

**BIPOLE III TRANSMISSION PROJECT:
A MAJOR RELIABILITY IMPROVEMENT INITIATIVE**

DRAFT

ENVIRONMENTAL ASSESSMENT SCOPING DOCUMENT

Submitted by:

Manitoba Hydro

Transmission

Licensing and Environmental Assessment Department

December 2009

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Background.....	1
1.2	Project Overview	1
1.3	Purpose	1
2.0	REGULATORY AND POLICY FRAMEWORK	3
3.0	SCOPE OF THE PROJECT AND ASSESSMENT	3
3.1	Scope of Project	3
3.2	Scope of Assessment and Factors	4
4.0	NEED AND ALTERNATIVES	5
5.0	ENVIRONMENTAL ASSESSMENT CONSULTATION	6
5.1	Southern/Public Component	6
5.2	Aboriginal/Northern Component.....	7
5.3	Other Stakeholders.....	7
6.0	ABORIGINAL TRADITIONAL AND LOCAL KNOWLEDGE	7
7.0	ENVIRONMENTAL ASSESSMENT PROCESS	8
7.1	Site Selection and Environmental Assessment.....	8
7.2	Environmental Assessment.....	8
7.3	Environmental Issues.....	9
7.4	Project Description.....	9
7.4.1	General	9
7.4.2	Site Preparation	9
7.4.3	Construction.....	10
7.4.4	Operation and Maintenance.....	11
7.4.5	Decommissioning.....	12
7.5	Environmental Setting Description	12
7.5.1	General	12



7.5.2	Physical Environment	13
7.5.2.1	Atmosphere	13
7.5.2.2	Physiography and Geology.....	13
7.5.2.3	Soils.....	13
7.5.2.4	Surface Water.....	14
7.5.2.5	Groundwater	14
7.5.3	Aquatic Environment.....	14
7.5.4	Terrestrial Environment.....	15
7.5.4.1	Terrestrial Ecosystems and Habitats	15
7.5.4.2	Vegetation.....	15
7.5.4.3	Mammals and Mammal Habitat	15
7.5.4.4	Birds and Bird Habitat	16
7.5.4.5	Amphibians and Reptiles	16
7.5.4.6	Terrestrial Invertebrates.....	16
7.5.5	Socio-Economic Environment.....	16
7.5.5.1	Resource Use	16
7.5.5.2	Land and Water Use.....	17
7.5.5.3	Infrastructure and Services.....	17
7.5.5.4	Personal, Family and Community Life	18
7.5.5.5	Economic Base.....	18
7.5.6	Heritage Resources	18
7.6	Environmental Effects Assessment.....	19
7.7	Mitigation Measures	19
7.8	Significance	20
8.0	CUMULATIVE EFFECTS ASSESSMENT	20
9.0	SUSTAINABILITY ASSESSMENT	21
10.0	MONITORING AND FOLLOW-UP PROGRAM	21
11.0	ENVIRONMENTAL IMPACT STATEMENT FORMAT.....	22



1.0 INTRODUCTION

1.1 Background

Approximately 75% of Manitoba's hydroelectric generating capacity is delivered to southern Manitoba via the Bipole I and II HVdc transmission lines. The transmission lines share the same Interlake corridor over much of their length from northern Manitoba to a common terminus at the Dorsey Converter Station northwest of Winnipeg. The existing transmission system is vulnerable to the risk of catastrophic outage of either or both Bipoles I and II in the Interlake corridor and/or the Dorsey Station due to severe weather, fire, sabotage and other unpredictable events. System reliability studies conducted by Manitoba Hydro and its consultants have concluded that the likelihood of such events occurring, when combined with the potentially significant consequences of prolonged major outages, warrants substantial mitigation to reduce dependence on the Dorsey Converter Station and the existing HVdc transmission corridor.

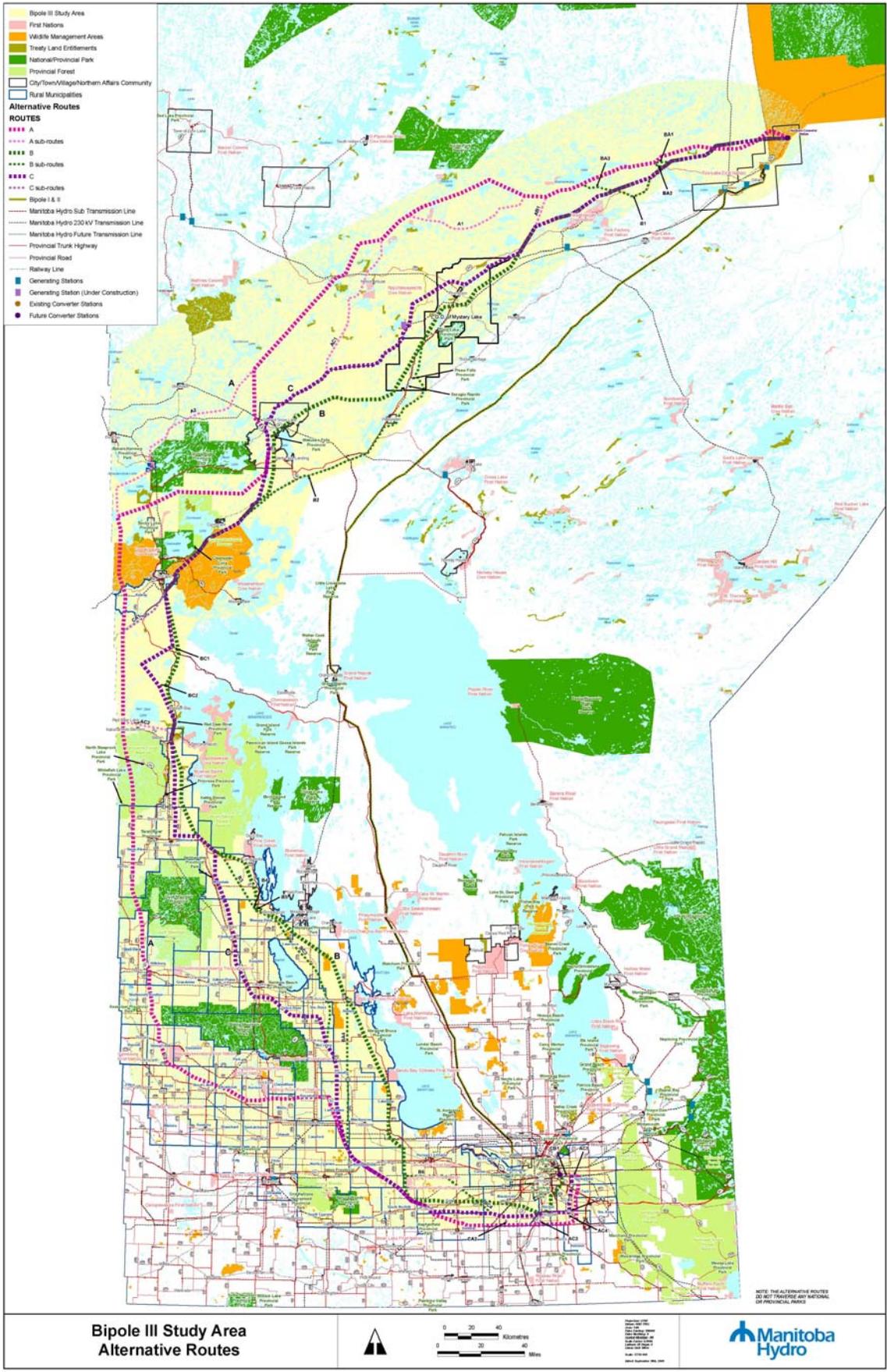
1.2 Project Overview

Manitoba Hydro is proposing to develop a new 500 kV HVdc transmission line, known as Bipole III, on the west side of Manitoba (See map overleaf - Bipole III Study Area Alternative Routes). The proposed Project will consist of a HVdc transmission line originating at a new converter station to be located near the site of the proposed Conawapa Generating Station on the Nelson River and terminating at a second new converter station to be located at the Riel site east of Winnipeg. The proposed Project will also include new 230 kV transmission lines linking the northern converter station to the northern collector system at the existing 230 kV switchyards at the Henday Converter Station and Long Spruce Generating Stations. Each of the converter stations will require a ground electrode facility connected to the station by a low voltage feeder line. Depending on final route selection, the Bipole III transmission line will be approximately 1,290 to 1,475 km in length and will cross diverse regions of Manitoba from the Boreal Forest in the north to agricultural areas in the south. Construction is planned to commence in the Fall of 2012 with a projected in-service date of October 2017.

1.3 Purpose

The purpose of this Draft Environmental Assessment Scoping Document is to establish the framework and scope for conducting the environmental assessment for the proposed Bipole III Transmission Project and preparing the Environmental Impact Statement (EIS).





2.0 REGULATORY AND POLICY FRAMEWORK

Various federal, provincial and other legislation related to atmospheric, terrestrial, aquatic and heritage resources potentially applies to the Project. Federal legislation includes the *Canadian Environmental Assessment Act*, *Species at Risk Act*, *Migratory Birds Convention Act*, *Fisheries Act*, *Navigable Waters Protection Act* and *Explosives Act*. Provincial legislation includes *The Environment Act*, *The Endangered Species Act*, *The Water Protection Act*, *The Heritage Resources Act*, *The Sustainable Development Act* and *The Dangerous Goods Handling and Transportation Act*. There are also various municipal by-laws, agreements and other regulatory and policy structures and instruments that could influence or apply to the proposed Project and the environmental assessment process. The EIS will contain a comprehensive annotated list of applicable legislation, regulations, policies and guidelines.

The Project will require a Class 3 Licence under The Environment Act (Manitoba) and the preparation of an EIS. It is anticipated that Manitoba Conservation will coordinate a cooperative environmental assessment process with the Canadian Environmental Assessment Agency (CEAA) in accordance with the “Canada-Manitoba Agreement on Environmental Assessment Cooperation”. The cooperative process will ensure provincial-federal coordination and compliance with respective legislated mandates under *The Environment Act* and the *Canadian Environmental Assessment Act*.

3.0 SCOPE OF THE PROJECT AND ASSESSMENT

3.1 Scope of Project

The scope of the Project comprises the physical works and activities associated with site preparation, construction, operation and maintenance, and eventual decommissioning of the following project components:

- 500 kV HVdc transmission line;
- Northern converter station and collector system;
- Southern converter station and connections; and
- Ground electrode facilities and connections to the converter stations.

The EIS will describe the Project, augmented by appropriate figures, diagrams, drawings, maps, air photos and/or orthophotos, and, to the extent possible and practical, will include the following:

- HVdc transmission line details and routing locations;
- Northern HVac collector line details and routing locations;
- Converter station site details and locations;
- Ground electrode and connecting line details and locations;
- Access route locations and details;



- Borrow area details and locations;
- Lands to be cleared for the transmission rights-of-way and infrastructure;
- Disposition of trees cleared from right-of-way;
- Locations of marshalling and crew accommodation areas;
- Equipment and materials to be used for construction and operation/maintenance;
- Waste materials and treatment/disposal plans;
- Greenhouse gas production estimates and mitigation strategies;
- Traffic, patterns and volumes during construction and operation;
- Construction work force numbers, composition and classification;
- Construction work camp details (Conawapa site);
- Construction power details (Conawapa site);
- Right-of-way maintenance and vegetation management;
- Workplace health and safety programs and measures;
- Plans to address accidents and malfunctions;
- Plans to address environmental influences on the project;
- Decommissioning of temporary construction works; and
- Concepts for decommissioning project components.

3.2 Scope of Assessment and Factors

The scope of the assessment will address the requirements of a Class 3 Development pursuant to *The Environment Act* including conducting an environmental assessment, carrying out public consultation, and preparing an EIS. The EIS will address the requirements outlined in the Manitoba Conservation Information Bulletin “*Environment Act Proposal Report Guidelines*” and will be supplemented by information outlined in this draft scoping document. The following factors will be considered in the environmental assessment and addressed in the EIS:

- Need for and purpose of the proposed project;
- Review of alternative transmission routes and facility locations;
- Environmental effects (direct and indirect) of the proposed Project on the physical, biological and socio-economic environment including cumulative environmental effects;
- Identification of technically and economically feasible measures to mitigate adverse environmental effects;
- Opportunities to enhance beneficial effects;
- Comments from stakeholders received during the environmental assessment process;
- Effects of malfunctions and accidents, and plans to avoid or minimize adverse effects;
- Effects of the environment on the project and plans to respond to emergency situations;
- Current use of lands and resources for traditional purposes by Aboriginal persons;



- Consideration of Aboriginal Traditional and local knowledge;
- Capacity of affected renewable resources to meet the needs of present and future generations;
- Identification of residual environmental effects remaining after mitigation;
- Significance of the residual environmental effects; and
- Implementation of a follow-up program including monitoring.

The environmental assessment will consider at least the following biophysical, and socio-economic resource topics.

- Atmosphere (climate, climate change, air quality);
- Land (terrain, geology, soils);
- Water (surface water, water quality);
- Terrestrial Ecosystems;
- Aquatic Biota and Habitat;
- Mammals and Mammal Habitat;
- Birds and Bird Habitat;
- Amphibians and Reptiles;
- Terrestrial Invertebrates;
- Commercial Resource Use (forestry, mining, fishing, etc.);
- Agricultural Land Use;
- Traditional Land and Resource Use;
- Recreation and Tourism;
- Population and Demographics;
- Employment and Income;
- Human Health and Well-Being;
- Infrastructure and Services;
- Property Ownership;
- Personal, Family and Community Life;
- Economic Base; and
- Heritage and Cultural Resources.

Aboriginal Traditional and local knowledge will be considered and incorporated into each of the above topics to the extent possible.

4.0 NEED AND ALTERNATIVES

The need for the Project will be discussed in detail in the EIS as will technically and economically feasible alternatives to the project, and alternative means of carrying out the project.



The purpose of the Project will be addressed in the EIS in relation to the need to improve the reliability of Manitoba's power system by creating a second major transmission corridor and third bipole line, and the requirement for additional transmission capacity for future generating stations in northern Manitoba. The transmission line routing process for the Project will not address the east side of Lake Winnipeg as an alternative route due to a decision reached in 2007 jointly by the Manitoba Government and the Manitoba Hydro-Electric Board. The requirement for physical separation from the existing Bipole I and II transmission lines has also precluded the Interlake area as a potential alternative route.

The preferred right-of-way for the Bipole III transmission line will be determined by a Site Selection and Environmental Assessment (SSEA) process conducted within the conceptual study area west of Lakes Winnipegosis and Manitoba. The locations of the northern converter station, ground electrode facilities and connection lines, and northern collector system connections will also be subject to the SSEA process.

5.0 ENVIRONMENTAL ASSESSMENT CONSULTATION

Stakeholder consultation is an integral part of the environmental assessment process. Southern and northern consultations are being carried out separately but coordinated over the same time frames. Consultation undertaken by Manitoba Hydro and its consultants does not replace the requirement of government to consult with Aboriginal people pursuant to section 35 of the *Constitution Act*.

5.1 Southern/Public Component

Four rounds of public consultation are planned for the Project. Rounds 1 and 2 (completed) focused on identifying potential stakeholders, providing an introduction to the Project, and identifying potential issues and concerns to assist in establishing potential route alternatives. Round 3 (underway) focuses on receiving and reviewing input on three potential route alternatives to assist in making a decision on a preferred right-of-way for the transmission line. The focus of round 4 (to begin in 2010) will be on receiving and reviewing input on the preferred right-of-way for the HVdc transmission line, to assist in final route delineation and development of mitigation measures for the SSEA and EIS.

The goals for the public consultation process are to:

- Provide timely, accurate and relevant project information to potentially affected stakeholders, interested parties and the general public;
- Provide meaningful and on-going opportunities for public and stakeholder input to the SSEA and EIS;



- Obtain information and feedback from potentially affected stakeholders to assist in site selection and environmental assessment, and development of appropriate mitigation measures; and
- Record what was heard and demonstrate how it was considered in the project site selection and environmental assessment.

5.2 Aboriginal/Northern Component

Manitoba Hydro is coordinating meetings and discussions with Aboriginal and northern communities. The goals of the Aboriginal/northern component are essentially the same as those of the southern component but are directed toward First Nations and Northern Association of Community Councils communities in the conceptual study area. The consultation approach involves meeting with the leadership and members of these communities as appropriate, explaining the proposed Project, and receiving comments and concerns for consideration in the SSEA and EIS. Consultation with the Manitoba Métis Federation is also being undertaken.

5.3 Other Stakeholders

The consultation process also includes consultations with other stakeholders (e.g., government agencies, non-governmental environmental organizations and other interest groups) for the purpose of addressing issues related to the identification, assessment and selection of alternative routes, and the identification of mitigation or enhancement measures for the issues identified.

6.0 ABORIGINAL TRADITIONAL AND LOCAL KNOWLEDGE

Aboriginal Traditional Knowledge has been explained by the Canadian Environmental Assessment Agency as: *“knowledge that is held by, and unique to, Aboriginal peoples, is cumulative and dynamic, building upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change”*. Aboriginal Traditional Knowledge objectives for the Project include the following:

- Creation of a mutually respectful relationship with Aboriginal communities for incorporating Aboriginal Traditional Knowledge into the environmental assessment process and the EIS;
- Meaningful involvement of Aboriginal communities in the identification and use of Aboriginal Traditional Knowledge; and
- Integration of Aboriginal Traditional Knowledge throughout the SSEA and EIS (e.g., route selection, effects identification and assessment, mitigation identification, significance evaluation and follow-up).



Aboriginal Traditional Knowledge will be obtained through use of existing information (with permission), traditional knowledge studies with the consent of First Nations and Aboriginal communities, traditional knowledge workshops in those communities, and agreements with northern First Nations and the Manitoba Métis Federation.

Local knowledge generally refers to the long-standing traditions and current practices of certain regional, indigenous or local communities. Many opportunities exist for local knowledge input to the environmental assessment process from northern to southern Manitoba. Local knowledge will be acquired by both the stakeholder key person interviews and Aboriginal consultation programs.

7.0 ENVIRONMENTAL ASSESSMENT PROCESS

7.1 Site Selection and Environmental Assessment

The Site Selection and Environmental Assessment Process (SSEA) is a phased assessment approach employing increasing levels of study area refinement leading to a balanced and prudent choice for a preferred transmission line right-of-way and selection of other project component sites. The iterative SSEA process includes:

- Defining a project study area based on factors including community and public input, socio-economic, environmental and technical (engineering) considerations;
- Identifying regional and site-specific constraints and opportunities for transmission line routing including potentially sensitive biophysical, socio-economic and cultural features;
- Identifying and evaluating alternative transmission line routes based on community/public input, local and Aboriginal traditional knowledge, socio-economic, biophysical, technical, and cost considerations;
- Selecting a preferred transmission line right-of-way and facility locations that, where feasible, minimizes potential adverse effects and enhances opportunities; and
- Developing mitigation measures, where required, to address potential adverse effects.

7.2 Environmental Assessment

The environmental assessment process for the Project will be consistent with provincial and federal environmental assessment legislation, guidelines and procedures as well as Canadian and international best practices. The process will describe the Project and the existing environment, identify and assess environmental effects, identify mitigation measures and follow-up requirements, and evaluate significance of residual environmental effects.

The objectives of the environmental assessment for the Project include:



- Assisting in the planning and design of the Project by identifying and assessing potential environmental effects and identifying mitigation measures;
- Providing sufficient information about the existing environment so that environmental effects can be identified and mitigated, and follow-up requirements can be defined;
- Identifying and optimizing Project opportunities and beneficial effects;
- Integrating Aboriginal Traditional Knowledge through-out the environmental assessment process from scoping to EIS preparation;
- Addressing issues and concerns identified by stakeholders, Aboriginal peoples and local residents; and
- Providing sufficient information in the EIS for review and decision-making by regulators.

7.3 Environmental Issues

Environmental issues identified from the consultation program, stakeholder meetings, discipline experts, literature review, previous experience, the media and other sources will be identified and described in the EIS. Environmental and socio-economic issues will then be analyzed and assessed and specific measures identified to mitigate associated adverse environmental effects.

7.4 Project Description

7.4.1 General

The EIS will describe the proposed Project including the route and site selection process, site preparation, construction, operation and maintenance phases, and eventual decommissioning. The description will include the main Project components and associated Project activities. The EIS will explain how Manitoba Hydro has incorporated economic analyses, technical, geotechnical and environmental criteria, best management practices, and scientific, Traditional Aboriginal and local knowledge into the Project design.

7.4.2 Site Preparation

The EIS will describe all actions and activities associated with site investigation and preparation for all Project components (i.e., transmission line, converter stations, ground electrode facilities, northern collector system and ancillary facilities). Detailed descriptions of timing and the methods associated with the various activities that are or were required including surveying, flagging, clearing, test drilling, establishing waste disposal and borrow areas, setting up camps and work areas, and developing the infrastructure requirements to access and service the Project locations. This will include:

- Topographical maps and orthophotos of suitable scales showing the locations of the proposed HVdc and HVac transmission routes, converter stations and ground electrodes, access roads,



water crossings, construction camps and marshalling areas also indicating local settlement, land use, topography, waterbodies, watercourses and wetlands;

- Descriptions and drawings of typical site clearing dimensions, rights-of-way clearing widths, and erosion and sediment control measures;
- Description of the extent and method of clearing, excavating, quarrying and earthworks required to construct the transmission lines, converter stations, ground electrodes and ancillary facilities;
- Identification of borrow sites for construction materials and description of clearing, excavation, transportation and waste disposal methods proposed;
- Description of the land acquisition process for the transmission lines, converter stations and ground electrodes, and the nature of occupation (i.e., ownership, lease, etc.); and
- Description of approvals required prior to beginning right-of-way and site clearing.

7.4.3 Construction

The EIS will provide descriptions of the timing and the methods proposed for the various activities related to the construction of the transmission lines, converter stations, ground electrodes and ancillary facilities including descriptions of:

- Construction methods to be used to cross lakes, streams, creeks, lakes and wetlands including setback of transmission towers from shorelines, rights-of-way and buffer zones widths,
- Installation, operation and removal of any temporary structures or facilities including ice bridges, construction camps, fuel storage facilities and construction power;
- Types of transmission towers including the advantages and disadvantages of alternative types of structures;
- Proposed construction activities that could have adverse effects on the environment and measures that are proposed to avoid or minimize the adverse environmental effects of the construction activities;
- Materials and equipment to be used in the construction of the transmission lines, converter stations and ground electrodes;
- Nature and volume of hazardous materials including fuels proposed for use during construction of the project. Information will include: transportation, storage and dispensing methods, associated spill prevention plans, containment and clean-up plans, and equipment and personnel involved;
- Estimates of the size and composition of the workforce required during different stages of construction and at various locations;
- Measures proposed to protect the health and safety of workers and the general public in and around construction areas;



- Living accommodations, crew sizes and servicing for temporary work camps provided for construction workers, including potable water supplies, and solid and liquid waste treatment and disposal;
- Nature and volumes of waste streams generated during the construction phase including how each waste stream will be managed, consistent with regulations, guidelines and best practices, with specific references to waste oil and other potentially hazardous or recyclable materials;
- Removal of temporary construction facilities, construction camps and marshalling areas including proposed site restoration and revegetation including reclamation plans;
- Proposed environmental surveillance and monitoring during construction and clean-up of construction infrastructure along with proposed contingency plans that consider the effects associated with serious malfunctions or accidents;
- Contingency plans to respond to extreme weather conditions (tornados, extreme winds, ice storms, etc.) and forest fire during construction; and
- Proposed construction schedule including sequencing of each major Project component.

7.4.4 Operation and Maintenance

The description of the operation and maintenance of the Project will include:

- Inspection and preventative maintenance procedures for transmission lines, rights-of-ways, converter stations and ground electrodes;
- Methods proposed for vegetation management and control along transmission lines and other project facilities;
- Greenhouse gas budget for the project and plans to offset any potential net increases in greenhouse gases;
- Equipment and materials including quantities proposed for use during operation and maintenance activities;
- Waste materials (quantities, management, disposal methods) produced by operation and maintenance activities;
- Size and composition of the proposed labour force involved in operation and maintenance activities;
- Measures that will be taken to protect the health and safety of workers and the general public around the transmission lines and other Project components including spill prevention and contingency planning;
- Plans for emergency preparedness and response; and
- Contingency plans to respond to extreme weather conditions (tornados, extreme winds, ice storms, etc.) and forest fire during operation.



7.4.5 Decommissioning

The EIS will provide a description of plans for decommissioning any temporary infrastructure or facilities related to the construction of the Project. It will also provide a general concept for decommissioning the transmission lines and other Project components at the end of their operational life including site restoration and remediation.

7.5 Environmental Setting Description

7.5.1 General

The EIS will describe the existing environmental setting for the Project in general and specific terms. The description of the environment will include a broad overview of the regional assessment area and progressively more specific descriptions for the local area around the Project components and Project footprint for those Project components. Considering the size and shape of the regional assessment areas, and the diverse nature of the lands and resources in those areas, further breakdowns by geographic, ecological and administrative areas are expected. The EIS will define and provide the rationale for decisions taken regarding spatial and temporal boundaries used for the environmental assessment.

The EIS will identify and describe available information sources, additional information obtained for assessment purposes, and any outstanding information gaps and deficiencies for each environmental component. The implications of information limitations will be considered in relation to effect prediction, mitigation and significance evaluation in the EIS. Baseline information will be provided and strengths and weakness of the existing database will be described and discussed. Confidence limits will be provided where practical and uncertainties associated with baseline information deficiencies will be discussed.

The description of the environmental setting is intended to provide the context for a more detailed understanding of the potential environmental effects of the Project components and activities on the biophysical and socio-economic environment, and heritage resources. Data on the biophysical and socio-economic environments, and heritage resources, including Aboriginal Traditional and local knowledge, will be compiled, described and analyzed in sufficient detail to help select alternative transmission routes and facility locations, and to predict and avoid or minimize potential adverse environmental effects of preferred transmission right-of-ways and facility locations.

Valued Environmental Components (VECs), defined as elements of the environment having scientific, social, cultural, economic, historical, archaeological or aesthetic importance, will be identified and described under each environmental component. The VECs will be determined based on consultations with stakeholders, Aboriginal people and discipline experts, as well as literature reviews and experience with other projects. Environmental indicators and measurable parameters or variables will be identified and described for each VEC. The same indicators and parameters/variables will be used to describe



environmental effects and residual environmental effects, and to monitor changes or trends over time during the Project construction and operation/maintenance phases.

The following framework will be used to describe the existing environment and provide the information specified. The EIS may expand on the structure and breakdown of the environmental components and provide additional information and analyses to address environmental issues and effects warranting greater consideration due to regulatory requirements, public concern, or potential significance.

7.5.2 Physical Environment

7.5.2.1 Atmosphere

The EIS will provide available information on:

- Climate conditions by sub-area (i.e., north, south) and season;
- Seasonal weather patterns and long-term climate trends;
- Extreme weather events (tornados, ice storms, blizzards, wind shear, etc.) including frequencies, locations, trends and risks;
- Air quality conditions; and
- Location of climate monitoring stations.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on climate and air quality.

7.5.2.2 Physiography and Geology

The EIS will provide available information on:

- Physiography including landforms, elevations, relief, unique features, etc;
- Surficial geology including types and depths; and
- Bedrock geology including types, location and depths.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on physiography and geology.

7.5.2.3 Soils

The EIS will provide available information on:

- Soils types and characteristics;
- Soil capabilities and limitations; and
- Permafrost conditions.



The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on soils.

7.5.2.4 Surface Water

The EIS will provide available information on:

- Watersheds, drainages, catchments, hydrology, etc;
- Waterbodies including lakes and ponds, rivers, streams and creeks, and wetlands;
- Waterbody characteristics;
- Seasonal changes (e.g., ice conditions, levels, etc.) to lakes and ponds;
- Seasonal changes (e.g., ice conditions, flows, etc.) to rivers, streams and creeks;
- Shoreline environment and shoreline erosion/recession and deposition rates; and
- Water quality of major waterbodies intersected or in the vicinity of the Project.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on surface waterbodies and water quality.

7.5.2.5 Groundwater

The EIS will provide general information on:

- Local and regional groundwater characteristics;
- Aquifer charge and recharge areas, and rates; and
- Research, observation and potable water well locations.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on groundwater regime and quality.

7.5.3 Aquatic Environment

The EIS will provide general information on:

- Aquatic biological resources including fish, invertebrates and lower trophic levels, and associated habitats in lakes, rivers, wetlands and other waterbodies.

The EIS will provide sufficient level of detail in order to describe the productivity of aquatic ecosystems and biodiversity, and to predict, avoid and/or minimize any potential adverse effects on fish and fish habitat.



7.5.4 Terrestrial Environment

7.5.4.1 Terrestrial Ecosystems and Habitats

The EIS will provide available information on:

- Ecological land classification descriptions at the ecoregion, ecozone and ecodistrict levels;
- Descriptions of communities and habitats represented;
- Identification of communities and habitats requiring conservation, management and/or protection from project activities; and
- Classification of habitats according to representativeness, uniqueness, sensitivity, resilience, rarity, etc.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on representative terrestrial ecosystems and important habitats.

7.5.4.2 Vegetation

The EIS will provide available information on:

- Plant species, abundance and distribution;
- Riparian and wetland vegetation communities;
- Medicinal plants and uses;
- Location and extent of forest stands and use in the boreal forest ecozone;
- Fire history, frequency and succession trends in the boreal forest ecozone;
- Risk of forest fires in the boreal forest ecozone; and
- Plant species in the assessment areas listed in the MESA, COSEWIC or SARA (Schedule 1).

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on vegetation.

7.5.4.3 Mammals and Mammal Habitat

The EIS will provide available information on:

- Mammal species including populations, habitats and seasonal use patterns;
- Important ecological communities represented by key mammal species;
- Critical habitats for key mammal species;
- Mammal population movements including seasonal habitat usage;
- Known habitat and critical areas for woodland caribou and moose including wintering and calving areas; and
- Mammal species listed in the MESA, COSEWIC or SARA (Schedule 1).



The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on mammals, mammal populations and mammal habitat.

7.5.4.4 Birds and Bird Habitat

The EIS will provide available information on:

- Bird species including populations, habitat and seasonal use patterns;
- Important ecological communities represented by key bird species;
- Critical habitats for key bird species;
- Seasonal use of wetlands by waterbirds for breeding and moulting, and spring and fall staging;
- Migratory bird populations including seasonal habitat usage and migratory routes; and
- Bird species listed in the MESA, COSEWIC or SARA (Schedule 1).

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on birds, bird populations and bird habitat.

7.5.4.5 Amphibians and Reptiles

The EIS will provide general information on:

- Amphibian and reptile species populations and habitats;
- Critical amphibian and reptile habitats; and
- Amphibian and reptile species listed in the MESA, COSEWIC or SARA (Schedule 1).

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on amphibians and reptiles and related habitat.

7.5.4.6 Terrestrial Invertebrates

The EIS will provide general information on:

- Terrestrial invertebrate species and habitats; and
- Terrestrial invertebrate species listed in the MESA, COSEWIC or SARA (Schedule 1).

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on terrestrial invertebrates.

7.5.5 Socio-Economic Environment

7.5.5.1 Resource Use

The EIS will provide available information on:



- Domestic use and harvesting of resources by Aboriginal groups including fishing, hunting, trapping and gathering medicinal, and other plants and berries and fuel wood;
- Commercial harvesting of resources by Aboriginal and other groups, including commercial fishing, sport fishing and hunting, outfitting, mining, forestry, and accommodating tourism and eco-tourism; and
- Location of existing mineral and mining dispositions issued under the authority of *The Mines and Minerals Act*.

The EIS will provide sufficient level of detail on the socio-economic environment in order to predict, avoid and/or minimize any potential adverse effects of the Project on resource use.

7.5.5.2 Land and Water Use

The EIS will provide available information on:

- Land ownership and tenure and the use of waterways by Aboriginal groups and others, including Reserve lands, Treaty Land Entitlement lands, traditional resource management areas, Community Interest Zones, Crown lands and waterways used for transportation;
- Agricultural areas for crops, livestock, etc. including production;
- National and provincial parks;
- Existing areas or areas under consideration for protected area status under Manitoba's Protected Areas Initiative; and
- Recreation and tourism activities including lodges, outfitters, cottage developments, campgrounds, ecotourism, etc.

The EIS will provide sufficient level of detail on the socio-economic environment in order to predict, avoid and/or minimize any potential adverse effects on land and water use.

7.5.5.3 Infrastructure and Services

The EIS will provide available information on:

- Infrastructure including transportation, communications, water and waste utilities, community facilities, housing, etc; and
- Services for communities (Aboriginal and non-aboriginal) including water and waste, education, health, social, justice, police, fire and emergency.

The EIS will provide sufficient level of detail on the socio-economic environment in order to predict, avoid and/or minimize any potential adverse effects on infrastructure and services.



7.5.5.4 Personal, Family and Community Life

The EIS will provide available information on:

- Population characteristics of communities (Aboriginal and non-Aboriginal) including total population, growth rate, and structure by age and sex;
- Household characteristics including breakdowns by family unit, status, children, ages, etc;
- Personal, family and community well-being including social connectiveness, outdoor recreation, aesthetics, culture and spirituality;
- Community organization and governance; and
- Property ownership, and land tenure.

The EIS will provide sufficient level of detail on the socio-economic environment in order to predict, avoid and/or minimize any potential adverse effects on personal, family and community life.

7.5.5.5 Economic Base

The EIS will provide available information on:

- Economic base of the communities (Aboriginal and non-aboriginal) potentially affected by the project including profiles of economic sectors, business statistics, taxation, etc;
- Wage economy including labour force characteristics, education, business sectors, employment/unemployment, participation rates and income levels;
- Traditional economy including Aboriginal hunting, fishing, trapping and gathering;
- Provincial, municipal and community economic agreements and development plans; and
- Current and proposed major projects.

The EIS will provide sufficient level of detail on the economy in order to predict, avoid and/or minimize any potential adverse effects and enhance any beneficial effects on the economy of the affected communities.

7.5.6 Heritage Resources

The EIS will provide available information on:

- Historic land use, settlement and occupancy;
- Archaeological and culturally important sites;
- Location of known and potential burial sites;
- Ranking of archaeological and cultural sites in order of their importance; and



- Structures, sites or things that are of historical, archaeological, paleontological or architectural significance in the local assessment area that may be affected by any changes to the environment caused by the Project.

The EIS will provide sufficient level of detail in order to predict, avoid and/or minimize any potential adverse effects on heritage resources.

7.6 Environmental Effects Assessment

Environmental effects of the proposed Project components and activities on the existing environment will be identified and described as changes to the environment caused by the Project. Effects will be identified using checklist, matrices, linkage diagrams, map overlays and other established approaches, and will employ GIS and other computer-based systems.

Direct, indirect and cumulative environmental effects (adverse and beneficial) will be identified and assessed. Effects will be assessed by different methods depending on discipline and use multiple sources including literature, field work, consultation and interviews, modeling, data analysis, peer review, and professional judgement. Adversity of environmental effects will be determined based on predetermined factors and criteria. Environmental effects will be expressed in quantitative terms using environmental indicators and measurable parameters/variables to the extent possible.

Environmental effects will be identified and assessed for each phase of the project (site preparation, construction, operation and maintenance, decommissioning) and for each major project component (physical, aquatic, terrestrial, socio-economic), and will incorporate available scientific, Aboriginal Traditional and local knowledge. Uncertainties associated with effect predictions will be identified and described. Environmental effects will be described and summarized for each environmental component. Graphic representations and comparisons of environmental effects will also be used where practical.

7.7 Mitigation Measures

Technically and economically feasible mitigation measures will be identified and described to avoid or minimize adverse environmental effects of the proposed Project. The measures identified will relate to specific environmental effects and will be taken from applicable legislation, standards, guidelines, best practices, experience, and other recognized sources. Uncertainty relating to the environmental effects predicted and the mitigation measures proposed will be reviewed in the EIS.

Mitigation measures will be identified and described for environmental effects at each stage of the Project and for each major Project component and will incorporate available scientific, Aboriginal Traditional and local knowledge.



Residual environmental effects will be identified and described as the effects remaining after the application of mitigation measures, and will be expressed in quantitative terms using the same parameters/variables as environmental effects.

7.8 Significance

The significance of the residual environmental effects of the proposed Project will be evaluated based on best and current practices, and will use a pre-determined significance evaluation framework that will include the following factors:

- Ecological value;
- Societal value;
- Nature of the effect;
- Magnitude of the effect;
- Geographic extent of the effect;
- Frequency of the effect;
- Duration of the effect; and
- Reversibility of the effect.

The significance evaluation framework will consider the applicable legislation, guidelines, standards and codes, risks to the environment and human health, results of scientific study and analysis, Aboriginal Traditional and local knowledge, and will relate to all phases of the proposed Project from site preparation, construction and operation/maintenance to decommissioning.

8.0 CUMULATIVE EFFECTS ASSESSMENT

In addition to assessing the direct and indirect environmental effects of the proposed Project, the EIS will include an assessment of potential cumulative environmental effects. The cumulative effects assessment will consider the potential for the environmental effects of the proposed Project to act in combination with the effects of other past, present and/or reasonably foreseeable future projects in the defined regional or cumulative effects assessment area. The cumulative effects assessment framework will be defined in the EIS and will be based on CEAA guidance as well as best and current practices. The approach, assumptions, analysis and conclusions of the assessment will be documented in the EIS. Cumulative environmental effects will be considered throughout the EIS from scoping to significance evaluation and the results of the assessment will be presented in a separate stand-alone chapter.



9.0 SUSTAINABILITY ASSESSMENT

The EIS will examine how Manitoba Hydro's corporate environmental and sustainable development policies are incorporated into the planning, design, construction, operation and maintenance, and eventual decommissioning of the proposed Project. Sustainability indicators will be identified, described, and assessed, and incorporated in to the follow-up program. The EIS will also discuss how Manitoba's Principles and Guidelines of Sustainable Development, as scheduled under *The Sustainable Development Act*, are addressed and are met.

10.0 MONITORING AND FOLLOW-UP PROGRAM

Monitoring and follow-up involves verifying the accuracy of the environmental assessment and determining the effectiveness of measures implemented to mitigate adverse environmental effects. The EIS will outline mitigation measures and monitoring and follow-up requirements to be implemented through a monitoring and follow-up program that will extend through the site preparation, construction, operation and maintenance, and decommissioning phases of the proposed Project.

An environmental effects monitoring program will be developed to verify predictions made in the EIS and detect and address any unforeseen environmental effects during all phases of the Project. The monitoring programs will describe parameters to be monitored, methods to be followed, roles and responsibilities, and reporting requirements.

Mitigation measures and follow-up actions identified in the EIS will be implemented through Environmental Protection Plans (EnvPPs). EnvPPs are project management tools that supplement project design, construction and operating specifications to avoid or minimize potential adverse environmental effects arising from the construction and operation and maintenance of a project. The plans prescribe practical measures to meet regulatory requirements for environmental protection that are specific to the project. They are specifically designed and organized for use as reference documents by field construction and operation/maintenance personnel. Separate EnvPPs will be prepared for each major Project component (transmission lines, converter stations, ground electrodes, etc.) and for the construction and operating and maintenance phases of the Project.

Each EnvPP will incorporate the following:

- Measures proposed to avoid and minimize adverse environmental effects;
- Monitoring plans including reporting protocols;
- Erosion protection and sediment control plan for disturbed areas;
- Maps of protected areas, significant sites and sensitive habitats to be avoided;



- Emergency response plan(s) developed by contractors;
- Workplace safety and health procedures;
- Closure and reclamation plans for disturbed areas;
- Waste management practices; and
- Implementation plan for the EIS commitments.

EnvPPs will include management and implementation components to ensure sufficient organization and resources are provided to deliver the protection program effectively. An inspection program will also be outlined to ensure mitigation and follow-up implementation, and regulatory compliance.

Draft or preliminary EnvPPs will be submitted along with the EIS and will be updated in final form upon receipt of regulatory environmental approvals for the Project. The EnvPPs will address all appropriate requirements of the approvals. Initially, construction phase EnvPPs will be prepared which will be replaced by operating phase EnvPPs once the Project components are commissioned.

11.0 ENVIRONMENTAL IMPACT STATEMENT FORMAT

The EIS will provide information necessary for the public to understand the proposed Project and its likely effects on the environment, the regulatory authorities to make an informed decision on the Project, and the proponent to implement the mitigation measures and follow-up requirements in an environmentally and socially responsible manner.

The EIS be written with a minimum of technical terminology and will include a glossary of terms. An executive summary will be prepared with a minimum of technical terminology for general distribution. Maps, charts, diagrams, drawings and photographs as appropriate will be used throughout the EIS to describe project and environment, and to identify and assess environmental effects. Common mapping scales, legends and referencing standards will be used. Geographic Information Systems will be used to store, analyze and represent georeferenced information. Maps will be presented at a common scale to the extent possible. Supporting technical, scientific, Aboriginal and local information including field study reports, data summaries, etc. will be contained in appendices to the EIS.

All conclusions will be supported by credible technical information, Aboriginal Traditional Knowledge and local knowledge. All sources of information used to conduct the environmental assessment and produce the EIS will be listed in a references section. All best practices, best management practices, standard industry practices, operating procedures, etc. cited in the EIS will be referenced.



