. Data requirements to calibrate the model will also be described.

The effects assessment will include:

- (a) a detailed characterization of geochemical influence on inflowing groundwater from all potential sources, including: mine rock exposed on pit walls, materials temporarily stored (e.g., waste rock); and water released or leached from tailings

dam and other structures;

- (b) a discussion of potential effects from the tailings storage facility, such as seepage;
- (c) a discussion of contaminant loading and dispersion, including surface runoff; and
- (d) a discussion of the potential effects of blasting and its associated residues, in particular, nitrogen, nitrate, nitrite and ammonia on fish and non-fish bearing water sources, including possible trophic status changes in the receiving environment and, if necessary, ways to reduce or eliminate nutrient input.

The groundwater model and effects assessment will be integrated with the results of Project ML/ARD and geochemical studies.

6.8 Aquatic Biology and Fisheries

The Application will identify potential effects on aquatic life, fish and fish habitat during all phases of the Project and explain how these will be avoided or minimized or addressed through appropriate mitigation measures. Aquatic life includes: benthic invertebrates, periphyton and plankton. The Application will include descriptions of:

- (a) the footprint of development;
- (b) infrastructure development;
- (c) dewatering activities;
- (d) flow changes from water management and diversions; and
- (e) impacts from compensation activities.

The analysis of potential effects will consider:

- (f) productive capacity of aquatic systems during all Project phases;
- (g) risks to benthic invertebrate, periphyton, aquatic macrophytes and plankton communities as well as productivity of Morrison Lake;
- (h) all creeks and rivers that may experience changes to fisheries resources including, but not limited to the Morrison valley, and streams associated with the road access, any linear corridors for pipelines or conveyors, transmission line;
- (i) habitat loss or alteration, including aquatic vegetation and sensitive areas such as spawning grounds (including shoreline spawning assessment of Morrison Lake), nursery areas, winter refuges and migration corridors, and riparian (streamside) vegetation;
- (j) any rare and/or sensitive species (including fish and amphibians) and habitat and COSEWIC/SARA-listed species, and species of cultural or traditional use importance to First Nations (e.g. Salmon);

- (k) mortality (includes fishing);
- (l) long-range blasting effects through tremor effects on fish and fish habitat in local aquatic systems;
- (m) aquatic organisms and habitat, including downstream Morrison River fisheries and fish populations extending into Babine Lake;
- (n) 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, metals) due to runoff or discharges from the Project;
- (o) mitigation and/or compensation requirements;
- (p) physical and chemical changes to sediment quality; and
- (q) potential changes to water temperature and depth in aquatic environments affected by the Project.

Note that impacts will be assessed on all water bodies likely to be impacted by the Project, not just lakes and water bodies with fishery resources. 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”.

In the event that there is an unavoidable harmful alteration, disruption or destruction (HADD) of fish habitat, the Application will describe the “HADD” with regard to magnitude and significance, and provide rationale to justify why the HADD is not avoidable and propose a fish compensation plan to offset the HADD such that no net loss of productive fish capacity is achieved. Adequate information will be described to demonstrate that the fish habitat compensation measures will be technically feasible and biologically effective.

6.9 Wetlands

The Application will describe the potential effects on wetlands.

6.10 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 birds, giving consideration to, and demonstrating linkages between, predicted physical and biological changes resulting from the proposed development. The assessment will consider effects at multiple ecological levels with 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. British Columbia Wildlife Habitat Rating Standards Version 2 (MOE, 1999) will be used and Provincial RISC standards will be followed.

A Valued Ecosystem Component (VEC) approach will be taken that focuses

assessment on species that either have conservation status provincially (i.e., red and blue-listed species) 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:

- (a) a quantitative and qualitative determination of overall loss or alteration of terrestrial and wetland habitat that will result from Project development. 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;
- (b) a qualitative assessment of possible physical hazards and attractants for wildlife (i.e., assessment of the potential impacts of roads, transmission lines, pits, pipelines, and other structural features on wildlife feeding, migration and movement, denning and refuge, reproductive behaviour and success, and direct mortality);
- (c) 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);
- (d) 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);
- (e) a qualitative assessment of the potential for population level impacts to VEC species resulting from the combined impacts of
 - (i) habitat loss or alteration;
 - (ii) physical hazards;
 - (iii) chemical hazards;
 - (iv) sensory disturbances; and
- (f) proposed mitigation, monitoring, and compensation programs for avoiding, minimizing, tracking, and compensating Project related impacts on wildlife.

6.11 Ecosystem and Vegetation

The Application will identify potential effects on:

- (a) local plant communities (ecosystems), including sensitive and rare ecosystems;
- (b) culturally significant species and species of importance to LBN, including those

identified in TEK studies; and

- (c) rare plant species (provincially-listed, and COSEWIC and SARA-listed).

The Application will also describe the potential for invasive, noxious plants, as defined in the province's Weed Control Act (1996). The Application will describe consultation activities engaged in to identify species of importance to LBN.

6.12 Navigable Waters

The Application will:

- (a) identify potential effects on navigability of water bodies that may be affected by the Project, the nature of the effect, and in consultation with a Navigable Waters Protection Officer any mitigation measures to be implemented;
- (b) provide data on location (latitude and longitude), width, depth, and any navigation use or issues where works are proposed in, under, over, through or across a potentially navigable water body;
- (c) include conceptual level information on any proposed single span bridges including location, length and width of any proposed single span bridges and whether any works related to bridge construction are proposed over navigable waters. (Note: No new bridges or crossings of navigable waters are anticipated);
- (d) describe potential effects on navigation with respect to the identified waste rock and tailings disposal areas, and road or transmission access corridor; and
- (e) include information on existing bridges to be upgraded in the Project area or related to the new transmission line including the current and future owner/maintainer of the bridge, location of watercourse crossings, width and depth and knowledge of any navigational use or issues.

6.13 Archaeology and Heritage Resources

The Application will:

- (a) on the basis of the AIA, identify potential effects on archaeological, heritage or cultural resource; including magnitude, frequency, geographic extent, duration, reversibility, resilience, significance, probability of occurrence and confidence level; and consider all other requirements of the *Heritage Conservation Act*, R.S.B.C. 1996, c. 187;
- (b) assess the heritage significance value of any cultural deposits identified;
- (c) include a description of archaeological values along the proposed transmission line right-of-way and the potential for archaeological effects;
- (d) present mitigation measures that protect the sites from Project development, or if

development impacts are unavoidable, and the means to preserve information from the sites through systematic archaeological data recovery;

- (e) identify mitigation measures for any sites identified during the archaeological impact assessment where impacts from land altering development activities cannot be avoided;
- (f) follow provincial standards for archaeological investigations;
- (g) describe participation and consultation of First Nations and any information provided by First Nations' in determining areas of archaeological, including Culturally Modified Trees (CMTs) and historic blazes and other aspects of archaeological studies;
- (h) commit to obtaining, if required, a Site Alteration Permit(s) under Section 12 of the Heritage Conservation Act will be obtained prior to disturbing any ground;
- (i) where possible, determine which archaeological or cultural resources can be protected through design mitigation and avoidance measures;
- (j) include AOA and AIA studies performed in respect of the Project;
- (k) describe how LBN was consulted in determining the resources to be protected;
- (l) describe archaeological protection measures and how LBN was consulted in developing these measures.

6.14 Traditional Ecological Knowledge (TEK)

The Application will describe where and how TEK is incorporated into the assessment, including its effects on predicting impacts and determining mitigation measures. Where traditional knowledge is not available or not provided to the Proponent in a timely manner despite reasonable diligence, the Application will describe efforts taken to obtain it.

The Application will present both the scientific and traditional perspectives on predicted impacts wherever both types of information are available.

6.15 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 Morice Land and Resource Management Plan (MLRMP). The Application will:

- (a) provide maps and/or descriptions of existing and past land and resources uses in relation to the proposed development;
- (b) assess the Project's possible impacts on the following existing land and resource uses:

- (i) important areas traditionally-used by First Nations;
- (ii) seasonal camp areas;
- (iii) permanent camp areas;
- (iv) hunting, trapping, outfitting, recreational, tourism, commercial and sport fishing areas;
- (v) parks and protected areas adjacent to the proposed Project; and
- (vi) other resource tenures (egs. forestry, mining);

The Application will:

- (c) include an effects assessment for Quality of Experience, which will include potential effects from noise, visual quality, and regional and local air quality;
- (d) consider and LBN land use plans available;
- (e) consider the network of trails and water transportation routes that connect traditional and contemporary use sites, such as seasonal and permanent camps;
- (f) consider the broader cultural landscapes that include the connectivity between these sites;
- (g) describe how LBN was consulted about land and resource use impacts, including with respect to recreation and access management, visual impact assessment, sound effects, socio-economic and health impact assessment, and monitoring; and
- (h) describe land uses identified in TEK studies performed with LBN involvement.

6.16 Socio-economics

The Application will describe the Project's potential effects on the socio-community environment of the:

- (a) province;
- (b) region;
- (c) First Nations; and
- (d) communities in the Project area, including Granisle, Fort Babine, Old Fort, Donald's Landing, Tachet, Woyenne, Burns Lake, Smithers, Topley, Telkwa and Houston.

The Application will focus on the Project's potential effects on the socio-economic baseline elements at the local community level, with effects considered in the context of individual residents, families, businesses, trappers, guide outfitters, recreationalists and

the wider community. The Project's potential socio-economic and cultural effects upon the Lake Babine Nation (LBN) at the local level will also be given particular attention in the context of the Proponent's commitment to engage the participation of the LBN.

The Application will analyse potential effects of the Project on the current and future socio-community environment, including:

- (e) changes in job opportunities; employment levels, average wages and salaries over the life of the proposed development, including estimates of local and First Nations participation and details of the required skill levels necessary to obtain employment directly at the mine;
- (f) training, availability and use of local skilled workers and LBN members to meet job requirements, local hiring policies and commitments, transferability of skills between industries and barriers to employment, advancement, and retention of local and LBN workers, including training or retraining as necessary;
- (g) opportunities for and demands on local and regional businesses;
- (h) impacts on the economy of First Nations;
- (i) federal, provincial and municipal tax revenues;
- (j) economic diversification and sustainable economic development;
- (k) impacts on provincial Gross Domestic Product (GDP);
- (l) predicted inflation and the cost of living impacts;
- (m) population and demographic changes and indicators, including migration patterns;
- (n) social and community services;
- (o) housing, including values, costs, availability, taxes and vacancy rates;
- (p) cultural well being of communities, including effects of changes on cultural and heritage activities and language use; and
- (q) road safety and road hazards along potential haul routes.

6.17 Country Foods

The Application will describe the potential effects of the Project on Country Foods. The Application will describe levels of contaminants of potential concern (e.g., mercury and arsenic) existing in country foods and traditional medicines such as fish, wild game, plants and berries that are consumed by First Nations, where such foods and medicines were made available for study.

6.18 Access and Infrastructure

The Application will identify potential effects on existing social, institutional and community services, transportation facilities, infrastructure (e.g., transportation safety), and permanent changes to the infrastructure and services arising from the Project.

6.19 Noise

The Application will identify potential effects due to increased noise levels from blasting, crushing and equipment operation at the Project, and trucking noise from the Project site along the access road to a northing location approximately parallel to Bell mine, on wildlife, residents and mine workers. 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. The Application will identify the closest human receptors to any Project-generated noise. A qualitative assessment of the potential effects for identified human receptors will be conducted. The 'percent highly annoyed' metric will be included in the assessment. The Application will present the effects of noise monitoring and include a Noise Management Plan.

6.20 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, and will include a comparison of the current situation with the end-of-mine stage and 20 years after closure.

6.21 Human Health

The Application will assess potential effects of all phases of the Project on public health and safety with consideration of relevant physical environment and social health determinants. The Application will:

- (a) incorporate proximity and population density (if possible) of human receptors to different areas of the Project such as access roads, tailings pond, mill, waste rock storage, concentrate load-out and the open pit;
- (b) assess potential effects of the Project on the health and safety of the public (this includes off-duty, off-site employees, their families, First Nations, local stakeholders and local communities) and describe mitigation measures for any possible effects to human health and safety;
- (c) describe levels of contaminants of potential concern (e.g. arsenic) in relation to country foods such as fish, wild game, plants and berries that are consumed by First Nations, where such foods were made available for study; and
- (d) describe, as appropriate, any monitoring plans and strategies to mitigate potential effects of noise on human health.

Wherever possible, effects will be calculated as risks.

The Application will use information described in other areas of the Application (e.g., air quality, noise, water quality, land use, etc.) to assess the Project's potential effects on human health. A screening level risk assessment of the potential human health risks due to contaminants in country foods will be used as the basis for determining human health effects. Health effects from baseline data and predicted levels of air contaminants will be assessed using Health Canada's guidance document on estimating number of excess deaths in Canada due to air pollution, whereby estimated health outcomes down to background levels will be calculated. A risk assessment also will be conducted for diesel particulate matter.

6.22 Transportation

The Application will assess potential effects on wildlife, fish and water quality of transporting the concentrate along existing highways, and if relevant, to the Port of Stewart, and identify any proposed mitigation measures.

6.23 Accidents and Malfunctions

The Application will discuss potential accidents and/or malfunctions associated with the Project, including the following components:

- (a) tailings dam;
- (b) sedimentation dam;
- (c) pit wall slope;
- (d) waste rock slope;
- (e) concentrate or hazardous substance spills;
- (f) possible accidents from ML/ARD from tailings disposal; and
- (g) explosives.

The Application will identify any contingency plans and response options for probable accidents and/or malfunctions.

6.24 Sustainability

The Application will describe the design factors, operational procedures and management plans of the Project that contribute to the concepts of sustainability.

6.25 Residual Adverse Effects Summary

The Application will summarize the findings and significance of residual effects assessments for each VEC.

7.0 EFFECT(S) OF THE ENVIRONMENT ON THE PROJECT

The Application will assess the effect(s) of the environment on the Project, in particular impacts on the integrity of the proposed development infrastructure including the tailings containment facility, water retention dikes, road operation, waste rock dumps, access road, transmission line, and design, construction and operations of the long-term collection and treatment facility. The Application will:

- (a) assess the full range of climate conditions (including extreme weather events, wet, dry and normal precipitation and extreme temperature spells, freeze-thaw cycles);
- (b) assess the effects of seismic activity;
- (c) assess other extreme events such as fires and floods, snow avalanches and landslides;
- (d) describe how ore processing will be maintained in the event of unforeseen meteorological conditions, such as extreme snowfall;
- (e) describe measures designed to mitigate these effects; and
- (f) describe or refer to appropriate contingency plans.

8.0 CUMULATIVE EFFECTS

The Application will define the term 'cumulative effects'. The Application will include an evaluation of the residual environmental and socio-economic effects that are likely to result from the proposed Project development and how they may combine with the residual environmental and socio-economic effects from other past, present and reasonably foreseeable future projects and activities to result in cumulative effects. The Application will include a rationale for excluding any development from the cumulative effects assessment, if necessary.

The Application will assess cumulative effects in relation to:

- (i) valued ecosystem components; and
- (ii) valued socio-economic components.

A preliminary list of developments and activities will include:

- (iii) access roads, both forestry and mining;
- (iv) vegetation removal, both forestry and mining;
- (v) rural / recreational development;
- (vi) other anticipated mining activity; and
- (vii) recreational and traditional hunting and fishing.

The Application will include a discussion of potential cumulative effects related to:

- (a) visual and aesthetic resources;
- (b) the biophysical environment;
- (c) inflow to Babine Lake;
- (d) social environment;
- (e) economic environment;
- (f) recreational users;
- (g) cultural environment;
- (h) archaeological, cultural and heritage resources;
- (i) the potential for cumulative effects with respect to regional and local groundwater quality;
- (j) the potential for cumulative effects with respect to surface water quality;

- (k) potential effects on downstream water users (e.g., Fort Babine and others);
- (l) metal loading into Babine Lake, which will be assessed as per existing information provided by the Province of British Columbia and third parties, including projected copper loadings in effluent that may affect current concentration in Babine Lake; and
- (m) whether copper loadings will affect the complexing capacity of Babine Lake or whether loadings might delay Babine Lake recovery from Bell and Granisle effects.

All methodologies used for the cumulative effects assessment will follow the framework as set out by the CEA Agency in the documents “*Reference Guide: Addressing Cumulative Environmental Effects*” (November, 1994) and “*Cumulative Effects Assessment Practitioners Guide*” (February 1999), and refer to the operational policy statement “*Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act*” (CEAA Agency 1999). In addition, the Application will include:

- (n) explicit documentation of the assumptions, approaches, methodologies, models, and information sources used;
- (o) information limitations and associated levels of uncertainty to support all steps of the cumulative effects assessment;
- (p) presentation of data and analyses that are verifiable in nature and quantitative, where data are available;
- (q) best professional judgment or expert opinion in the absence of verifiable knowledge, whether from traditional or scientific sources; and
- (r) a discussion of any mitigation measures identified for cumulative effects and follow-up programs.

9.0 ENVIRONMENTAL MANAGEMENT SYSTEM

The Application will include a description of the Environmental Management System (EMS) for the Project, which will 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 and includes organizational structure, planning activities, staff responsibilities, practices, procedures and resources for developing, implementing, reviewing and maintaining environmental policies associated with the Project. The role of Lake Babine Nation also will be described.

Environmental Management Plans (EMPs) are essential components of the EMS. EMPs will identify the Proponent's approach to Project planning and the development of protection measures to mitigate potential harmful environmental effects and other impacts during the construction and operation phases. EMPs will describe the environmental practices and procedures to be applied during planning, construction and operation of the Project. The Application will describe how the Proponent will ensure that commitments in EMPs will be binding on those acting for the Proponent including contractors and sub-contractors.

9.1 Construction and Operational EMPs

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

- (a) Air Emissions and Fugitive Dust Management Plan;
- (b) Noise Management Plan;
- (c) Water Management Plan, including an outline of drinking water source protection measures, monitoring plans, and contingency plans in the event of worst-case situations;
- (d) Morrison Lake Water Quality Protection Plan;
- (e) Fish and Fish Habitat Management Plan;
- (f) Erosion and Sedimentation Control Management Plan including freshet and storm water runoff and erosion control;
- (g) Soils and Overburden Materials Management Plan;
- (h) Vegetation Management Plan;
- (i) Wildlife Management Plan;

- (j) Archaeological and Heritage Site Management Plan, which will:
1. describe protection measures to be implemented if required during construction and operation, and procedures for archaeological monitoring of ground disturbing activities at protected sites;
 2. identify any need for Systematic Data Recovery (SDR) studies at any significant sites that have been assessed during the AIA as unavoidable by the Project, and where completion of additional excavation for investigation may be warranted;
 3. identify ways to facilitate procurement of a Site Investigation Permit(s) under Section 14 of the Heritage Conservation Act to undertake investigations for SDR studies evolving from the AIA;
 4. include detailed summaries of SDR reports; and
 5. on the basis of the AIA and SDR studies, identify the need for Site Alteration permits(s) from the Archaeology and Registry Services Branch to authorize disturbance of protected archaeological sites which have been found unavoidable by the Project.
- (k) Tailings and Waste Rock Management Plan;
- (l) Tailings Pipeline Management Plan;
- (m) Transmission Line Management Plan;
- (n) Concentrate Haulage Management Plan, including an outline of safety measures to be taken during transport, including proper training of personnel and emergency response measures;
- (o) ML/ARD Prediction and Preventative Management Plan;
- (p) Spill Contingency and Emergency Response Plan covering maximum, most-likely spill incident and response plan(s) options for short-term and permanent access routes;
- (q) Industrial and Domestic Waste Management Plan including construction and operational waste;
- (r) Access Management Plan; and
- (s) Materials Management Plan covering dangerous goods and hazardous materials, hydrocarbon containment, explosives manufacture, storage and handling.

First Nations role in EMP implementation will be described. The Proponent's Health, Safety and Environment Policy and a document outlining Ethics and Business Code also will be included in the Application.

9.2 Habitat Mitigation and Compensation Plan

The Application will include habitat impact mitigation and compensation plans, including a fish habitat compensation plan (FHCP) to a level acceptable to Department of Fisheries and Oceans, if such are determined to be required. The Application will describe the implications of such plans on the environment and other species (e.g. a fisheries compensation plan altering migratory bird habitat). A wildlife and fisheries/aquatic assessment will be completed that identifies impacts and prescribes preliminary impact mitigation and compensation measures. For fish, a detailed FHCP with design drawings will be required if necessary to satisfy Section 35(2) of the *Fisheries Act*.

9.3 Closure, Decommissioning and Reclamation

The Application will:

- (a) describe the regulatory framework and requirements, industry standards, and government agreements that are needed with respect to the closure phase of the proposed development;
- (b) include plans for mitigating the social and economic impacts of mine closure;
- (c) report minimum standards, criteria, etc., where regulatory requirements, industry standards or government agreements exist;
- (d) provide a clear visual and textual description of the proposed development site at closure and after reclamation;
- (e) List closure, decommissioning and reclamation components and activities;
- (f) estimate costs of decommissioning, closure and reclamation;
- (g) provide an overview of the key site reclamation options considered and explain the rationale for selecting some and rejecting others, e.g., the removal of all material from site versus partial or total burial, including costs and associated environmental issues;
- (h) describe methods and locations of materials disposal, both on-site and off-site, including the structural foundations, tailings storage facility, waste dumps and sedimentation ponds;
- (i) describe the plan for the re-introduction and monitoring of native plants used in reclamation to a state where vegetation is self-sustaining;
- (j) provide a description of any post-closure environmental management plans; and
- (k) provide Project effects and management plans for temporary and/or early closure.

With respect to ML/ARD, the Application will:

- (a) demonstrate that collection and treatment is a viable long term option;
- (b) discuss alternate methods to prevent ARD and describe why such methods are unachievable for the Project;
- (c) show that segregation, covers and diversion are used to the degree possible to minimize the amount of inflow and subsequent potential ML/ARD;
- (d) demonstrate that the collection system used will collect all necessary drainage to minimize deleterious effects of ML/ARD;
- (e) describe the type, design and size of treatment system proposed for the Project;
- (f) describe how the proposed treatment system will meet point of compliance requirements;
- (g) estimate the cost of building and operating a collect-and-treat system in perpetuity including post-closure operating, monitoring and maintenance costs, as necessary;
- (h) describe the physical and geochemical ramifications of land-based or subaqueous deposition of treatment sludge, if long-term collection and treatment is utilized; and
- (i) describe the impacts on post-closure land use from the collection and treatment of contaminated drainage and the creation of treatment.

9.4 Monitoring

The Application will:

- (a) provide an overview of the proposed monitoring programs to be incorporated into each phase of the Project, respecting that final details of these phased and long-term monitoring programs will be developed during the post-Application permitting stage;
- (b) provide information on monitoring programs during mine operation and after mine closure including a description of the type of monitoring equipment used, parameters monitored, frequency of measures and duration of monitoring efforts for each of the permanent mine structures respecting that final details of these phased and long-term monitoring programs will be developed during the post-Application permitting stage;
- (c) present details on frequency, timing, locations and parameters for water quality and water quantity monitoring in the post-closure period;
- (d) provide a justification for the proposed length of monitoring, and a discussion of any triggers that would necessitate extending the long-term monitoring period;
- (e) describe how the Metal Mining Effluent Guidelines pertain to the Project; and

- (f) describe any commitments and assurances provided to the public and First Nations regarding long-term monitoring.

10.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

The Application will summarize impact assessment findings, including:

- (a) the potential environmental, socio-economic, human health and heritage impacts;
- (b) the potential impacts on First Nations;
- (c) measures proposed to reduce these impacts to acceptable levels;
- (d) the potential for residual effects, taking into account proposed mitigation measures; and
- (e) the significance of residual effects.

10.1 Summary of Commitments and Assurances

The Application will include a summary table of proposed impact management commitments. The table will:

- (a) include commitments to any standard as well as special management practices and design features;
- (b) organize commitments by impact topic;
- (c) summarize the proponent's commitments in implementing mitigations, contingency plans, adaptive management, monitoring, and reclamation activities that are key to preventing Project effects; and
- (d) include commitments that have been made at different points in the EA Application, including timing of the actions, execution plans, and who will address each commitment.

The Application will include PBM's commitment to Lake Babine Nation to ensure that the Project is constructed and operated so as to avoid, minimize or mitigate any and all potential adverse effects on LBN's interests and to accommodate LBN's concerns.

11.0 FOLLOW-UP PROGRAMS

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:

- (a) describe the approach, objectives and proposed methodologies that will be used in proposed monitoring programs;
- (b) contain a follow-up plan stating timelines and deliverables for all EA commitments; and
- (c) state who is responsible for carrying out these commitments.

Follow-up programs will include the following:

- (d) 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;
- (e) vegetation and metal levels;
- (f) air quality;
- (g) hydrology;
- (h) archaeological;
- (i) wildlife monitoring, including tissue metal levels, if required;
- (j) geotechnical stability of waste and water management facilities;
- (k) geochemical stability of waste rock, tailings and pit walls (ML/ARD monitoring);
- (l) overall success in meeting objectives of fish habitat compensation and reclamation programs;
- (m) post construction requirements; and
- (n) post-closure environmental management and monitoring programs.

For macrophyte communities, the Aquatic Effects Monitoring Program will establish baseline community mapping prior to construction and monitor for effects throughout the Project.

12.0 CONCLUSION

The Application will summarize the effects of the Project, mitigation measures and commitments. The Application will propose a conclusion from the assessment of effects, cross referencing the findings from Section 6 of this document.

13.0 CORPORATE COMPLIANCE

The Application will describe the operating arrangements proposed to develop the Project, including management structure, business history and contact information. The Application will describe the relevant experience of the company, its key directors and management members, and/or its primary contractors, advisors and consultants in Canada and in other countries with similar environmental regulatory and social policy regimes concerning the following:

- (a) the record of compliance with government agencies and regulations pertaining to environmental protection and socio-economic issues, including details of any corrective measures or penalties imposed by government as a result of significant non-compliance;
- (b) any prior experience in the design, construction, operation and closure of mining facilities, processing facilities, waste rock and tailings impoundments in areas with similar terrain, similar natural features and of a similar size and scale including details of safety statistics and any significant penalties or corrective measures imposed by government as a result of improper design and/or infractions during operation and closure; and
- (c) the record of honouring commitments on environmental and socio-economic matters during exploration, construction, operation and particularly in the event of mine closure or cessation.

The Application will include copies or factual summaries of all corporate policies related to construction and operations management, the safety of its workforce, environmental protection and socio-economic activities which relate to the proposed development including summaries of any agreements related to preferential hiring in local community groups.

APPENDIX 1 CEAA Information Requirements

Project Factor	BCEAO 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	<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	Section 6.2	<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, archaeological, palaeontological or architectural significance.
Mitigation	Section 7	<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	<ul style="list-style-type: none"> Address any issues raised by the public during review of the Project.
Cumulative effects	Section 6.5	<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 6.7	<ul style="list-style-type: none"> Evaluate the effects of the environment on the Project or Project components such as avalanche, storm events, earthquakes etc.

All phases of the development	Section 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	<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.

Additional Requirements for a Comprehensive Study

Purpose	Section 1.4	<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.

APPENDIX 2 List of References and Supporting Documentation

This section will itemize reference documents cited in the Application:

- **Consultations, Public, First Nations and Government Agencies**

The EA will provide documentation with respect to consultations with the public, First Nations and government agencies.

- **Records, Meetings and Discussion Topics and Relevant Agreements**

The EA will provide records of meetings, discussion topics and relevant agreements, with government review agencies prior to filing the Application.

- **List of Enclosures**

The EA will provide a list of all enclosures included with the Application.