

**FINAL TERMS OF REFERENCE
ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

FOR THE PROPOSED

**HR MILNER EXPANSION PROJECT
MAXIM POWER CORP.**

Approximately 20 km north from the Town of Grande Cache, Alberta

ISSUED BY: Alberta Environment

DATE: April 9, 2008

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1 INTRODUCTION

1.1 BACKGROUND

[A] MAXIM Power Corp. (MAXIM or “the proponent”) is proposing to develop a single unit, 500 megawatt (MW) coal-fired power plant referred to as the HR Milner Expansion project (“Milner Expansion” or the “Project”). The Project is located near Grande Cache, Alberta on the site of the existing 150 MW HR Milner Generating Station. The legal description of the current and proposed operation is N1/2 of Section 10 and the S1/2 of Section 15, Township 58 Range 8 West of the 6th Meridian which is situated in the Inner Foothills belt of the Rocky Mountains, northwest of Edmonton. It is anticipated that the Project would be complete and operational by 2012.

[B] The Project will utilize much of the infrastructure of the existing HR Milner Generating Station. Water requirements will be met by the existing water license. Alternative surface and groundwater sources will be investigated. Ash from the plant will be disposed of at the existing Flood Creek disposal site until this site reaches capacity. Work will commence to site a new ash disposal facility off-site. Information on the planning of this new facility will be included in the EIA report; however, approval for the new facility is not part of the application.

[C] The purpose of this Terms of Reference is to identify for MAXIM and appropriate stakeholders the information required by government agencies for an Environmental Impact Assessment (EIA) report prepared under the *Environmental Protection and Enhancement Act* (EPEA).

1.2 SCOPE

[A] MAXIM will prepare and submit an Environmental Impact Assessment (EIA) report that examines the environmental and socio-economic effects of the construction, operation, and reclamation of the Project.

[B] The Study Area for the EIA report shall include the Project Area, as well as the spatial and temporal limits of individual environmental components outside the Project Area boundaries where an effect can be reasonably expected. The EIA Study Area includes both Local and Regional Study Areas.

[C] The EIA report shall be prepared with consideration to all applicable provincial and federal legislation, codes of practices, guidelines, standards and directives.

[D] 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 MAXIM’s application to the Alberta Utilities Commission (AUC). An EIA report summary will also be included as part of the AUC Application.

[E] The EIA report will include a glossary of terms and a list of abbreviations to assist the reader in understanding the material presented. It will also include tables that cross-reference the report (subsections) to the EIA Terms of Reference.

[F] The EIA report will include the key environmental issues that are important for the achievement of sustainable environmental and resource management. The report will also identify those issues that were raised during public consultation and differentiate between emerging issues (with ongoing uncertainties), issues with quantifiable and significant environmental effects, and issues which can be resolved through available technology and with existing management approaches.

[G] MAXIM will prepare a summary of the EIA report that will provide the reader with sufficient information to obtain a general understanding of the Project and its potential positive and negative effects. The summary report must be a stand-alone document; however, it can reference more detailed information presented in the EIA report itself.

- [H] The summary report should provide an overview of the EIA report including:
- a) the Project components and development activities which have the potential to affect the environment;
 - b) existing conditions in the Study Area, including existing uses of land, resources and other activities which have potential in combination with proposed development activities, to affect the environment;
 - c) the environmental, cultural, and socio-economic impacts of the Project including the regional, temporal, and cumulative effects which are anticipated;
 - d) impact significance in terms of magnitude, extent, duration, frequency, and reversibility;
 - e) proposed environmental protection plans, mitigation measures and monitoring;
 - f) residual effects;
 - g) an overview of modeling techniques used to forecast potential effects and assumptions used in assessing potential impacts; and
 - h) regulatory decisions that are needed for the Project to proceed.

2 PUBLIC ENGAGEMENT AND ABORIGINAL CONSULTATION

- [A] Document the public engagement program implemented for the Project including:
- a) documentation of individual participation and attendance at each meeting, including recording of specific comments or issues raised at the meetings;
 - b) description and documentation of concerns and issues expressed by the public, MAXIM's analysis of those concerns and issues, and the actions taken to address those concerns and issues; and
 - c) how public input was incorporated into the Project development, impact mitigation and monitoring.
- [B] Document the aboriginal consultation program implemented for the Project including:
- a) documentation of individual participation and attendance at each meeting, including a record of specific comments or issues raised at the meetings;
 - b) description and documentation of concerns and issues expressed by aboriginal, the Proponent's analysis of those concerns and issues, and the actions taken to address those concerns and issues;
 - c) how aboriginal input was incorporated into the Project development, impact mitigation and monitoring; and
 - d) consultation undertaken with aboriginal communities with respect to traditional ecological knowledge and traditional use of land.

[C] Describe plans to maintain the public engagement and aboriginal consultation process following completion of the EIA review 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.

3 PROJECT DESCRIPTION

3.1 THE PROPONENT

- [A] Provide:
- a) a corporate profile; and
 - b) the name of the legal entity that will develop, manage and operate the Project and hold the operating approvals.
- [B] Provide a brief history of the existing Milner Generating Station, coal-fired electricity generation in Alberta and development activities, resource characterization and environmental studies in the Project area. MAXIM shall provide an overview of Alberta's deregulated electrical supply system and discuss the need for additional electrical energy capacity and where and when the capacity is needed. MAXIM will also discuss the proposed Project's electricity supply capacity.

3.2 PROJECT DEVELOPMENT

- [A] Provide a development plan that includes:
- a) the phases of development;
 - b) coal processing and power generation facilities including coal handling, ash handling and disposal, and steam and/or power generation;
 - c) infrastructure (pipelines, access roads and power lines);
 - d) other buildings and structures;
 - e) field maintenance operations; and
 - f) activities associated with development of the area, operations, reclamation and closure.
- [B] Provide a schedule outlining the proposed phases of development and the sequence and duration of key project components, including the timing of key steps in the pre-construction, construction, operation, decommissioning, and reclamation stages of each phase.
- [C] Provide information on mineable coal resources in the region (Grande Cache and area) to supply both the existing 150 MW HR Milner Generating Station and the proposed new unit for the expected operating life of the Project.
- [D] Discuss the key factors controlling the schedule, restrictions for conducting certain development activities and uncertainties.

3.3 EVALUATION OF ALTERNATIVES

3.3.1 Project Alternatives

- [A] Discuss the need for the Project addressing the following:
- a) any alternative means of carrying out the Project that are technically and economically feasible and, where applicable, indicate their potential environmental effects and impacts;
 - b) compare identified alternatives to the Project or components of the Project and the anticipated effects and impacts of the alternatives. Discuss reasons for not selecting any identified alternatives;
 - c) implications resulting from a delay in proceeding with the Project, or any phase of the Project; and
 - d) potential cooperative development opportunities for the Project (e.g. shared infrastructure).
- [B] Discuss the implications of not going ahead with the Project.

3.3.2 Process and Infrastructure Alternatives

- [A] Describe the process and criteria used to select sites for facilities and infrastructure.
- [B] Discuss the route or site selection criteria for any linear or other infrastructure development or modification and provide the rationale for selecting the proposed alignment and design.
- [C] Discuss how alternative technologies were evaluated and summarize the results, including:
- a) best available technology economically achievable (BATEA) for coal transport, coal processing, ash disposal, cooling, combustion, pre- and post-combustion treatment to remove contaminants including NO_x (oxides of nitrogen), SO₂ (sulphur dioxide), particulates, CO₂, and mercury, CO₂ reduction and potential capture and storage.
 - b) the environmental and energy thermal efficiency of MAXIM's selected generating technology compared to leading alternatives such as those outlined in the 1995 *Fuel Cycle Emissions Analysis of Existing and Future Electric Generation Options in Alberta, Canada – Integrated Gasification Combined Cycle (IGCC), Pressurized Fluidized Bed Combustion (PFBC) and Coal/Natural Gas-Fired Hybrids*, providing:
 - i) a table comparing NO_x, SO₂, CO₂, particulate emissions and energy efficiency; and

- ii) a comparison of the effect of the technology on waste streams, water requirements and disposal requirements.
- c) a comparison of the identified technology alternatives and their environmental effects, with the rationale for selecting the proposed technology.

[D] Discuss the potential for new or additional technology to increase energy recovery during the life of the project.

[E] Describe the criteria and rationale for selecting the preferred water supply sources. Include options for alternative surface water sources, off-stream storage and other criteria used to assess the feasibility of its use.

[F] Discuss options and technologies considered for wastewater treatment, wastewater management and wastewater disposal and reasons, including water quality and environmental considerations, for selecting the preferred options in the context of best management practices and best available technologies.

[G] Discuss the waste disposal options including coal ash disposal options. Discuss the strategy for on-site waste disposal versus off-site waste disposal and identify:

- a) the location of on-site waste disposal including landfills, if applicable;
- b) the availability of off-site waste disposals facilities;
- c) site suitability from a groundwater protection perspective (provide geo-technical information to support the siting of disposal facilities); and
- d) site suitability with regard to existing and potential human activities in the area.

3.4 PROJECT PROCESSES AND FACILITIES

[A] Provide maps and/or drawings of the Project components and activities, including:

- a) existing infrastructure and facilities;
- b) proposed infrastructure and facilities including coal handling, ash handling and disposal, boiler, turbine and generator design, pollution control equipment and cooling systems;
- c) other buildings and infrastructure (pipelines and utilities);
- d) temporary structures;
- e) transportation and access routes including any new rail lines and off-loading facilities;
- f) on-site hydrocarbon storage;
- g) containment structures such as berms and storage and retention ponds;
- h) water wells/intakes, pipelines, and storage structures;
- i) sources of aggregate resources, borrow material and other construction materials and locations of any stockpiles that will be developed; and
- j) waste storage areas and disposal sites.

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

[C] Discuss planned accommodations for the workforce during the life of the Project.

[D] Describe the thermal recovery and other related processes and process facilities of the Project, and

- a) discuss the amount and source of energy required for the Project; and
- b) describe the proposed infrastructure to deliver the generated energy to market.

[E] Provide a listing of chemical products and catalysts 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 (CEPA), 1999* toxics;
- b) listed on the National Pollutant Release Inventory (NPRI);
- 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 Chemical Management Plan.

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

3.5 TRANSPORTATION AND INFRASTRUCTURE

[A] Provide the results of consultation with Alberta Transportation and discussions with other industry operators.

[B] Provide a summary of any Traffic Impact Assessment carried out for the Project, or where no Traffic Impact Assessment has been prepared:

- a) Describe the anticipated changes to traffic (e.g., type, volume) on highways during the life of the Project. Consider other existing and planned uses of the same highways; and
- b) Identify needs to upgrade existing roads, bridges, drainage and intersections (including Highway 40 infrastructure) or construct new roads.

[C] Describe and locate on maps the transportation infrastructure requirements for the Project and how they relate to local communities.

[D] Describe road access to and road development within the Project Area, and identify the type and location of road construction and reclamation materials, the volume of material needed and the availability of these materials.

[E] Indicate where Crown land dispositions may be needed for roads or other infrastructure outside of the Project Area.

[F] Describe crossings of watercourses or waterbodies required (with appropriate diagrams). Include:

- a) timing;
- b) construction standards or methods;
- c) regulatory requirements; and
- d) environmental protection plans.

3.6 ELECTRIC TRANSMISSION INFRASTRUCTURE

[A] MAXIM shall:

- a) discuss the capacity of the existing transmission lines in the Grande Cache area to handle the additional power when the proposed Project comes on-stream;
- b) identify system upgrades that may be required to connect the proposed Project to the provincial electrical grid;
- c) provide results of discussions with the Alberta Electrical System Operator regarding power additions to the provincial electrical grid; and
- d) identify the regulatory processes and decisions that will determine what changes to the transmission system are required to accommodate the proposed Project (e.g. the *Transmission Regulation* (AR 174/2004) under the *Electric Utilities Act*, future applications under the *Hydro and Electric Energy Act*).

3.7 LAND MANAGEMENT

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

[B] Provide a fire control plan highlighting:

- a) measures taken to ensure continued access for firefighters to adjacent wildland areas;
- b) forest fire prevention measures;
- 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.

3.8 AIR EMISSIONS MANAGEMENT

[A] Provide emission profiles (type, rate and source) for the Project's operating emissions including point and non-point sources and fugitive emissions, and for construction emissions. Consider normal, worst case, upset, start-up and shut-down conditions. Discuss the following:

- a) odorous or visible emissions from the proposed facilities including potential water vapour emissions from the proposed facilities with respect to drift, icing, fogging and visibility;
- b) annual and total greenhouse gas emissions for the life of the Project;
- c) the Project's contribution to total provincial and national greenhouse gas emissions on an annual basis;
- d) MAXIM's overall greenhouse gas management plans;
- e) the amount and nature of acidifying emissions, probable deposition patterns and rates;
- f) control technologies used to minimize air emissions such as sulphur dioxide (SO₂), carbon monoxide (CO), particulate matter (PM_x), hydrogen sulphide (H₂S), oxides of nitrogen (NO_x), air toxics (including heavy metal emissions), polycyclic aromatic hydrocarbons (PAHs), selenium, mercury (e.g. fabric filters vs. particulate control technologies), arsenic, chromium, lead, radionuclide parameters, greenhouse gases, volatile organic compounds (VOC) and hazardous air pollutants from incomplete combustion;
- g) fugitive emissions associated with the hauling and storage of coal;
- h) ozone observations in the region, providing applicable observational or modeling results from studies of emission sources similar to the proposed Project and discuss how MAXIM will manage ozone regionally; and
- i) fugitive emissions control technology to detect, measure and control emissions and odours from equipment leaks.

3.9 WATER RESOURCES

3.9.1 Water Supply

[A] Describe the water supply requirements for the Project, including:

- a) the expected water balance during the life of the Project and the proposed water source(s). Discuss assumptions made or methods chosen to arrive at the water balances;
- b) the adjustment to water diversion activities to meet any instream flow objectives that may be set for the identified sources of supply;
- c) the process, potable 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 variability in the amount of water required on an annual and seasonal basis as the Project is implemented;
- e) the expected cumulative effects on water losses/gains due to the Project operations;
- f) potable water treatment systems for the life of the Project;
- g) type and quantity of potable water treatment chemicals used; and
- h) 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.

3.9.2 Surface Water Management

[A] Describe MAXIM's surface water management strategy for the construction, operation, decommissioning and reclamation stages, including the following:

- a) design factors considered, such as:
 - i) site drainage,
 - ii) run-on management,

- iii) road run-off,
 - iv) erosion/sediment control,
 - v) slumping areas,
 - vi) groundwater protection,
 - vii) groundwater seepage,
 - viii) produced water management,
 - ix) flood protection, and
 - x) storage facilities;
- b) permanent or temporary alterations or realignments of watercourses, wetlands and other waterbodies, including regulatory and mitigation requirements.

[B] Describe realignments of Crown bed and shore and proposed compensation.

3.9.3 Wastewater Management

[A] Describe MAXIM's wastewater management strategy, including:

- a) the source, quantity and composition of each wastewater stream from existing and proposed facilities;
- b) the proposed disposal locations and methods for each wastewater stream;
- c) design of facilities that will collect, treat, store and release wastewater streams;
- d) type and quantity of chemicals used in wastewater treatment;
- e) sewage treatment and disposal; and
- f) the principles that have been incorporated into the Project design for pollution prevention, waste minimization and recycling.

3.10 WASTE MANAGEMENT

[A] 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 identify how each stream will be managed;
- b) describe how disposal sites and sumps will be constructed; and
- c) describe plans for pollution prevention, waste minimization, recycling, and management to reduce waste quantities over the life of the Project.

3.11 CONSERVATION AND RECLAMATION

[A] Provide a conceptual conservation and reclamation plan for the Project in the context of development on an existing brownfield site with consideration to:

- a) any existing Conservation and Reclamation Plan;
- b) pre-development information with respect to land capability, vegetation, commercial forest land base by commercialism class, forest productivity, recreation, wildlife, aquatic resources, aesthetics and land use resources;
- c) integration of operations, decommissioning, reclamation planning and reclamation activities. Discuss anticipated timeframes for completion of reclamation, including an outline of the key milestone dates for reclamation and how progress to achieve these targets will be measured;
- d) discuss any constraints to reclamation such as timing of activities, availability of reclamation materials and influence of natural processes and cycles;
- e) post-development land capability with respect to:
 - i) self-sustaining topography, drainage and surface watercourses representative of the surrounding area,
 - ii) pre-development traditional use with consideration for traditional vegetation and wildlife species in the reclaimed landscape,
 - iii) wetlands,

- iv) self-sustaining vegetation communities representative of the surrounding area, and
- v) reforestation and forest productivity;
- f) a revegetation plan for the disturbed terrestrial and aquatic areas, identifying the species types that will be used for seeding or planting, and the vegetation management practices to return disturbed areas to a state capable of supporting a self-sustaining vegetative community capable of ecological succession equivalent to pre-disturbance conditions, considering factors such as biological capability and diversity and end land use objectives;
- g) reclamation material salvage, storage areas and handling procedures;
- h) reclamation material replacement indicating depth, volume and type;
- i) pre-development and final reclaimed site drainage plans;
- j) integrating surface and near-surface drainage within the Project Area; and
- k) promotion of biodiversity.

[B] Provide:

- a) a conceptual ecological land classification (ELC) map for the post-reclamation landscape considering potential land uses and how the landscape and soils have been designed to accommodate future land use; and
- b) a discussion of any uncertainties related to the conceptual reclamation plan.

3.12 ENVIRONMENTAL MANAGEMENT SYSTEMS AND RESPONSE PLANS

[A] Summarize key elements of MAXIM's existing or proposed environment, health and safety management system.

[B] Describe adaptive management plans that minimize the impact of the Project. Describe the flexibility built into the plant design and layout to accommodate future modifications required by any change in environmental standards, limits and guidelines.

[C] Describe MAXIM's emergency response system to minimize adverse environmental effects, while protecting the safety of personnel, including

- a) emergency reporting procedures for spill containment and management, and
- b) emergency response, public notification protocol and safety procedures.

[D] Describe MAXIM's current and proposed source monitoring programs with respect to the following:

- a) air emissions, including fugitive emissions;
- b) wastewater treatment and release; and
- c) hazardous and non-hazardous waste treatment and storage.

[E] Discuss how the results of monitoring programs and publicly available monitoring information will be integrated with MAXIM's environmental management system.

3.13 REGIONAL AND COOPERATIVE INITIATIVES

[A] Discuss MAXIM's involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with industrial development, including:

- a) potential cooperative ventures that MAXIM has initiated, could initiate or could develop with other industries and other resource users;
- b) how MAXIM will work to develop and implement such cooperative opportunities;
- c) MAXIM's participation in any regional forums;
- d) how MAXIM would design and implement research programs where necessary; and
- e) how regional environmental management initiatives will be incorporated into MAXIM's management practices.

[B] Discuss MAXIM's regional monitoring activities including:

- a) monitoring that will be undertaken to assist in managing environmental effects, confirm performance of mitigative measures and improve environmental protection strategies;
- b) monitoring done independently by MAXIM;
- c) monitoring performed in conjunction with other stakeholders; and
- d) new monitoring initiatives that may be required as a result of the Project.

4 ENVIRONMENTAL ASSESSMENT

4.1 ASSESSMENT REQUIREMENTS

4.1.1 Scenarios

[A] Define assessment scenarios including:

- a) a Baseline Case, which includes existing environmental conditions and existing and approved Projects or activities;
- b) an Application Case, which includes the Baseline Case with the effects of the Project added; and
- c) a Planned Development Case, which includes past, existing and anticipated future environmental conditions, existing and approved projects or activities plus other planned projects.

[B] For the purpose of defining the scenarios, “approved” means approved by any federal, provincial, or municipal regulatory authority; “planned” means any project or activity that has been publicly disclosed prior to the issuance of these Terms of Reference or up to six months prior to the submission of an Application and EIA report.

4.1.2 Study Areas

[A] The Project Area includes all lands subject to direct disturbance from the Project and associated infrastructure.

[B] The Local and Regional Study Areas include the Project Area and other areas based on individual environmental components where an effect from the proposed development can reasonably be expected.

[C] The study area for the EIA report shall include the Project Area and associated infrastructure as well as the spatial and temporal aspects of individual environmental components outside the Project Area boundaries where an effect can be reasonably expected. The EIA Study Area includes both Local and Regional Study Areas.

[D] For the Project Area provide:

- a) the legal land description;
- b) the boundaries of MAXIM’s lease;
- c) the proposed AUC approval area; and
- d) a map that shows the status of land tenure and identifies the locations of all proposed development activities and facilities.

[E] For the Local and Regional Study Areas provide:

- a) a topographic map of appropriate scale showing the area proposed to be disturbed in relation to existing township grids, wetlands, watercourses, and waterbodies; and
- b) the scientific rationale used to define the spatial and temporal aspects of the Study Areas.

4.1.3 Cumulative Effects Assessment

[A] MAXIM will conduct a cumulative environmental effects assessment of the Project based on the EUB/AENV/NRCB Information Letter *Cumulative Effects Assessment in Environmental Impact Assessment Reports* under the *Alberta Environmental Protection and Enhancement Act* June 2000. MAXIM will include a summary of all proposed monitoring, research and other strategies or plans to minimize, mitigate and manage potential adverse effects.

- [B] The identification and assessment of the likely cumulative effects of the Project will:
- a) define the spatial and temporal Study Area boundaries, and provide the rationale for assumptions used to define those boundaries for each environmental component examined;
 - b) describe the current (baseline) state of the environment in the regional Study Area (used for the cumulative effects assessment) and the activities that have created the current conditions;
 - c) assess the incremental consequences that are likely to result from the Project in combination with other existing, approved and planned projects in the region;
 - d) discuss how relevant information or data used from other development projects is appropriate for use in this EIA report;
 - e) consider and describe deficiencies or limitations in the existing database for relevant components of the environment; and
 - f) explain the approach and methods used to identify and assess cumulative impacts, including cooperative opportunities and initiatives undertaken to further the collective understanding of cumulative impacts, and provide a record of relevant assumptions, confidence in data and analysis to support conclusions.

4.1.4 Information Requirements

[A] The EIA Report will include the following environmental information for each assessment scenario:

- a) a description of and rationale for the selection of environmental attributes, parameters, or properties examined;
- b) for each selected environmental attribute, parameter, or property:
 - i) describe existing conditions. Comment on whether the available data are sufficient to assess impacts and mitigative measures. Identify environmental disturbance from previous, current, and approved activities that have become part of the baseline conditions,
 - ii) describe the nature and significance of the environmental effects and impacts associated with the development activities,
 - iii) present plans to minimize, mitigate or eliminate negative effects and impacts. Discuss the key elements of such plans,
 - iv) present a plan to manage environmental changes and identify any follow-up programs necessary to verify the accuracy of the environmental assessment and to determine effectiveness of measures taken to mitigate adverse environmental affects, and
 - v) identify residual impacts and comment on their significance;
- c) a discussion of the sources of information used in the assessment including a summary of previously conducted environmental assessments related to MAXIM's operations:
 - i) information sources will include literature and previous EIA reports and environmental studies, operating experience from current, similar operations; industry study groups; traditional knowledge; and government sources; and
 - ii) identify any limitations or deficiencies that the information may place on the analysis or conclusions in the EIA report. Discuss how these limitations or deficiencies will be addressed within the EIA report;
- d) a description of the techniques used to identify and evaluate the environmental impacts and effects resulting from the project;
- e) identify where deficiencies in information exist and describe MAXIM's plan, including rationale, for providing the necessary information. Where required, undertake studies and investigations to obtain additional information to address the information deficiencies;
- f) provide a sufficient base for the prediction of positive and negative impacts and the extent to which negative impacts may be mitigated by planning, Project design, construction techniques, operational practices and reclamation techniques. Impact significance will be

- quantified where possible and assessed including consideration of spatial, temporal and cumulative aspects;
- g) if applicable, present a plan that addresses the adverse impacts associated with the Project that may require joint resolution by government, industry, and the community. Describe how this plan will be implemented and how it will incorporate the participation of government, industry and the community; and
 - h) present baseline biophysical information in a manner that enables an ecological land classification (ELC) map of the Project Area to be completed to the ecosite classification.

4.1.5 Modeling

- [A] For each model used in the assessment scenarios, provide:
- a) a justification for the model used;
 - b) a documentation of the assumptions used to obtain the modeling predictions; and
 - c) a discussion of the limitations of the models used and how these limitations were addressed, including sources of error and relative accuracy.

4.1.6 The Project and Climate Parameters

- [A] 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 impact the change to climate parameters may have on elements of the project that are sensitive to climate parameters.

4.2 AIR QUALITY, CLIMATE AND NOISE

4.2.1 Baseline Information

- [A] Discuss the baseline climatic and air quality conditions including the following:
- a) the type and frequency of meteorological conditions that may result in poor air quality; and
 - b) appropriate ambient air quality parameters such as SO₂, H₂S, total hydrocarbons (THC), NO_x, VOC, individual hydrocarbons of concern in the THC and VOC mixtures, ground-level ozone (O₃), visibility, representative heavy metals, and particulates (TSP, road dust, PM₁₀ and PM_{2.5}).
- [B] Provide representative baseline noise levels.

4.2.2 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 or acidic deposition patterns;
 - d) identify areas that exceed Potential Acid Input (PAI) critical loading criteria;
 - e) discuss interactive effects that may occur as a result of 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, vegetation resources, and water quality.
- [B] Identify components of the Project that have the potential to create increased 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.

[C] Describe how air quality and noise impacts resulting from the Project will be mitigated.

[D] Describe the residual air quality and noise effects of the Project and MAXIM's plans to manage those effects.

4.2.3 Monitoring

[A] Describe the potential for reduced air quality. Describe ambient air quality and noise monitoring that will be conducted during the life of the Project to assess air quality and noise and the effectiveness of mitigation.

[B] Describe monitoring programs MAXIM may implement to monitor the effects of acid deposition.

4.3 HYDROGEOLOGY

4.3.1 Baseline Information

[A] Provide an overview of the existing geologic and hydrogeologic setting. Document any new hydrogeological investigations, including methodology and results, undertaken as part of the EIA study, and:

- a) present regional and Project Area geology using structure contour maps, geologic cross sections and isopach maps 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 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,
 - iv) water well development and groundwater use, including an inventory of groundwater users,
 - v) the recharge potential for aquifers,
 - vi) potential hydraulic connection between ash disposal areas and other aquifers due to Project operations,
 - vii) the characterization of areas chosen for ash disposal, including chemical compatibility and containment potential, injection capacity, hydrodynamic flow regime, and water quality assessments. The suitability of any onsite waste disposal sites should be discussed and supporting geological information provided, and
 - viii) the locations of major facilities associated with the Project, including facilities for waste storage, treatment and disposal (e.g. deep well disposal) and describe site-specific aquifer and shallow groundwater conditions beneath these proposed facilities.

4.3.2 Impact Assessment

[A] Describe Project components and activities that have the potential to affect groundwater resource quantity and quality during the life 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;

- 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.

[C] Describe programs to manage and protect groundwater resources including response/mitigation plans that may be considered in the event that adverse effects are detected.

[D] Describe the residual effects of the Project on groundwater quality and quantity and MAXIM's plans to manage those effects.

4.3.3 Monitoring

[A] Describe monitoring programs proposed to identify impacts to groundwater quality and quantity resulting from the Project and to measure the effectiveness of mitigation plans.

4.4 HYDROLOGY

4.4.1 Baseline Information

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

[B] Provide available surface flow baseline data for both the Local Study Area and Regional Study Area, including but not limited to:

- a) seasonal variation, low, average and peak flows for key creeks, river locations, watercourses; and
- b) low, average and peak levels for waterbodies/key lakes.

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

4.4.2 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 during all stages of 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 local watercourses (during minimum, average and peak flows) and water levels in local waterbodies;
- b) assess the potential impact of any alterations in flow on the hydrology in both the Local Study Area and Regional Study Area 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 (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 due to the Project.

[C] Discuss changes in sedimentation patterns in receiving waters caused by the Project.

[D] Describe impacts on other surface water users due to 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 (IFN) on water supply and water and wastewater management strategies.

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

[H] Describe mitigation measures to address impacts during the construction, operation, decommissioning and reclamation stages including the following:

- a) alteration in flow regimes;
- b) potential water use conflicts; and
- c) increased sediment loadings.

[I] Describe residual effects of the Project on hydrology in both the Local Study Area and Regional Study Area and MAXIM's plans to manage those effects.

4.4.3 Monitoring

[A] Describe monitoring programs to measure the effectiveness of mitigation plans.

[B] Discuss any monitoring programs that may be considered to assess the impacts of changes in surface water flows and levels and their impacts on aquatic resources, wildlife and vegetation.

4.5 SURFACE WATER QUALITY

4.5.1 Baseline Information

[A] Describe the baseline water quality of watercourses and waterbodies and their seasonal variations and relationships to flow and other controlling factors.

4.5.2 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 *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 effects 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.

[C] Describe proposed mitigation measures to maintain surface water quality during the construction, operation, decommissioning and reclamation stages of the Project.

[D] Describe the residual effects of the Project on surface water quality and MAXIM's plans to manage those effects.

4.5.3 Monitoring

[A] Describe monitoring programs that may be proposed to assess surface water quality impacts from the Project and the success of mitigation measures. Discuss the location of monitoring sites, the frequency of monitoring, the parameters to be monitored, the implementation of quality assurance programs, and the numerical methodology.

[B] Describe how continuous monitoring will be used to evaluate Project effects, and how such monitoring will be used to identify the need for mitigation.

4.6 AQUATIC ECOLOGY

4.6.1 Baseline Information

[A] Describe the existing fish and other aquatic resources (e.g. benthic invertebrates). Identify species composition, distribution, relative abundance, movements and general life history parameters.

[B] Describe and map, as appropriate, the fish habitat and aquatic resources of the lakes, rivers and other waters and identify:

- a) key indicator species and provide the rationale and selection criteria used;
- b) critical or sensitive areas such as spawning, rearing, and over-wintering habitats. Discuss seasonal habitat use, including migration and spawning routes; and
- c) the use of the fish resources as existing or potential aboriginal, sport or commercial fisheries.

4.6.2 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 impact 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 as a result of the Project. Identify the implications on the fish resource and describe any mitigation strategies that might be planned to minimize these effects; and
- d) changes to benthic invertebrate communities that may affect food quality and availability for fish.

[B] As applicable, discuss the design, construction and operational factors to be incorporated into the Project to minimize effects to fish and fish habitat and protect aquatic resources.

[C] 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.

[D] Describe the residual effects of the Project on fish, fish habitat, and other aquatic resources and discuss their significance in the context of local and regional fisheries. Describe MAXIM’s plans to manage those effects.

4.6.3 Monitoring

[A] Describe monitoring programs that may be proposed to assess fisheries impacts from the Project and the success of mitigation measures.

4.7 VEGETATION

4.7.1 Baseline Information

[A] Describe the existing vegetation and map vegetation communities for each ecosite phase.

[B] Describe and map peatlands and wetlands, and discuss the distribution and relative abundance of wetlands.

[C] Identify, verify and map the relative abundance of species of rare plants and the ecosite phases where they are found.

[D] Identify key indicator species and discuss the rationale for their selection. Identify composition, distribution, relative abundance, habitat requirements and general life history. Address those species listed as “at Risk, May be at Risk and Sensitive” as listed in *The Status of Alberta Species* (Alberta Sustainable Resource Development).

[E] Discuss the potential of each ecosite phase to support rare plant species, plants for traditional and medicinal 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.

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

4.7.2 Impact Assessment

[A] Identify the amount of vegetation and wetlands to be disturbed during the life of the Project.

[B] Discuss any potential effects the Project may have on rare plants or endangered species, as listed in the Status of Alberta Species (Alberta Sustainable Resources Development) and the Alberta Natural Heritage Information Centre (ANHIC) and Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

[C] Discuss temporary (include timeframe) and permanent changes to vegetation and wetland communities and:

- a) comment on the effects and their implications for other environmental resources (e.g. habitat diversity and quantity, water quality and quantity, erosion potential, recreation and other uses); and
- b) comment on the sensitivity to disturbance (including acid deposition), as well as the techniques used to estimate sensitivity to disturbance and reclamation, of each vegetation community.

[D] Describe the regional relevance of any ecosite phase to be removed.

[E] 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.

[F] Provide an ELC 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.

[G] Compare the pre-disturbance and reclaimed percentages and distribution of all forested communities in the Project Area and determine the amount of commercial and non-commercial forest land base that will be disturbed by the Project.

[H] Discuss the impact of any loss of peatlands or wetlands, as well as how this will affect land use, fragmentation and biodiversity. Discuss measures and techniques that will be used to minimize the impact.

[I] Provide a mitigation strategy that will minimize Project impacts addressing the following:

- a) mitigation of the adverse effects of site clearing on rare plants and plant communities. Identify any setbacks proposed around environmentally-sensitive areas such as surface waterbodies, riparian areas and peatlands/wetlands; and
- b) measures and techniques that will be used to minimize the impact of loss of peatlands or wetlands on land use, fragmentation and biodiversity.

[J] Describe the residual effects of the Project on vegetation and MAXIM's plans to manage those effects.

4.7.3 Monitoring

[A] Describe monitoring programs that may be proposed to assess vegetation impacts from the Project and the success of mitigation measures.

4.8 WILDLIFE

4.8.1 Baseline Information

[A] Describe and map existing wildlife resources (amphibians, reptiles, birds and terrestrial and aquatic mammals), their use and potential use of habitats.

[B] Identify key indicator species and discuss the rationale for their selection. Identify composition, distribution, relative abundance, seasonal movements, movement corridors, habitat requirements, key habitat areas, and general life history. Address those species listed as “at Risk, May be at Risk and Sensitive” as listed by Alberta Sustainable Resource Development and COSEWIC.

4.8.2 Impact Assessment

[A] Describe Project components and activities that may affect wildlife and wildlife habitat.

[B] Describe the potential changes to wildlife:

- a) evaluate potential impacts on wildlife populations, habitat use, habitat availability/quality and food supply during all phases of the Project. Consider habitat loss, abandonment, reduced effectiveness, fragmentation or alteration as it relates to reproductive potential and recruitment for regional wildlife populations over the life of the Project;
- b) describe the spatial and temporal changes to habitat (type, quality, quantity, diversity and distribution) and to wildlife distribution, relative abundance, movements, habitat availability and the potential to return the area to pre-disturbed wildlife habitat/population conditions, including:
 - i) potential effects on wildlife as a result of changes to air and water quality, including both acute and chronic effects on animal health,
 - ii) potential effects on wildlife due to improved or altered access into the area (e.g. vehicle collisions with wildlife), obstructions to daily or seasonal movements, noise and hunting mortality during operations and after reclamation, and
 - iii) map the anticipated changes due to the Project and other planned activities in both the Local Study Area and Regional Study Area to describe potential effects of habitat fragmentation and the implications to wildlife.

[C] Provide a strategy and mitigation plan to minimize impacts on wildlife habitat during the life of the Project and to return productive wildlife habitat to the area, considering:

- a) consistency of the plan with applicable regional, provincial and federal wildlife habitat objectives and policies;
- b) habitat enhancement measures and a schedule for the return of habitat capability to areas impacted by the Project;
- c) the use of setbacks to provide for the protection of riparian habitats, interconnectivity of such habitat and the unimpeded movement by wildlife species using the habitat;
- d) the need for access controls or other management strategies to protect wildlife during and after Project operations; and
- e) measures to prevent habituation of wildlife (e.g. black bears), increasing the potential for human-wildlife encounters and consequent destruction of wildlife, including any staff training program, garbage containment or regular follow-up.

[D] Describe the residual effects of the Project on wildlife and wildlife habitat in both the Local Study Area and Regional Study Area and MAXIM’s plans to manage those effects.

4.8.3 Monitoring

[A] Describe monitoring programs that may be proposed to assess wildlife impacts from the Project and the effectiveness of mitigation strategies and habitat enhancement measures, giving special attention to sensitive species.

4.9 BIODIVERSITY AND FRAGMENTATION

4.9.1 Baseline Information

[A] Describe the terrestrial and aquatic biodiversity metrics that will be used to characterize the existing ecosystems and probable effects of Project development, and that will represent broad taxonomic assemblages, 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 ecological unit (e.g. 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 by combining measures of species richness, overlap in species lists, significance of individual species or associations, uniqueness and other appropriate measures. Describe the techniques used in the ranking process.

[B] Describe the current level of habitat fragmentation.

4.9.2 Impact Assessment

[A] 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 from fragmentation that may result from the Project.

[C] Discuss the measures to minimize any anticipated changes in regional biodiversity.

[D] Describe the residual effects of the Project on biodiversity and fragmentation and MAXIM's plans to manage those effects.

4.9.3 Monitoring

[A] Describe monitoring programs proposed to measure changes to biodiversity and fragmentation caused by the Project and the effectiveness of mitigation measures.

4.10 TERRAIN AND SOILS

4.10.1 Baseline Information

[A] Provide descriptions and maps of the terrain and soils conditions, including:

- a) surficial geology and topography;
- b) the soil types and their distribution. Provide an ecological context to the soil resource by supplying soil survey information that includes Survey Intensity Level (SIL) 2 for any undisturbed areas within the Project Area;
- c) the 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.

4.10.2 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, field (pipelines, transmission lines and access roads), aggregate and borrow sites, construction camps, and other infrastructure-related construction activities;
- b) provide an inventory of the pre- and post-disturbance land capability classes for soils in the Local Study Area and describe the impacts to land capability due to the Project. Map the size and distribution of pre-disturbance land capability classes and 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) identify the potential acidification impact on soils and discuss the significance of predicted impacts by acidifying emissions resulting from the Project;
- e) describe the impact of the Project development 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, soil moisture, nutrient depletion, erosion, etc.);
- f) discuss the potential for soil erosion during the life of the Project;
- g) identify the environmental effects of the proposed electric power generation project on the landscape during the life of the Project; and
- h) discuss the potential for upset conditions and their environmental effects.

[B] Provide a mitigation plan to address the following:

- a) possible measures to minimize surface disturbance including the use of existing clearings for Project development;
- b) possible actions to address potential effects of acid deposition;
- c) actions to mitigate effects of any constraint or limitation to habitat restoration such as compaction, contaminants, soil moisture, erosion, nutrient regime, etc.;
- d) possible measures to mitigate changes to ground surface (temperature, heave and subsidence) during operations;
- e) possible actions to address impacts to land capability; and
- f) any other measures to reduce or eliminate the potential impacts that the Project may have on soil capability and/or quality.

[C] Describe the residual effects of the Project on terrain and soils and MAXIM's plans to manage those effects.

4.10.3 Monitoring

[A] Describe monitoring programs proposed to measure Project impacts on terrain and soils and the success of mitigation measures.

4.11 LAND USE

4.11.1 Baseline Information

[A] Identify the current land uses, including oil and gas development, agriculture, forestry, tourism, cultural use, food collection, trapping, fishing, hunting and other outdoor recreational activities.

[B] Identify and map all Crown land including bed and shore.

[C] Identify unique sites or special features such as Natural Areas, Environmentally Significant Areas, and Heritage Rivers.

[D] Identify any land use policies and resource management initiatives that pertain to the Project, and discuss how the Project will be consistent with the intent of these initiatives.

4.11.2 Impact Assessment

- [A] Identify the potential impact of the Project on land uses, including:
- a) impacts to unique sites or special features;
 - b) anticipated impacts related to changes in public access;
 - c) secondary effects, such as increased hunter, angler and other recreational access and facilitated predator movement, that may result from linear development;
 - d) the implications of relevant land use policies and resource management initiatives for the Project, including any constraints to development;
 - e) potential impacts to aggregate reserves that may be located on land under MAXIM'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 disturbance impacts Annual Allowable Cuts and quotas within the FMA;
 - 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) implications of the Project on regional recreational activities, public access and other land uses during and after development activities.
- [B] Discuss possible mitigation strategies to address:
- a) the need for, and plans to address, access management during and after Project operations;
 - b) the process for addressing the needs of other land users in the Local Study Area;
 - c) measures to mitigate impacts on land use created by the Project; and
 - d) how potentially-affected aggregate reserves will be salvaged and stockpiled with input provided by Alberta Transportation and Alberta Sustainable Resource Development.
- [C] Describe the residual effects of the Project on land use and MAXIM's plans to manage those effects.

4.11.3 Monitoring

- [A] Describe monitoring programs proposed to measure land use impacts resulting from the Project and the effectiveness of mitigation measures.

5 HISTORIC RESOURCES

- [A] Describe consultation with Alberta Culture and Community Spirit (ACCS) concerning the need for a Historical Resource Impact Assessment (HRIA) for the Project, and:
- a) provide a general overview of the results of any previous historical resource studies that have been conducted in the Study Area, including archaeological resources, palaeontological resources, historical period sites, and any other historical resources as defined within the *Historical Resources Act*;
 - b) summarize the results from the field program performed to assess archaeological, palaeontological and historical significance of the Local Study Area;
 - c) provide a summary of the results of the HRIA conducted to assess the potential impact of the Project on archaeological, palaeontological and historical resources;
 - d) provide an outline of the program and schedule of field investigations that ACCS may require MAXIM to undertake to further assess and mitigate the effects of the Project on historical resources; and

- e) document any stakeholder concerns with respect to the development of the Project based on the historical significance of the Study Area.

6 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE

- [A] Describe consultation with aboriginal communities and provide:
 - a) the extent of traditional use of land in the Local Study Area. Discuss the vegetation and wildlife used for traditional, food, ceremonial, medicinal and other purposes, and any potential effects the Project may have;
 - b) traditional uses including fishing, hunting, nutritional or medicinal plant harvesting, and cultural use by local aboriginal peoples; and
 - c) a map of cabin sites, spiritual sites, graves and other traditional use sites considered as historic resources under the *Historical Resources Act* (if the aboriginal community is willing to have these locations disclosed.)
- [B] Determine the impact of development on these uses and identify possible mitigation strategies.

7 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 proposed 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 potential human health impact of the potential contamination of country foods and natural food sources taking into consideration all Project activities;
 - f) document the health concerns raised by stakeholders during consultation on the Project;
 - g) document any health concerns identified by aboriginal communities due to 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 effects to receptors, including First Nations and Métis receptors;
 - i) assess the cumulative health effects that are likely to result from the Project in combination with other existing, approved and planned Projects or reasonably-foreseeable activities in the region;
 - j) 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;
 - k) describe the potential health and safety impacts due to higher regional traffic volumes and the increased risk of accidental leaks and spills; and
 - l) discuss possible mitigation strategies to minimize the potential impact of the Project on human health.
- [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) provide a summary of the Project's emergency response plan;

- b) document the 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 and municipal emergency response agencies;
- e) describe the potential safety impacts due to higher regional traffic volumes; and
- f) discuss mitigation plans to ensure workforce and public safety during the life of the Project. Include prevention and safety measures for wildfire occurrences, water saturated plume from the cooling towers, icy roads in the winter months, accidental release or spill of chemicals to the environment and failures of structures retaining water or fluid wastes.

8 SOCIO-ECONOMIC ASSESSMENT

8.1.1 Baseline Information

[A] Describe the existing socio-economic conditions in the region, including for the communities in the region.

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

- a) population changes;
- b) MAXIM'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. Identify local employment and business development opportunities the Project may create; and
- e) planned accommodations for the workforce.

8.1.2 Impact Assessment

[A] Describe the socio-economic effects of the Project, including:

- a) impacts on the communities in the region and on Alberta including:
 - i) local employment and training,
 - ii) local procurement,
 - iii) population changes,
 - iv) housing concerns in local communities,
 - v) construction camps,
 - vi) recreational activities,
 - vii) trapping, hunting and fishing,
 - viii) effects on First Nations and Métis (e.g. traditional land use and culture), and
 - ix) regional and provincial economic benefits;
- b) estimated industrial benefits including Alberta, other Canadian, and non-Canadian percentages of total Project cost for engineering and project management, equipment and materials, construction labour and total overall Project;
- 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 Regional Health Authority concerning housing availability and health care services respectively;
- d) discuss any effects expected on primary and secondary highway systems and other regional roads caused by anticipated traffic changes;
- e) if a construction camp is needed, identify:
 - i) its location,
 - ii) the number of workers it is intended to house,

- iii) whether the camp will service the Project only or other clients,
 - iv) the length of time the camp will be in service, and
 - v) describe what services will be provided in the camp (e.g., security, recreation and leisure, medical services); and
- f) 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.

[B] Discuss options for mitigating impacts including:

- a) the Proponent’s policies and programs regarding the use of regional and Alberta goods and services;
- b) plans to work with First Nations and Métis communities and groups and other local residents and businesses with regards to employment, training needs, and other economic development opportunities arising from the Project;
- c) impacts to local and regional transportation infrastructure;
- d) steps that have been undertaken by industry, the municipality, provincial government or through regional and cooperative initiatives to address socio-economic concerns and impacts to local and regional transportation infrastructure;
- e) the potential to avoid overlap with other Projects that are reasonably anticipated during the life of the Project;
- f) mitigation plans that will be undertaken to address issues related to the availability of affordable housing and the quality of health care services; and
- g) strategies to mitigate socio-economic concerns raised by the local municipality and other stakeholders in the region.

[C] Describe the residual effects of the Project on socio-economic conditions and the measures MAXIM plans to manage those effects.

8.1.3 Monitoring

[A] Discuss monitoring plans proposed to measure the success of mitigation activities.