Final Terms of Reference
Environmental Impact Assessment Report

For Coalspur Mines Ltd. Proposed
Vista Coal Mine Project

Approximately 10 km from Hinton, Alberta

ISSUED BY: **Alberta Environment and Water**

DATE: **January 24, 2012**

TABLE OF CONTENTS

PURPOSE OF THE TERMS OF REFERENCE

The purpose of this document is to identify for Coalspur Mines Limited (Coalspur), Aboriginal communities and stakeholders the information required by government agencies for an Environmental Impact Assessment (EIA) Report prepared under the *Environmental Protection and Enhancement Act* (EPEA) for the Vista Coal Project (the Project).

Coalspur is a coal development company with its corporate office located in Calgary, Alberta. Coalspur's operations office is located in Hinton, Alberta. The company is publicly traded on both the Australian Stock Exchange (ASX) and the Toronto Stock Exchange (TSX).

Coalspur's Vista Coal Project is a proposed 4.2 million tonne per annum (Mta) export thermal coal mine located in the Coal Branch Region near Hinton, Alberta.

The Vista Coal Project is approximately 10 km from the Hinton town boundary and extends away from Hinton to the southeast for about 12 km up to the McLeod River. The Project Area covers about 4880 hectares in Townships 50 and 51, Ranges 22 and 23, west of the 5th Meridian and contains sites allocated for the coal mine and associated infrastructure, including but not limited to a coal processing plant, tailings pond, coal conveyor, load out facility and access corridors for a 20-year mining area.

PROJECT BACKGROUND

The Project is based on an updated and modified version of the McLeod River Project, approved in 1983 by the Energy Resources Conservation Board (ERCB) (Decision 83-A) following a technical application, EIA Report and public hearing process. The McLeod River Project was not developed further after the 1983 public interest decision and no further regulatory approvals were sought for that Project.

Coalspur obtained the northern portion of the McLeod River Project from Mancal Coal Inc. and the Mine Permit (No. C 2011-5) and the Coal Processing Plant Approval (No. C 2011-3) were transferred to Coalspur by the ERCB in 2011.

In the 1983 Decision Report for the Mine Permit, the ERCB outlined a number of items that would require further consideration, which will be addressed through the Vista Coal Project:

- Adding area to the Mine Permit to relocate surface facilities northwards, including the coal processing plant, to allow for mining of coal to greater overburden depths.
- Investigating the feasibility of using plant middlings as thermal coal dryer fuel and the salvage, storage and disposition of marginal grade coal from the mine.
- Reviewing the plant tailings management plan to ensure an effective balance between sufficient capacity and environmental disturbance.
- The filing of sufficient information to show the technical, environmental, social and economic aspects of the different alternatives to the proposed (and tentatively accepted) conveyor system or another mode of coal transportation could be used to deliver cleaned coal to the load-out facilities.

The EIA for this project will be part of an integrated submission that will include applications for:

- Amendments to the Mine Permit and Plant Approval to provide comprehensive technical descriptions of the plant and associated facilities and to address those items identified in the 1983 Decision Report;
- Pit and Dump licenses under the *Coal Conservation Act;*
- Approvals under Alberta's *Environmental Protection & Enhancement Ac*t;
- Approvals and licenses under the *Water Act*; and
- Mineral Surface Lease and other surface dispositions under the *Public Lands Act*.

SCOPE OF THE EIA REPORT

The Proponent shall prepare and submit an EIA Report that examines the environmental and socio-economic impacts of the entire Project that Coalspur is seeking approval for. The Vista Coal Project is to be clearly defined for regulators and stakeholders since it is based on the McLeod River Project. The regulatory submission for the Project will be a stand-alone document utilizing information from the McLeod River EIA Report and applications where appropriate, which includes:

- providing an existing baseline assessment enhanced by information from the McLeod River Project utilizing current assessment methodologies.
- assessing all project components of the Vista Coal Project and providing data, results and analysis for the Project Area, Local Study Area and Regional Study Area, including a cumulative effects assessment.

The EIA Report shall be prepared considering all applicable provincial and federal legislation, codes of practice, guidelines, policies, standards and directives.

The EIA report shall be prepared in accordance with these Terms of Reference and the environmental information requirements prescribed under EPEA and associated regulations, and the *Canadian Environmental Assessment Act* if applicable. The EIA report will form part of the Proponent's application to the ERCB. An EIA report summary will also be included as part of the ERCB Application.

The Proponent shall refer to the *Guide to Preparing Environmental Impact Assessment Reports in Alberta* published by Alberta Environment and Water (the Guide) and these Terms of Reference when preparing the Environmental Impact Assessment report. In any case where there is a difference in requirements between the Guide and these Terms of Reference, the Terms of Reference shall take precedence.

CONTENT OF THE EIA REPORT

1 PUBLIC ENGAGEMENT AND ABORIGINAL CONSULTATION

[A] Describe the concerns and issues expressed by the public and the actions taken to address those concerns and issues, including how public input was incorporated into the Project development, impact mitigation and monitoring.

[B] Describe the concerns and issues expressed by aboriginal communities and the actions taken to address those concerns and issues, including how aboriginal community input was incorporated into the Project design, EIA development, mitigation, monitoring and reclamation. Describe consultation undertaken with aboriginal communities and groups with respect to traditional ecological knowledge and traditional use of land and water.

[C] Discuss the Proponent's view on the effectiveness of its aboriginal consultation considering the approved First Nations Consultation Plan for the Project.

[D] Describe plans to maintain the public engagement and aboriginal consultation processes following completion of the EIA report to ensure that the public and aboriginal peoples will have an appropriate forum for expressing their views on the ongoing development, operation and reclamation of the Project.

2 PROJECT DESCRIPTION

2.1 Overview

[A] Provide a brief project description in sufficient detail to provide context for the EIA, including:

a) the Proponent and its history in Alberta, with specific reference to existing operations, proposed operations, mineral resources, environmental studies and community involvement;
b) a development plan that outlines:
    i) the phases of development;
    ii) transportation, infrastructure and access routes; and
    iii) activities associated with each stage of the Project.

[B] Provide maps and drawings for the Project components and activities that includes:

a) existing infrastructure, leases and clearings, including exploration clearings;
b) the extent of mine excavation and dump areas in each stage of the Project;
c) coal recovery and processing facilities;
d) dewatering and water control facilities;
e) other buildings and infrastructures, including temporary facilities (e.g., conveyors, power lines and utilities);
f) containment structures such as retention ponds and storage ponds (e.g., stormwater runoff);
g) water wells/intakes, pipelines, and storage structures;
h) waste storage, transfer treatment and disposal sites;
i) field maintenance operations; and
j) sources of aggregate resources, borrow material and other construction material and locations of any stockpiles that will be developed.

[C] Describe the primary resource recovery process, any proposed follow-up recovery process and other related processes and process facilities of the Project.

[D] Discuss the amount and source of energy required for the Project.

[E] Describe the proposed method to transport product to markets.

[F] Discuss the key factors controlling the schedule, restrictions for conducting certain development activities, and uncertainties.

[G] Provide a list of facilities for which locations will be determined later.

[H] Provide the adaptive management approach that will be implemented throughout the life of the Project. Include how monitoring, mitigation and evaluation were incorporated.

2.2 Project Alternatives

[A] Discuss the need for the Project including:
- a) implications resulting from a delay in proceeding with the Project, or any phase of the Project or not going ahead with the Project; and
- b) potential cooperative development opportunities (e.g., shared infrastructure).

[B] Discuss the selection criteria used, options considered, and rationale for selecting:
- a) location of facilities and infrastructure (including linear infrastructure); and
- b) thermal energy and electric power required for the Project.

2.3 Constraints

[A] Discuss the process and criteria used to identify constraints to development, and how the Project has been designed to accommodate those constraints. Include the following:
- a) any applicable ALSA Regional Plan;
- b) land use policies and resource management initiatives that pertain to the Project;
- c) aboriginal traditional land use;
- d) all known traplines;
- e) the environmental setting;
- f) cumulative environmental impacts in the region;
- g) cumulative social impacts in the region;
- h) results of Project-specific or regional monitoring;
- i) potential for new or additional technology to increase resource recovery at later times; and
- j) potential for changes in the regulatory regime.

2.4 Regional and Cooperative Efforts

[A] Discuss the Proponent's involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with regional development.

[B] Describe opportunities for sharing infrastructure (e.g., access roads, utility corridors, water infrastructure) with other resource development stakeholders. Provide rationale where these opportunities will not be implemented.

2.5 Transportation Infrastructure

[A] Provide a summary of any Traffic Impact Assessment study carried out for the Project, or where no Traffic Impact Assessment study has been prepared, describe the anticipated changes to traffic (e.g., type, volume) on highways, including an assessment of impacts for all stages of the Project. Consider other existing and planned uses of the same highway.

[B] Describe and map the locations of any new road or intersection construction, or any improvements to existing roads or intersections, related to the development of the Project, from the boundary of the Project Area up to and including the highway access point, and
- a) discuss the alternatives and the rationale for selection of the preferred alternative;

b) describe the impacts to local communities of the changes in transportation infrastructure;
c) provide a proposed schedule for the work;
d) provide the estimated cost of the work; and
e) provide a summary of consultation with Alberta Transportation and the local authority, including their views on the compatibility of the proposed work with their own local or regional infrastructure development plans.

[C] Identify the type, volume, location and availability of road construction and reclamation materials for all road construction and road improvement work, related to the development of the Project, within and outside of the Project Area.

2.6 Air Emissions Management

[A] Discuss the selection criteria used, options considered, and rationale for selecting control technologies to minimize air emission and for air quality management.

[B] Provide emission profiles (type, rate and source) for the Project's operating emissions including point and non-point sources and fugitive emissions (including mine faces), and for construction emissions. Consider both normal and upset conditions. Discuss:
a) odorous or visible emissions from the proposed facilities;
b) annual and total greenhouse gas emissions for all stages of the Project. Identify the primary sources and provide examples of calculations;
c) the Project's contribution to total provincial and national greenhouse gas emissions on an annual basis;
d) the Proponent's overall greenhouse gas management plans;
e) the Proponent's plans to manage emissions from the mining fleet;
f) the amount and nature of Criteria Air Contaminant emissions; and
g) the amount and nature of acidifying emissions, probable deposition patterns and rates.

2.7 Water Management

2.7.1 Water Supply

[A] Describe the water supply requirements for the Project, including:
a) the criteria used, options considered and rationale for selection of water supply sources(s);
b) the expected water balance during all stages of the Project. Discuss assumptions made or methods chosen to arrive at the water balances;
c) the process water, potable water, and non-potable water requirements and sources for construction, start-up, normal and emergency operating situations, decommissioning and reclamation. Identify the volume of water to be withdrawn from each source, considering plans for wastewater reuse;
d) the location of sources/intakes and associated infrastructure (e.g., pipelines for water supply);
e) the variability in the amount of water required on an annual and seasonal basis as the Project is implemented;
f) the expected cumulative effects on water losses/gains resulting from the Project operations;

g) potable water treatment systems for all stages of the Project;
h) type and quantity of potable water treatment chemicals used; and
i) measures for ensuring efficient use of water including alternatives to reduce the consumption of non-saline water such as water use minimization, recycling, conservation, and technological improvements.

2.7.2 Surface Water

[A] Describe the surface water management strategy for all stages of the project, including:
a) design factors considered, such as:
   i) site drainage,
   ii) run-on management,
   iii) road and plant run-off,
   iv) erosion/sediment control,
   v) geotechnical stability concerns,
   vi) groundwater and surface water protection,
   vii) muskeg dewatering,
   viii) mine pit dewatering,
   ix) groundwater seepage, and
   x) flood protection;
b) permanent or temporary alterations or realignments of watercourses, wetlands and other waterbodies;
c) the pre and post-disturbance alignment and condition of all ephemeral and permanent streams, wetlands and waterbodies including those created by the Project; and
d) factors used in the design of water management facilities with respect to the *Canadian Dam Safety Association Dam Safety Guidelines*, including expected flood and flood protection.

[B] Describe and map crossings of watercourses or waterbodies (including bridges, culverts and pipelines) required.

[C] Describe discharges to the surrounding watershed from existing and reclaimed sites, including end pit lakes and the management strategy for handling such releases.

2.7.3 Wastewater Management

[A] Describe the wastewater management strategy for the Project, including:
a) the source, quantity and composition of wastewater streams from each component of the proposed operation (e.g., coal mining, coal processing) for all Project conditions, including normal, start-up, worst-case and upset conditions;
b) the design of facilities that will handle, treat and store wastewater streams and the type and quantity of any chemicals used in wastewater treatment, including measures taken in the design to prevent or minimize potential impacts to the environment;
c) the options for wastewater treatment, including the rationale for selecting the preferred options, including a discussion of options not chosen and the rationale for their exclusion;
d) the options for the disposal of wastewater in the context of best management practices and best available technologies, including the rationale for choosing the

preferred option and the measures taken to prevent impacts on potable groundwater, aquatic ecosystems and vegetation;

e) how make-up water requirements and disposal volumes will be minimized;
f) the potable water and sewage treatment systems for both the construction and operation stages. Discuss the sewage treatment system options considered including the rationale for the option selected; and
g) a monitoring plan for wastewater releases, including the rationale used to determine the frequency of sampling and the parameters to be measured.

2.8 Waste Management

[A] Discuss the selection criteria used, options considered, and rationale for waste disposal. Discuss the strategy for on-site waste disposal versus off-site waste disposal.

[B] Characterize and quantify the anticipated dangerous goods, and hazardous, non-hazardous, and recyclable wastes generated by the Project, and:

a) describe the composition and volume of specific waste streams and discuss how each stream will be managed;
b) describe the management plan for exploratory drilling wastes, overburden and other mining wastes, as well as any by-products;
c) describe how any disposal sites will be constructed; and
d) describe plans for pollution prevention, waste minimization, recycling, and management to reduce waste quantities over the life of the Project.

[C] Provide a list of chemical products to be manufactured, processed or otherwise used for the Project and describe, in general terms, how these products will be stored and managed. Identify products containing substances that are:

a) *Canadian Environmental Protection Act*, 1999 toxics;
b) listed on the National Pollutant Release Inventory;
c) dangerous goods as defined by the federal *Transportation of Dangerous Goods Act*; and
d) on the Domestic Substances List and categorized as requiring further assessment under Canada's Chemicals Management Plan.

[D] Describe the nature and amount of on-site hydrocarbon storage. Discuss containment and other environmental protection measures.

2.9 Conservation and Reclamation

[A] Provide a conceptual conservation and reclamation plan for the Project. Describe and map as applicable:

a) any existing Conservation and Reclamation Plan;
b) current land use and capability and proposed post-development land use and capability;
c) anticipated timeframes for completion of reclamation stages and release of lands back to the Crown including an outline of the key milestone dates for reclamation and how progress to achieve these targets will be measured;
d) constraints to reclamation including options considered to meet land capability outcomes, as well as timing of activities, availability of reclamation materials and influence of natural processes and cycles including natural disturbance regimes;

e) post-development land capability with respect to:
    i) self-sustaining topography, drainage and surface watercourses representative of the surrounding area,
    ii) existing traditional use with consideration for traditional vegetation and wildlife species in the reclaimed landscape,
    iii) end pit lakes,
    iv) wetlands,
    v) self-sustaining vegetation communities representative of the surrounding area capable of ecological succession, and
    vi) reforestation and forest productivity;
f) a revegetation plan for the disturbed terrestrial, riparian and wetland areas;
g) water supply capability of post-mine landscape;
h) reclamation material salvage, storage areas and handling procedures;
i) reclamation material replacement indicating depth, volume and type;
j) existing and final reclaimed site drainage plans;
k) integrating surface and near-surface drainage within the Project Area; and
l) promotion of biodiversity.

[B] Provide a predicted Ecological Land Classification map for the post-reclamation landscape considering potential land uses, including traditional uses and how the landscape and soils have been designed to accommodate future land use.

[C] Provide a conceptual plan to monitor reclamation performance and success (including soils, vegetation, wildlife and aquatic resources).

[D] Describe how the Proponent considered the use of progressive reclamation in project design and reclamation planning.

[E] Discuss uncertainties related to the conceptual reclamation plan.

3 ENVIRONMENTAL ASSESSMENT

An EIA Report was completed in 1982 for part of what is now the Vista Coal Project Area as part of the McLeod River Project. This information will be utilized where appropriated for the development of the EIA Report for the Vista Coal Project.

3.1 Air Quality, Climate and Noise

3.1.1 Baseline Information

[A] Discuss the baseline climatic and air quality conditions including:
a) the type and frequency of meteorological conditions that may result in poor air quality; and
b) appropriate ambient air quality parameters.

[B] Provide representative baseline noise levels at receptor locations.

3.1.2 Impact Assessment

[A] Identify components of the Project that will affect air quality, and:
a) describe the potential for reduced air quality (including odours and visibility) resulting from the Project and discuss any implications of the expected air quality for environmental protection and public health;

b) estimate ground-level concentrations of appropriate air quality parameters;
c) discuss any expected changes to particulate deposition, nitrogen deposition or acidic deposition patterns;
d) identify areas that are predicted to exceed Potential Acid Input (PAI) critical loading criteria;
e) discuss interactive effects that may occur resulting from co-exposure of a receptor to all emissions; and
f) describe air quality impacts resulting from the Project, and their implications for other environmental resources, including habitat diversity and quantity, soil resources, vegetation resources, and water quality.

[B] Identify stages or elements of the Project that are sensitive to changes or variability in climate parameters, including frequency and severity of extreme weather events. Discuss what impacts the change to climate parameters may have on elements of the Project that are sensitive to climate parameters.

[C] Identify components of the Project that have the potential to increase noise levels and discuss the implications. Present the results of a noise assessment. Include:
a) potentially-affected people and wildlife;
b) an estimate of the potential for increased noise resulting from the development; and
c) the implications of any increased noise levels.

3.2 Hydrogeology

3.2.1 Baseline Information

[A] Provide an overview of the existing geologic and hydrogeologic setting from the ground surface down to, and including, the coal zones, and if applicable, to the base of any deeper strata that would be potentially impacted by mining. Document any new hydrogeological investigations, including methodology and results, undertaken as part of the EIA, and:
a) present regional and Project Area geology to illustrate depth, thickness and spatial extent of lithology, stratigraphic units and structural features;
b) present regional and Project Area hydrogeology describing:
    i) the major aquifers, aquitards and aquicludes (Quaternary and bedrock), their spatial distribution, properties, hydraulic connections between aquifers, hydraulic heads, gradients, groundwater flow directions and velocities. Include maps and cross sections,
    ii) the chemistry of groundwater aquifers including baseline concentrations of major ions, metals and hydrocarbon indicators,
    iii) the potential discharge zones, potential recharge zones and sources, areas of groundwater-surface water interaction and areas of Quaternary aquifer-bedrock groundwater interaction,
    iv) water well development and groundwater use, including an inventory of groundwater users,
    v) the recharge potential for Quaternary aquifers, and
    vi) potential hydraulic connection between coal zones and other aquifers resulting from Project operations.

3.2.2 Impact Assessment

[A] Describe Project components and activities that have the potential to affect groundwater resource quantity and quality at all stages of the Project.

[B] Describe the nature and significance of the potential Project impacts on groundwater with respect to:

a) inter-relationship between groundwater and surface water in terms of surface water quantity and quality;
b) implications for terrestrial or riparian vegetation, wildlife and aquatic resources including wetlands;
c) changes in groundwater quality and quantity;
d) conflicts with other groundwater users, and proposed resolutions to these conflicts;
e) potential implications of seasonal variations; and
f) groundwater withdrawal for Project operations, including any expected alterations in the groundwater flow regime during and following Project operations.

[C] Describe programs to manage and protect groundwater resources including:

a) the early detection of potential contamination;
b) groundwater remediation options in the event that adverse effects are detected; and
c) monitoring groundwater production or dewatering impacts.

3.3 Hydrology

3.3.1 Baseline Information

[A] Describe and map the surface hydrology. Include flow regimes of streams in the Project Area.

[B] Provide surface flow baseline data, including:

a) seasonal variation, low, average and peak flows for watercourses; and
b) low, average and peak levels for waterbodies.

[C] Identify any surface water users who have existing approvals, permits or licenses.

[D] Describe current sedimentation patterns in receiving waters from the proposed Project.

3.3.2 Impact Assessment

[A] Discuss changes to watersheds, including surface and near-surface drainage conditions, potential flow impediment, and potential changes in open-water surface areas caused by the Project.

[B] Describe the extent of hydrological changes that will result from disturbances to groundwater and surface water movement:

a) include changes to the quantity of surface flow, water levels and channel regime in watercourses (during minimum, average and peak flows) and water levels in waterbodies;
b) assess the potential impact of any alterations in flow on the hydrology and identify all temporary and permanent alterations, channel realignments, disturbances or surface water withdrawals;

c) discuss both the Project and cumulative effect of these changes on hydrology (e.g., timing, volume, peak and minimum flow rates, river regime and lake levels), including the significance of effects for downstream watercourses; and
d) identify any potential erosion problems in watercourses resulting from the Project.

[C] Discuss changes in sedimentation patterns in receiving waters resulting from the Project.

[D] Describe impacts on other surface water users resulting from the Project. Identify any potential water use conflicts.

[E] Describe potential downstream impact if surface water is removed.

[F] Discuss the impact of low flow conditions and in-stream flow needs on water supply and water and wastewater management strategies.

[G] Discuss how potential impacts of temporary and permanent roads on wetland hydrology will be minimized and mitigated.

3.4 Surface Water Quality

3.4.1 Baseline Information

[A] Describe the baseline water quality of watercourses and waterbodies. Discuss the effects of seasonal variations, flow and other factors on water quality.

[B] Describe the baseline channel embeddedness and percent fines in the essential habitats (i.e., spawning) in the receiving waters (i.e., McPherson Creek mainstem).

3.4.2 Impact Assessment

[A] Identify Project components that may influence or impact surface water quality.

[B] Describe the potential impacts of the Project on surface water quality:
a) discuss any changes in water quality resulting from the Project that may exceed the *Surface Water Quality Guidelines for Use in Alberta* or the *Canadian Water Quality Guidelines*;
b) discuss the significance of any impacts on water quality and implications to aquatic resources (e.g., biota, biodiversity and habitat);
c) discuss seasonal variation and potential impacts on surface water quality;
d) assess the potential Project related and cumulative impacts of acidifying and other air emissions on surface water quality; and
e) discuss the effect of changes in surface runoff or groundwater discharge on water quality in surface waterbodies.

3.5 Aquatic Ecology

3.5.1 Baseline Information

[A] Describe and map the existing fish and other aquatic resources (e.g., benthic invertebrates) of the lakes, rivers, ephemeral water bodies and other waters. Describe the species composition, distribution, relative abundance, movements and general life history parameters. Also identify any species that are:
a) listed as "at Risk, May be at Risk and Sensitive" in *The Status of Alberta Species* (Alberta Sustainable Resource Development);
b) listed in Schedule 1 of the federal *Species at Risk Act*; and

c) listed as “at risk” by COSEWIC; and
d) traditionally used species.

[B] Describe and map existing critical or sensitive areas such as spawning, rearing, and over-wintering habitats, seasonal habitat use including migration and spawning routes.

[C] Describe the current and potential use of the fish resources by aboriginal, sport or commercial fisheries.

[D] Describe and quantify the current extent of aquatic habitat fragmentation.

3.5.2 Impact Assessment

[A] Describe the potential impacts to fish, fish habitat, and other aquatic resources (e.g., stream alterations and changes to substrate conditions, water quality and quantity) considering:

a) fish tainting, survival of eggs and fry, chronic or acute health effects, and increased stress on fish populations from release of contaminants, sedimentation, flow alterations, temperature and habitat changes;
b) potential impacts on riparian areas that could affect aquatic biological resources and productivity;
c) the potential for increased fishing pressures in the region that could arise from the increased workforce and improved access resulting from the Project. Identify the implications on the fish resource and describe any mitigation strategies that might be planned to minimize these impacts, including any plans to restrict employee and visitor access;
d) changes to benthic invertebrate communities that may affect food quality and availability for fish; and
e) the potential for increased fragmentation of aquatic habitat.

[B] Identify the key aquatic indicators that the Proponent used to assess project impacts. Discuss the rationale for their selection.

[C] Discuss the design, construction and operational factors to be incorporated into the Project to minimize impacts to fish and fish habitat and protect aquatic resources. Describe how any water intakes have been designed to avoid entrapment and entrainment of fish and provide information on the species of fish considered.

[D] Identify plans proposed to offset any loss in the productivity of fish habitat. Indicate how environmental protection plans address applicable provincial and federal policies on fish habitat including the development of a “No Net Loss” fish habitat objective.

[E] Describe the effects of any surface and sub-surface water withdrawals considered including cumulative effects on fish, fish habitat and other aquatic resources.

3.6 Vegetation

3.6.1 Baseline Information

[A] Describe and map vegetation communities. Identify the occurrence, relative abundance and distribution and identify any species that are:

a) listed as “at Risk, May be at Risk and Sensitive” in *The Status of Alberta Species* (Alberta Sustainable Resource Development);

b) listed in Schedule 1 of the federal *Species at Risk Act*; and
c) listed as "at risk" by COSEWIC; and
d) traditionally used species.

[B] Describe and quantify the current extent of habitat fragmentation.

[C] Discuss the potential of each ecosite phase to support rare plant species, plants for traditional, medicinal and cultural purposes, old growth forests and communities of limited distribution. Consider their importance for local and regional habitat, sustained forest growth, rare plant habitat and the hydrologic regime.

[D] Describe the regional relevance of landscape units that are identified as rare.

[E] Provide Timber Productivity Ratings for both the Project Area and the Local Study Area, including identification of productive forested, non-productive forested and non-forested lands.

3.6.2 Impact Assessment

[A] Describe and assess the potential impacts of the Project on vegetation communities.

[B] Discuss any potential impacts the Project may have on rare plants or endangered species.

[C] Identify key vegetation indicators used to assess the Project impacts. Discuss the rationale for the indicator's selection.

[D] Discuss temporary (include timeframe) and permanent changes to vegetation and wetland communities and comment on:
a) the impacts and their implications for other environmental resources (e.g., habitat diversity and quantity, water quality and quantity, erosion potential);
b) the impacts and their implications to recreation, aboriginal and other uses; and
c) the sensitivity to disturbance (including acid deposition), as well as the techniques used to estimate sensitivity to disturbance and reclamation, of each vegetation community.

[E] Describe the regional impact of any ecosite phase to be removed.

[F] Discuss from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and the expected differences in the resulting vegetative community structures.

[G] Provide a predicted Ecological Land Classification map that shows the reclaimed vegetation. Comment on the importance of the size, distribution and variety of the reclaimed landscape units from both a local and regional perspective.

[H] Discuss the impact of any loss of wetlands, including how the loss will affect land use.

[I] Discuss weeds and non-native invasive species and describe how these species will be assessed and controlled prior to and during operation and reclamation.

[J] Discuss at multiple spatial scales, the predicted changes to upland, riparian and wetland habitats resulting from increased fragmentation.

3.7 Wildlife

3.7.1 Baseline Information

[A] Describe and map existing wildlife resources (amphibians, reptiles, birds and terrestrial and aquatic mammals). Describe species composition, distribution, relative abundance, seasonal movements, movement corridors, habitat requirements, key habitat areas, general life history including habitat disturbances and their use and potential use of habitats. Also identify any species that are:

a) listed as "at Risk, May be at Risk and Sensitive" in *The Status of Alberta Species* (Alberta Sustainable Resource Development);
b) listed in Schedule 1 of the federal *Species at Risk Act*; and
c) listed as "at risk" by COSEWIC.

[B] Describe, quantify and map all existing habitat disturbance (including exploration activities) and identify those habitat disturbances that are related to existing and approved Project operations.

3.7.2 Impact Assessment

[A] Describe and assess the potential impacts of the Project to wildlife populations and wildlife habitats, considering:

a) how the Project will affect wildlife relative abundance, movement patterns, distribution and recruitment into regional populations for all stages of the Project;
b) how improved or altered access may affect wildlife including potential obstruction of daily and seasonal movements, increased vehicle-wildlife collisions, and increased hunting pressures;
c) how increased habitat fragmentation may affect wildlife considering edge effects, the availability of core habitat, and the influence of linear features and infrastructure on wildlife movements and other population parameters;
d) the spatial and temporal changes to habitat availability and habitat effectiveness (types, quality, quantity, diversity and distribution);
e) potential impacts on wildlife resulting from changes to air and water quality, including both acute and chronic effects to animal health;
f) the resilience and recovery capabilities of wildlife populations and habitats to disturbance; and
g) the potential for the Project Area to be returned to its existing state with respect to wildlife populations and their habitats.

[B] Identify key indicator species and discuss the rationale for their selection.

[C] Comment on the availability of species for traditional use considering habitat loss, habitat avoidance, vehicle-wildlife collisions, increased non-aboriginal hunting pressure and other Project related impacts on wildlife populations.

3.8 Biodiversity

3.8.1 Baseline Information

[A] Describe the terrestrial and aquatic biodiversity metrics that will be used to characterize the existing ecosystems and probable impacts of the Project, and:

a) describe the process and rationale used to select biotic and abiotic indicators for biodiversity within selected taxonomic groups;
b) determine the relative abundance of species in each ecosite phase;
c) provide species locations, lists and summaries of observed and estimated species richness and evenness for each ecosite phase;
d) provide a measure of biodiversity on baseline sites that are representative of the proposed reclamation ecosites; and
e) rank each ecological unit for biodiversity potential. Describe the techniques used in the ranking process.

3.8.2 Impact Assessment

[A] Describe the metrics used to assess the probable impacts of the Project. Discuss the contribution of the Project to any anticipated changes in regional biodiversity and the potential impact to local and regional ecosystems.

[B] Identify and evaluate the extent of potential effects of fragmentation on biodiversity that may result from the Project. Discuss those effects at all relevant scales (from site specific to landscape level).

3.9 Terrain and Soils

3.9.1 Baseline Information

[A] Provide descriptions and maps of the terrain and soils conditions, including:
a) surficial geology and topography;
b) soil types and their distribution. Provide an ecological context to the soil resource by supplying a soil survey report and maps to Survey Intensity Level 2 for the Project Area;
c) suitability and availability of soils within the Project Area for reclamation;
d) soils that could be affected by the Project with emphasis on potential acidification (by soil type); and
e) descriptions and locations of erosion sensitive soils.

3.9.2 Impact Assessment

[A] Describe Project activities and other related issues that could affect soil quality (e.g., compaction, contaminants) and:
a) indicate the amount (ha) of surface disturbance from plant, mine, overburden disposal, reclamation material stockpiles, infrastructure (e.g., pipelines, power lines, access roads), aggregate and borrow sites, construction camps, waste disposal and other construction and operation activities;
b) provide an inventory of the pre- and post-disturbance land capability classes for soils in both the Project Area and the Local Study Area and describe the impacts to land capability resulting from the Project. Indicate the size and location of soil types and land capability classes that will be disturbed;
c) discuss the relevance of any changes for the local and regional landscapes, biodiversity, productivity, ecological integrity, aesthetics and future use resulting from disturbance during the life of the Project;
d) describe potential sources of soil contamination;

e) describe the impact of the Project on soil types and reclamation suitability and the approximate volume of soil materials for reclamation. Discuss any constraints or limitations to achieving vegetation/habitat reclamation based on anticipated soil conditions (e.g., compaction, contaminants, salinity, soil moisture, nutrient depletion, erosion, etc.); and
f) discuss the potential for soil erosion during the life of the Project.

[B] Discuss the potential impacts caused by the mulching and storage of woody debris considering, but not limited to vulnerability to fire, degradation of soil quality, increased footprint, etc.

3.10 Land Use and Management

3.10.1 Baseline Information

[A] Describe the existing land and resource uses and potential conflicts that exist considering oil and gas development, agriculture, forestry, tourism, aboriginal uses and outdoor recreational activities.

[B] Describe and map all Crown land and Crown Reservations (Holding Reservation, Protective Notation, Consultative Notation).

[C] Identify and map unique sites or special features such as Parks and Protected Areas, Heritage Rivers, Historic Sites, Environmentally Significant Areas, culturally significant sites and other designations (World Heritage Sites, Ramsar Sites, Internationally Important Bird Areas, etc).

[D] Describe existing access control measures.

3.10.2 Impact Assessment

[A] Describe access corridors needed and/or planned by other resource development stakeholders including those responsible for Forest Management Areas and other timber quota holders, and describe:
a) how their needs are accommodated to reduce overall environmental impact from resource development; and
b) opportunities for cooperation in access development.

[B] Indicate where Crown land dispositions may be needed for roads or other infrastructure for the Project.

[C] Provide a description and timing of land clearing activities.

[D] Identify the potential impact of the Project on land uses, including:
a) impacts to unique sites or special features;
b) the results of consultation with Parks Canada Agency concerning potential impacts of the Project to the lands, waters, air, and natural and cultural heritage resources of National Parks, National Historic Sites, National Marine Conservation Areas, Canadian Heritage Rivers, UNESCO World Heritage Sites and Ramsar Convention Wetlands of International Importance. Where impacts are predicted, provide the results of the assessments and clearly identify the impacts to the special protected area;

c) impacts caused by changes in public access arising from linear development, including secondary effects related to increased hunter, angler and other recreational access, decreased access to traditional use sites and facilitated predator movement;
d) the implications of relevant land use policies and resource management initiatives for the Project, including any constraints to development. Discuss how the Project will be consistent with the intent of these initiatives;
e) potential impacts to aggregate reserves that may be located on land under the Proponent's control and reserves in the region;
f) the impact of development and reclamation on commercial forest harvesting in the Project Area. Include opportunities for timber salvage, revegetation, reforestation and harvest for the reduction of fuel hazard;
g) the amount of commercial and non-commercial forest land base that will be disturbed by the Project. Compare the pre-disturbance and reclaimed percentages and distribution of all forested communities in the Project Area;
h) how the Project impacts Annual Allowable Cuts and quotas within the Forest Management Agreement area;
i) the potential impact on existing land uses of anticipated changes (type and extent) to the pre-disturbance topography, elevation and drainage pattern within the Project Area; and
j) impacts of the Project on public access, regional recreational activities, aboriginal land use and other land uses during and after development activities.

[E] Identify any access restrictions including where appropriate, measures taken to control access to the Project Area while ensuring continued access to adjacent wildland areas.

[F] Provide a fire control plan highlighting:
a) measures taken to ensure continued access for firefighters to adjacent wildland areas;
b) forest fire prevention, detection, reporting, and suppression measures, including proposed fire equipment;
c) measures for determining the clearing width of power line rights-of-way; and
d) required mitigative measures for areas adjacent to the Project Area based on the FireSmart Wildfire Assessment System.

[G] Describe how land management (end land use) planning processes will be incorporated in the mine planning/development process.

4 HISTORIC RESOURCES

4.1 Baseline Information

[A] Provide a brief overview of the regional historical resources setting including a discussion of the relevant archaeological, historic and palaeontological records.

[B] Describe and map known historic resources sites in the Project area, considering:
a) site type and assigned Historic Resources Values (HRVs); and
b) existing site specific *Historical Resources Act* requirements (if applicable).

[C] Provide an overview of previous Historical Resources Impact Assessments (HRIAs) that have been conducted within the Project Area, including:
a) a description of the spatial extent of previous assessment relative to the Project Area, noting any assessment gap areas; and

b) a summary of *Historical Resources Act* requirements and/or clearances that have been issued for the Project to date (if applicable).

[D] Identify locations within the Project Area that are likely to contain previously unrecorded historic resources. Thoroughly describe the methods used to identify these areas.

4.2 Impact Assessment

[A] Describe Project components and activities that have the potential to affect historic resources at all stages of the Project.

[B] Describe the nature and significance of the potential Project impacts on historical resources, considering:

a) effects on historic resources site integrity; and
b) implications for the interpretation of the archaeological, historic and palaeontological records.

[C] Discuss mitigation measures that can be used to minimize impacts on historical resources. Clearly identify those mitigation measures recommended for implementation and provide rationale for their selection.

5 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE

[A] Provide:

a) a map and description of traditional land use areas including fishing, hunting, trapping and nutritional, medicinal or cultural plant harvesting by affected aboriginal peoples (if the aboriginal community or group is willing to have these locations disclosed);
b) a map of cabin sites, spiritual sites, graves and other traditional use sites considered historic resources under the *Historical Resources Act* (if the aboriginal community or group is willing to have these locations disclosed), as well as traditional trails and resource activity patterns;
c) a description of the extent of traditional use of land in both the Project Area and the Local Study Area, including fishing, hunting, trapping, nutritional or medicinal plant harvesting, and cultural use by affected aboriginal peoples; and
d) a discussion of:
    i) the availability of vegetation, fish and wildlife species for food, traditional, medicinal and cultural purposes in the identified traditional land use areas considering all Project related impacts,
    ii) access to traditional lands in the Project Area during all stages of the Project, and
    iii) aboriginal views on land reclamation.

[B] Describe how TEK and TLU information was incorporated into the project designed and development, technical components of the EIA, the conservation and reclamation and, monitoring and mitigation.

6 PUBLIC HEALTH AND SAFETY ASSESSMENT

[A] Describe those aspects of the Project that may have implications for public health or the delivery of regional health services. Determine whether there may be implications for public health arising from the Project. Specifically:

a) assess the potential health implications of the compounds that will be released to the environment from the Project in relation to exposure limits established to prevent acute and chronic adverse effects on human health;
b) provide the data, exposure modeling calculations, and describe the methods the Proponent used to assess impacts of the Project on human health and safety;
c) provide information, including chemical analyses and modeling results, on samples of selected environmental media (e.g., soil, water, air, vegetation, wild game, etc.) used in the assessment;
d) discuss the potential for changes to water quality, air quality and soil quality to increase human exposure to contaminants taking into consideration all Project activities;
e) identify the human health impact of the potential contamination of country foods and natural food sources taking into consideration all Project activities;
f) document any health concerns raised by stakeholders during consultation on the Project;
g) document any health concerns identified by aboriginal communities or groups resulting from impacts of existing development and of the Project specifically on their traditional lifestyle and include an aboriginal receptor type in the assessment;
h) assess the cumulative human health impacts to receptors, including First Nations and Métis receptors;
i) as appropriate, describe anticipated follow-up work, including regional cooperative studies. Discuss how such work will be implemented and coordinated with ongoing air, soil and water quality initiatives; and
j) describe the potential health impacts resulting from higher regional traffic volumes and the increased risk of accidental leaks and spills.

[B] Describe those aspects of the Project that may have implications for public safety. Determine whether there may be implications for public safety arising from the Project. Specifically:
a) describe the Proponent's emergency response plan, including public notification protocol and safety procedures, to minimize adverse environmental effects, including emergency reporting procedures for spill containment and management;
b) document any safety concerns raised by stakeholders during consultation on the Project;
c) describe how local residents will be contacted during an emergency and the type of information that will be communicated to them;
d) describe the existing agreements with area municipalities or industry groups such as safety cooperatives, emergency response associations, regional mutual aid programs and municipal emergency response agencies; and
e) describe the potential safety impacts resulting from higher regional traffic volumes.

7 SOCIO-ECONOMIC ASSESSMENT

7.1 Baseline Information

[A] Describe the existing socio-economic conditions in the region and in the communities in the region.

[B] Describe factors that may affect existing socio-economic conditions including:

a) population changes;
b) the Proponent's policies and programs regarding the use of regional and Alberta goods and services;
c) a project schedule and a general description of the overall engineering and contracting plan for the Project;
d) workforce requirements for the Project, including a description of when peak activity periods will occur; and
e) planned accommodations for the workforce for all stages of the Project.

7.2 Impact Assessment

[A] Describe the socio-economic impacts of construction and operation of the Project, including:

a) impacts related to:
    i) local training, employment and business opportunities,
    ii) regional and provincial economic benefits,
    iii) housing,
    iv) recreational activities,
    v) hunting, fishing, trapping and gathering, and
    vi) impacts to First Nations and Métis (e.g., traditional land use and social and cultural implications);
b) estimated total Project cost, including a breakdown for engineering and project management, equipment and materials, and labour for both construction and operation stages. Indicate the percentage of expenditures expected to occur in the region, Alberta, Canada outside of Alberta, and outside of Canada;
c) impacts of the Project on the availability of affordable housing and the quality of health care services. Provide a summary of any discussions that have taken place with the local municipalities and the local environmental public health office of Alberta Health Services concerning housing availability and health care services respectively;
d) discuss any impacts expected on primary and secondary highway systems and other regional roads caused by anticipated traffic changes;
e) the impact on local and regional infrastructure and community services, including consideration of municipal "hard services", education/training services, social services, urban and regional recreation services, law enforcement and emergency services; and
f) describe municipal growth pressures as they relate to the Project and the need for additional Crown land to meet these needs.

[B] Discuss plans to work with First Nation and Métis communities and groups, other local residents and businesses regarding employment, training needs and other economic development opportunities arising from the Project.

[C] Provide the estimated total Project cost, including a breakdown for engineering and project management, equipment and materials, and labour for both construction and operation stages. Indicate the percentage of expenditures expected to occur in the region, Alberta, Canada outside of Alberta, and outside of Canada.

8 MITIGATION MEASURES

[A] Discuss mitigation measures to avoid, minimize or eliminate the potential impacts for all stages of the Project.

[B] Identify those mitigation measures that will be implemented for each associated impact and provide rationale for their selection.

[C] Discuss the effectiveness of the proposed mitigation.

9 RESIDUAL IMPACTS

[A] Describe the residual impacts of the Project following implementation of the Proponent's mitigation measures and the Proponent's plans to manage those residual impacts.

10 MONITORING

[A] Describe the Proponent's current and proposed monitoring programs.

[B] Describe the monitoring programs proposed to assess any Project impacts and to measure the effectiveness of mitigation plans.

[C] Discuss the Proponent's regional monitoring activities including:

a) monitoring that will be undertaken to assist in managing environmental effects, confirm performance of mitigation measures and improve environmental protection strategies;
b) how these monitoring programs are consistent with other current or proposed regional monitoring programs;
c) monitoring performed in conjunction with other stakeholders, including aboriginal communities and groups; and
d) new monitoring initiatives that may be required as a result of the Project.

[D] Discuss:

a) the Proponent's plans for addressing and mitigation any environmental impacts identified in the monitoring program;
b) how monitoring data will be disseminated to the public or other interested parties; and
c) how the results of monitoring programs and publicly available monitoring information will be integrated with the Proponent's environmental management system.