3.0 ASSESSMENT APPROACH

3.1 INTRODUCTION

The Pointe du Bois Transmission Project EA Report describes the Project's environmental impact assessment and provides information required by government agencies pursuant to *The Environment Act* (Manitoba). Manitoba Hydro will submit the EA Report and the EAPF to MCWS as application for the Environment Act Licence.

The intent and scope of the assessment is to describe for regulatory authorities the expected construction and operational effects of the Project, and other matters as set out in the EAPF. The assessment approach has been structured to address categories and types of environmental effects (i.e., effects at distinct phases of the Project [construction, and operations and maintenance]), and effects on distinct socio-economic (e.g., land use, infrastructure and services, resource use, heritage resources) and biophysical (e.g., air quality, aquatics, wildlife, vegetation) components of the environment.

3.2 SCOPE OF THE ASSESSMENT

3.2.1 Project Study Area

The Site Selection and Environmental Assessment for the Project began with the delineation of a study area that reflected the basic functional requirements of the Project (to route a 115 kV transmission line from Pointe du Bois to Whiteshell Stations) [Map 3-1]. The Project Study Area allowed for a range of planning choices to route the proposed transmission line based on environmental information about its physical and biophysical characteristics (including vegetation, wildlife and aquatic resources), as well as socio-economic and land use characteristics (including the location of communities, conservation areas, economic land uses, and heritage resources). Section 3.2.1.2 outlines the other study areas used for the environmental assessment.

3.2.1.1 Biophysical and Socio-Economic Baseline Studies

Following the delineation of the Project Study Area, experts conducted baseline studies in the following disciplines:

- Physical environment (climate, soils and surficial geology, hydrogeology);
- Aquatic environment;
- Terrestrial environment (vegetation, intactness, ecosystem diversity, wildlife and habitat);
- Socio-economic environment (land use, infrastructure and services, recreation and tourism, economy, resource use); and

- Heritage resources.

Baseline studies consisted of a review of existing information (primary literature, government and consultant reports, etc.) and unpublished government data (e.g., Manitoba Conservation Data Centre [MBCDC] records, Forest Inventory data). For some disciplines (e.g., wildlife, aquatics), field studies were undertaken to further characterize the study area or specific sites within the Project Study Area. Information collected from the various disciplines was used for the Site Selection process (see Chapter 4). The results of the baseline studies are summarized in Chapter 5.

3.2.1.2 Other Study Areas

More detailed biophysical and socio-economic characterization is required to assess the effects of the route for the proposed transmission line. A 3.0 km wide band centred on the Final Preferred Route (FPR) [Local Study Area] is one spatial boundary which was used by most disciplines in which to assess Project effects. The Project Footprint is defined as the 60 m ROW needed for PW75. In terms of the Pointe du Bois and Whiteshell Stations, the fenced areas of the stations are considered the Project Footprint. For some biophysical disciplines (Terrestrial Habitat & Ecosystems, Terrestrial Plants, and Wildlife), the 3.0 km wide band was not used to assess Project effects. Instead, Valued Environmental Component (VEC) study areas were identified to assess effects. In these instances, for each VEC, a local and regional study area was delineated. For each ecosystem or wildlife VEC or supporting topic, the local study area captured the area where potential Project effects on that VEC were expected to be experienced while the regional study area was used to put the local Project effects into the broader ecological and/or biological context. For some VECs and supporting topics, the Project Study Area served as the regional study area (Map 3-2).

3.2.2 Valued Environmental Component (VEC) Selection

The environmental assessment was focused on VECs, which are those aspects of the natural and socio-economic environments that are particularly notable or valued because of their ecological, scientific, resource, socio-economic, cultural, health, or aesthetic importance, and which have a potential to be adversely affected by project development or to have an effect on the project. In addition, VECs often can be measured so that predicted effects can be monitored. A VEC must both be important and have the potential to be affected by, or to affect, the Project. The potential to be affected means there has to be some interaction, either directly or indirectly, between the environmental component and some component or activity associated with the project during planning, construction, or operation. In this way, the assessment was focused on the identification and management of potential adverse effects.

A biophysical VEC can be a particular habitat type, an environmental feature, a particular assemblage (community) of plants or animals, a particular species of plant or animal, or an indicator of human health. The VECs assessed in the effects analysis were defined by the

multi-disciplinary project team undertaking the assessment based on one or more of the following criteria:

- Area of notable biological diversity;
- Significant habitat for locally important species;
- Significant habitat for uncommon or rare species;
- Important corridor or linkage for fish and/or wildlife movement;
- Sensitive receiving water environment;
- Species at risk;
- Notable species or species groups;
- Indicator of environmental health;
- Important component to the function of other ecosystem elements or functions;
- Component of economic or cultural significance;
- Component of educational, scientific, or aesthetic interest;
- Component of provincial, national or international significance;
- Identified regulatory requirements;
- Consultation with regulatory authorities;
- Consideration of the environmental setting including information derived from published and unpublished data sources and field studies conducted for the Project;
- Feedback through the Public Engagement Program (PEP); and
- Previous experience with other similar projects.

In terms of socio-economic VECs, they represent aspects of the socio-economic environment that are valued by people. As such, they are recognized as being important because of their connection to, or reflection of, the socio-economic system; its commercial or economic value, and/or its role in maintaining quality of life for people.

Socio-economic VECs assessed in the effects analysis were defined by the multi-disciplinary project team undertaking the assessment based on meeting one or more of the following criteria:

- Component of commercial and/or economic significance;
- Component of cultural and/or heritage significance;
- Component of educational, scientific, or aesthetic interest;

- Component of provincial, national or international significance;
- Identified regulatory requirements;
- Consultation with regulatory authorities;
- Consideration of the socio-economic setting including information derived from published and unpublished data sources and field studies conducted for the Project;
- Feedback through the PEP; and
- Previous experience with other similar projects.

Table 3-1 outlines the VECs selected for the Project by discipline along with the rationale for their selection.

Table 3-1: Valued Environmental Components (VECs)

Topic	VEC	Rationale	Measureable Parameter Variable	Examples of Project Effects
Land Use	**Property and Residential Development**	Project Footprint could result in displacement of dwellings. Landowner concerns regarding EMF, nuisance effects (audible noise, etc.), aesthetics, property damage, and potential decrease in property values. *See also Personal, Family & Community Life for aesthetics and nuisance effects. See Resource Use (High Value Forest Sites regarding shelterbelts).*	Distance of route to dwellings. Number of private properties directly affected by preferred route.	• Displacement of residences. • Damage to Property • Decrease in Property Values. • Impairment of Aesthetics • Increase in noise, dust etc.
	First Nation Lands (Reserve, Treaty Land Entitlement, fee simple lands, private purchase [TLE or FN])	Project Footprint could disturb community lands, traditional and cultural use area. Concerns regarding EMF, aesthetics, property damage, and nuisance effects (audible noise, etc.). *See also Personal, Family & Community Life for aesthetics and nuisance effects.*	Loss or disturbance of community lands (ha). Perceived loss of quality of life by sensory disturbance.	• Damage to Property • Decrease in Property Values. • Impairment of Aesthetics • Increase in noise, dust etc. • Decrease in available land for Reserve Lands.
	Protected Areas Initiative Lands (Ecological Reserves, Provincial Parks, Areas of Special Interest, Wildlife Management Areas, Provincial Forest Reserves)[1]	Ecological Reserves and Provincial Parks are protected by Legislation. Level of protection may vary according to a given Park's Land Use Category. ASI's, WMAs and Provincial Forest Reserves are of interest to the Protected Areas Initiative, and may become protected in the future.	Loss of registered high value land (ha). Loss or disruption to lands that may be protected in the future (ha).	• Disturbance to Designated Protected Areas. • Disturbance/loss of lands potentially protected in the future. • Disturbance/loss of ecological integrity and enduring features.
	Infrastructure (aerodromes, communications facilities, railway lines, pipelines, roads, drains, culverts)	Project operations could interfere with the operation of existing infrastructure. Project construction could damage underground infrastructure.	Distance of route from infrastructure facilities.	• Interference with aerodromes. • Operation of roads, culverts & drains. • Induction effects on communications facilities, railways & pipelines. • Damage to underground communications facilities & pipelines.
Economy	**Economic Opportunities** (Business & Job Opportunities)	The Project can provide modest job and business opportunities.	Estimated construction workforce and construction schedule.	• Increase in Availability and access to job & business opportunities. • Increase in First Nation/Aboriginal jobs & business opportunities. • Increase in Local community job & business opportunities. • Creation of long-term enduring benefits.
Services	**Community Services** (Emergency, Health)	Project construction, in particular, can result in increased stresses on community services in the Project Area.	Type, number, location and capacity of community services in the Project Area.	• Increase in demand on community services.
	Travel & Transportation (Traffic, Access)	Project construction, in particular, can result in increased traffic on area roads. Disruption to traffic can occur if the proposed transmission line is routed along a road or crosses a road. A transmission line can create new access.	Roads crossed or paralleled by the transmission line.	• Increase in traffic • Increase in access.

[1] Note – this VEC reflects the importance of Protected Areas Initiative Lands from a socio-economic perspective. Biophysical issues are addressed under wildlife and terrestrial habitat.

Personal, Family & Community Life	**Human Health** (noise, vibration, dust, EMF, herbicides)	Concerns about noise from transmission lines, as well as construction noise, vibration and dust. Concern about EMF and health effects. Concerns about herbicide use particularly by First Nations and Aboriginals.	EMF levels Audible noise levels ROW construction and maintenance processes.	• Increase in noise, dust & vibration. • Increase in EMF & audible noise • Increase in Herbicide use/ROW management.
	Aesthetics	Concerns about visual changes as a result of the Project.	Number of crossings of designated recreational trails Proximity to designated recreational areas Proximity to residences Number or location of river crossings (canoe routes)	• Impairment to aesthetics especially on residences, recreation and tourism, First Nation Lands, Protected Areas Initiative Lands.
Resource Use	**Mining & Aggregates**	Concerns about the effects on mining operations and mining exploration activities.	Location of existing mines in Project Area. Mining claims and leases along the preferred route.	• Interference with mining operations and mining exploration activities / leases / claims
	Trapping	Concerns about the effects of Project construction and operations on trapping success Concerns about damage to equipment during construction of the transmission line.	Registered traplines in the Project Area. Information obtained through the Site Selection KPIs from trappers.	• Disturbance and disruption to trapping. • Damage to equipment (traps, etc.).
	Recreation & Tourism (lodges, outfitting, hunting, recreation sites)	Concerns about disruption/intrusion to recreation and tourism activities, and facilities/sites. Concerns about economic effects on businesses.	Location of lodges and recreation sites, and distance to preferred route. Information obtained through the Site Selection KPIs from outfitters.	• Disruption/intrusion to Recreation & Tourism activities & facilities/sites. • Loss of business income.
	Domestic Resource Use (hunting, gathering, fishing)	Concerns about increased access to sites/areas used for domestic resource use. Concerns about EMF and herbicides, and the effects on traditional medicines, berries, etc. *See Personal, Family & Community Life (Aesthetics) and Services (Travel and Transportation).*	Location of sites & areas used for domestic resource use.	• Loss of traditional medicines, berries, etc. • Disruption to hunting, fishing, and other traditional pursuits.
	Productive Forestland	Project Footprint removes productive forest from sustainable harvest level determination	Contribution to the sustainable Annual Allowable Cut (AAC) - Mean Annual Increment (MAI)/ha	• Reduction in AAC levels.
		Project Footprint removes productive forest area from land base	Area withdrawn from commercial forest production (ha)	• Reduction in productive forest area available for timber production.
		Project Footprint removes trees from productive forest areas	Standing Timber Wood Fibre Volume (M^3)	• Reduction in timber volume.
	High Value Forest Sites	Project Footprint removes silvicultural investments	Reforestation sites- Plantations affected (ha)	• Reduction in plantation area.
		Project Footprint destroys long-term research and monitoring sites	Number of research/monitoring sites affected	• Loss of research and monitoring sites.
		Project Footprint removes trees and forest management investments on private land	Shelterbelts/Private Woodlots - area under management (ha) and area/trees affected (ha/#trees)	• Loss of private land trees or forest management investments.
Culture & Heritage Resources	**Heritage Resources**	All heritage resources are protected by the Manitoba Heritage Resources Act (1986). Human remains are protected by Manitoba's Policy for the Reporting, Exhumation and reburial of Found Human Remains (1987).	Loss of known or potential heritage resources.	• Loss of or damage to heritage resources • Change in site integrity.

	Cultural Resources	Project footprint may disturb traditional and cultural use areas through increased access. Sensory disturbance by visual / aesthetics of project & audible noise emitted from transmission line will interfere with cultural ceremonies and rituals.	Loss or disturbance of lands where traditional cultural practices occur.	• Increase in access • Impairment of Aesthetics • Increase in noise, dust etc.
Aquatics	**Fish Habitat[2] (as defined under the Fisheries Act)**	Legislated responsibility under the Canadian Fisheries Act (HADD, introduction of deleterious substances).	Physical Habitat – In-stream substrate type; Riparian characteristics at ROW crossings (vegetation, bank stability; bank slope).[3]	• Loss or damage to riparian zones, erosion and sedimentation at stream crossings. • Increase in access to watercourse • Contamination of watercourse due to accidental spills and leaks, use of herbicides, and installation of foundations
Physical Environment	**None**			
Terrestrial Habitat & Ecosystems	**Ecosystem Diversity**	Maintaining native biodiversity is fundamental to maintaining overall ecosystem function and ecosystem health. Identified as a topic of high concern in numerous EIA and land use management guidance documents. Federal policy on no net loss of wetland function. Soil sustains plant productivity and other ecosystem functions through its ability to hold and supply water and nutrients, store organic matter and provide suitable habitat for plant roots and a wide range of organisms.	Total terrestrial habitat area. Proportions of terrestrial habitat types. Priority habitats - Amounts and spatial distribution of priority habitat types (i.e., habitat types of particular concern for ecological and social reasons. May include critical terrestrial habitats for wildlife species at risk). Wetland function - Amounts and spatial distribution of wetland types particularly important for wetland function. Soil quantity and quality - Amounts and spatial distribution of mapped soil/ecosite types; types sensitive to degradation.	• Loss of or alteration to terrestrial habitat/ecosystem, wetland or soils • Loss or alteration of priority habitats (includes wetlands) • Changes to soil quantity or quality
	Intactness	Large intact areas are important for maintaining ecosystem functions and wildlife species sensitive to human disturbance.	Linear Feature Density (km/km^2) - total, transportation and non-cutline. Core Area Size (ha) – total, percentage of area, largest core areas.	• Increase in fragmentation • Decrease in size of core areas • Decrease in connectivity • Increase in access and movement of predators or invasive species.
Terrestrial Plants	**Priority Plants**	Plants perform key functions in terrestrial ecosystems. Some plant species are of particular ecological and social interest because they are rare, highly sensitive to human features, thought to make high contributions to ecosystem function, important habitat for other species and/or are of particular interest to aboriginal people.	Populations – number and locations of affected patches. Habitat - effects on critical and other high quality habitat.	• Disturbance of Sub-populations • Increase in plant mortality. • Loss or alteration of habitat due to o clearing o edge effects o altered surface water flow o changes to fire regime o spread of invasive species

[2] Note – There are five fish Species at Risk in the Project Area. However, there will likely not be any project effects on these species, and therefore they were not selected as VECs.

[3] Note – Riparian characteristics will be assessed through field studies at ROW watercourse crossings.

Wildlife	**Moose**	Concern for regional population in decline and effects to domestic and licensed harvest. Concerns about the effects of habitat loss, alteration and fragmentation contributing to the decline of local animals. Indicator of other wildlife species with shrubland, wetland and forest habitat associations.	The amount and types of habitat changed or lost (ha). Change in linear feature density (number/ km^2). Change in intactness (i.e., number and size of core areas (ha). Number of moose harvested. Changes to wolf and deer abundance.	• Increase in browse and less cover due to ROW clearing and maintenance. • Displacement of animals and loss of effective habitat due to sensory disturbances from o Construction noise o Increase in access for recreation during operation • Increase in mortality due to o increased access for hunting o increased predator movements on ROW o increased brain worm transmission due to alteration of habitat and increased deer movements along ROW
	American Marten	Concerns about the effects of Project construction and operations on trapping. Umbrella species where there are concerns about the effects of habitat loss on older aged forest, alteration and fragmentation contributing to the decline of local animals. Indicator of other wildlife species with coniferous habitat associations.	The amount and types of habitat changed or lost (ha). Change in linear feature density (number/ km^2). Change in intactness (i.e., number and size of core areas (ha). Number of American marten harvested. Change in movements across ROW (frequency).	• Loss of forest cover and increase in prey abundance along forest edge from RoW clearing and maintenance. • Displacement of animals and loss of effective habitat from sensory disturbance during construction • Increase in mortality from increased access for trapping • Reduction in habitat connectivity and reduced animal movement due to habitat fragmentation leading to reduced genetic diversity.
	Canada Warbler[4]	Concerns about the effects of Project construction on a species of conservation concern (Provincially Endangered, Federally Threatened) and effects to critical habitat. Concerns about the effects of habitat loss, alteration and fragmentation contributing to the decline of local birds. Indicator of other wildlife species with deciduous and mixedwood habitat associations.	The number of individuals affected. The amount of habitat changed or lost (ha). Change in linear feature density (number/ km^2). Change in intactness (i.e., number and size of core areas (ha). Nest success (number young fledged). Number of brown-headed cowbirds affecting nest success.	• Loss of critical habitat for a Threatened species during construction. • Decrease in productivity due to loss of nests from sensory disturbances during construction and operation. • Decline in local population due to o Habitat fragmentation o Increased brood parasitism o Increased predation & competition
	Bald Eagle	Species of domestic, regulatory, scientific and First Nation concern and effects to habitat. Concerns about the effects of bird-wire collisions and electrocutions contributing to the decline of local birds. Indicator of other wildlife species with aquatic habitat associations.	The number of individuals affected. The amount of habitat changed or lost (ha). Nest success (number young fledged). The number killed annually by bird-wire collisions or electrocutions.	• Loss of multigenerational nests during construction and operation. • Increase in nesting, perching and hunting opportunities from transmission line structures. • Decrease in productivity due to loss of nests from sensory disturbances during construction and operation. • Increase in mortality associated with bird-wire strikes and electrocutions leading to local population decline.

[4] Note – There are many Species at Risk with a potential to occur in the Project Area. Some just migrate through, or there are habitat limitations preventing their occurrences. Some species such as red-headed woodpecker can be mitigated, if present, with minor route alterations to avoid very site-specific habitat, or avoiding the placement of the transmission line route through urban areas for chimney swift and barn swallow. As such, there will likely not be any project effects on these species, and therefore, many of the listed species were not selected as VECs. However, listed species should still be considered in the evaluation, which in part, includes considerations for priority habitats.

Wetlands should be identified as a priority habitat types because of the association with a large number of Species at Risk. Preliminary Species at Risk identified for study area wetlands include: trumpeter swan, least bittern, yellow rail, piping plover, red knot, short-eared owl, olive-sided flycatcher, rusty blackbird, northern leopard frog, and common snapping turtle. A wetland priority habitat could also include mink frog, green frog, blue-spotted salamander and eastern tiger salamander, which are rare because they are located at the fringe of their range. Marshes, open sedge fens and potentially, riparian areas in proximity to water are three primary wetland types to consider for this purpose. Larger water bodies and watercourses should also be included for priority habitat coverage because of a concern for waterfowl and other waterbird (i.e., sandhill crane) bird-wire collisions, and potential effects related to overwintering areas for northern leopard frog and nesting habitat for common snapping turtle. For listed species that are not VEC's such as common nighthawk, whip-poor-will, red-headed woodpecker, chimney swift and barn swallow, their critical habitats will also have to be incorporated into the environmental assessment as priority habitat types or in another manner that addresses habitat availability.

	Ruffed Grouse	Concern for regional population and effects to domestic and licensed harvest. Concerns about the effects of habitat loss, alteration and fragmentation contributing to the decline of local birds. Indicator of other wildlife species with deciduous habitat associations.	The number of individuals affected. The amount of habitat changed or lost (ha). Change in linear feature density (number/ km^2). Change in intactness (i.e., number and size of core areas (ha). Nest success (number young fledged). Number of ruffed grouse harvested. The number killed annually by bird-wire collisions.	• Loss of forest cover and increase in forage abundance along forest edge from RoW clearing and maintenance. • Decrease in productivity due to loss of nests from sensory disturbances during construction and operation. . • Increase in mortality associated with bird-wire strikes. • Increase in mortality due to increased access for hunting. • Decline in local population due to o Habitat fragmentation o Increased predation & competition.

3.3 PROJECT-ENVIRONMENT INTERACTIONS

A Project- environment interactions matrix (Table 3-2) was developed to help identify areas of potential interaction between project activities, and the source of potential issues, with the various biophysical and socio-economic disciplines. The matrix was used to identify potential issues and Project-environment interactions that would likely affect discipline specific VECs. The matrix includes potential effects that may arise during construction, and operation and maintenance phases of the Project. Each potential Project-environment interaction is ranked as:

√ Interaction, potential effects considered
~ Limited interaction, no potential effects anticipated
X No interaction, no potential effect

The extent of potential effects were identified through the project description, baseline information and studies, professional judgement, and information obtained from regulatory authorities and through the PEP. Issues considered "Interaction, potential effects considered" were evaluated in the effects assessment (See Chapter 7).

Table 3-2: Project-Environment Interaction Matrix[1]

	Discipline								
Project Activities & Sources of Potential Issues	**Atmospheric Environment**	**Physical Environment**	**Aquatic Environment**	**Terrestrial Habitat & Ecosystems**	**Wildlife**	**Land and Resource Use**	**Personal, Family & Community Life**	**Services**	**Heritage & Cultural Resources**
Construction Phase:									
Project Activity									
ROW Clearing and Clean-up	X	√	√	√	√	√	~	√	√
Foundation & Anchor Installation, Structure	X	√	X	√	√	√	~	√	√

Table 3-2: Project-Environment Interaction Matrix[1]

Project Activities & Sources of Potential Issues	Discipline								
	Atmospheric Environment	Physical Environment	Aquatic Environment	Terrestrial Habitat & Ecosystems	Wildlife	Land and Resource Use	Personal, Family & Community Life	Services	Heritage & Cultural Resources
Assembly & Erection									
Watercourse Crossings	X	√	√	√	√	√	~	X	√
Marshalling Yards	X	√	X	√	√	√	~	X	√
Station Modifications	X	~	X	~	~	X	X	~	X
Access									
Access Trails if required	X	√	√	√	√	√	~	X	√
Vehicle traffic on highways and other roads	X	X	X	√	√	X	√	√	X
Air Emissions									
Dust from construction machinery & vehicles	√	X	√	√	√	X	~	X	~
Combustion emissions from construction vehicles	√	X	X	~	X	X	~	X	~
Slash and burning of vegetation from ROW clearing	√	X	~	√	√	X	~	X	~
Sensory Disturbance									
Construction equipment & vehicle noise	X	X	X	X	√	√	√	X	~
Site Contamination									
Construction waste	X	√	~	~	√	~	~	√	~
Construction vehicle fuels & lubricants, accidental spills	X	√	√	√	√	~	~	X	~
Economy									

Table 3-2: Project-Environment Interaction Matrix[1]

Project Activities & Sources of Potential Issues	Discipline								
	Atmospheric Environment	Physical Environment	Aquatic Environment	Terrestrial Habitat & Ecosystems	Wildlife	Land and Resource Use	Personal, Family & Community Life	Services	Heritage & Cultural Resources
Infrastructure & Services									
Pressure on infrastructure & services due to presence of the workforce	X	X	X	X	X	X	√	√	X
Operations & Maintenance Phase:									
Project Activity									
Structure and line maintenance	X	X	√	√	√	√	~	~	X
ROW vegetation maintenance	X	√	√	√	√	√	~	~	~
Stations maintenance	X	X	X	~	~	X	X	X	X
Access									
Access trails if required	X	√	√	√	√	√	~	~	√
Air Emissions									
Combustion emissions from maintenance vehicles	√	X	X	~	X	X	X	X	~
Electric and Magnetic Fields	X	X	X	~	X	~	X	X	√
Sensory Disturbance									
Aesthetics	X	X	X	X	X	√	√	X	√
Noise emitted from transmission line	X	X	X	X	√	√	√	X	√
Site Contamination									
Herbicide use during ROW maintenance	X	√	√	√	√	√	~	X	√
Maintenance vehicle fuel & lubricants,	X	√	√	√	√	~	~	X	~

Table 3-2: Project-Environment Interaction Matrix[1]

Project Activities & Sources of Potential Issues	Discipline								
	Atmospheric Environment	Physical Environment	Aquatic Environment	Terrestrial Habitat & Ecosystems	Wildlife	Land and Resource Use	Personal, Family & Community Life	Services	Heritage & Cultural Resources
accidental spills									
Economy									
Employment & Business Opportunities	X	X	X	X	X	X	√	~	X

√ Interaction, potential effects considered
~ Limited interaction, no potential effects anticipated
X No interaction, no potential effect

3.4 EFFECTS ASSESSMENT AND MITIGATION MEASURES

The environmental effects of the Project were identified, predicted or assessed using a stepwise approach. As outlined above, the initial step involved characterizing the interaction between the Project and the various environmental components, as well as the Project and each VEC. Although a range of components were considered, the focus of the environmental assessment report was on selected VECs. Table 3-1 characterizes the potential project effect for each VEC. Both positive and negative effects were considered. Table 3-2 identifies the Project-environment interaction between Project activities and sources of potential issues by discipline.

3.4.1 Identification of Mitigation Measures

Identification of mitigation measures involves finding practical ways to reduce or eliminate potential negative effects and enhance benefits during all phases of Project development. Where effects could not be avoided during the site selection process, mitigation measures were identified and incorporated into the Project design. As detailed designs are prepared, additional mitigation measures may be incorporated into the Project. Implementation of mitigation measures are detailed in the Environmental Protection, Follow-up and Monitoring chapter (see Chapter 8). Mitigation measures will be incorporated into the Environmental Protection Plan (EnvPP) for the construction and operations phases of the Project.

3.4.2 Residual Effects and Significance Evaluation

For effects that could not be fully mitigated (i.e., residual effects), the significance of each effect was assessed. Assessment of the significance of environmental effects of the Project involved consideration and evaluation of specific factors. This included the following:

- The direction or nature of the effect;
- The magnitude of the effect;
- The geographic extent of the effect;
- The duration of the effect;
- The frequency of the effect; and
- The reversibility of the effect.

Table 3-3 provides a definition for each of these factors used to evaluate the significance of residual effects. Although the focus was on the VECs selected for the Project, consideration was also given to other key components in the residual effects and significance evaluation process.

Table 3-3: Assessment Factors and Criteria Used to Evaluate Significance of Residual Effects

Factor	Definition	Criteria	Significance Evaluation
Direction	Describes the difference or the trend of the effect on the environment	Positive	Beneficial or desirable change
		Neutral	No expected change
		Negative	Adverse or undesirable change
Magnitude	The predicted degree or intensity of disturbance of an effect	Small	No definable or measureable effect; or below established thresholds of acceptable change; or within the range of natural variability; or minimum impairment of an ecosystem component's function
		Moderate	Effects that could be measured and could be determined with a well designed monitoring program; or are generally below established thresholds of acceptable change; or are marginally beyond the range of natural variability or marginally beyond minimal impairment of ecosystem component's function
		Large	Effects that are easily observable and described, and well beyond guidelines or established thresholds of acceptable change; are well beyond minimal impairment of an ecosystem component's functions.
Geographic Extent	The spatial boundary within which the residual environmental effect is expected to occur.	Project Footprint	Effects confined to the Project Footprint including the ROW.
		Local	Direct and indirect effects that extend beyond the Project Footprint but remain within the Local Study Area defined for the VEC for some biophysical disciplines or 1.5 km on either side of the Project Footprint for other disciplines

		Regional	Direct and indirect effects that extend into the wider regional area. This may include cumulative effects from other projects.
Duration	The length of time that the predicted residual effect is expected to last.	Short-term	Effects that generally are limited to the construction phase of the project or recovery cycle of the VEC.
		Medium-term	Effects that extend throughout the construction and operation phases of the project or that occur within one or two generations of recovery cycles
		Long-term	High level effects that extend greater than 50 years or are permanent, or that extend for two or more generations or recovery cycles.
Frequency	How often the effect will occur.	Infrequent	Effect may occur once during the life of the project.
		Sporadic/Intermittent	Effect may occur without predictable pattern during the life of the project.
		Regular/Continuous	Effect may occur periodically or continuously during the life of the project.
Reversibility	Likelihood and time required for the Project to no longer influence a VEC. For socio-economic VECs, the manageability of effects is considered rather than reversibility.	Reversible	Effect is reversible during the life of the project.
		Permanent	Effect is a long-term permanent effect.

Multiple criteria were considered to determine significance of a residual effect. An effect considered negligible was not considered further in the residual effects assessment. Magnitude, duration and geographic extent determined whether a residual effect was significant. Figure 3-1 illustrates how the Project could have a potentially significant or significant effect based on the criteria.

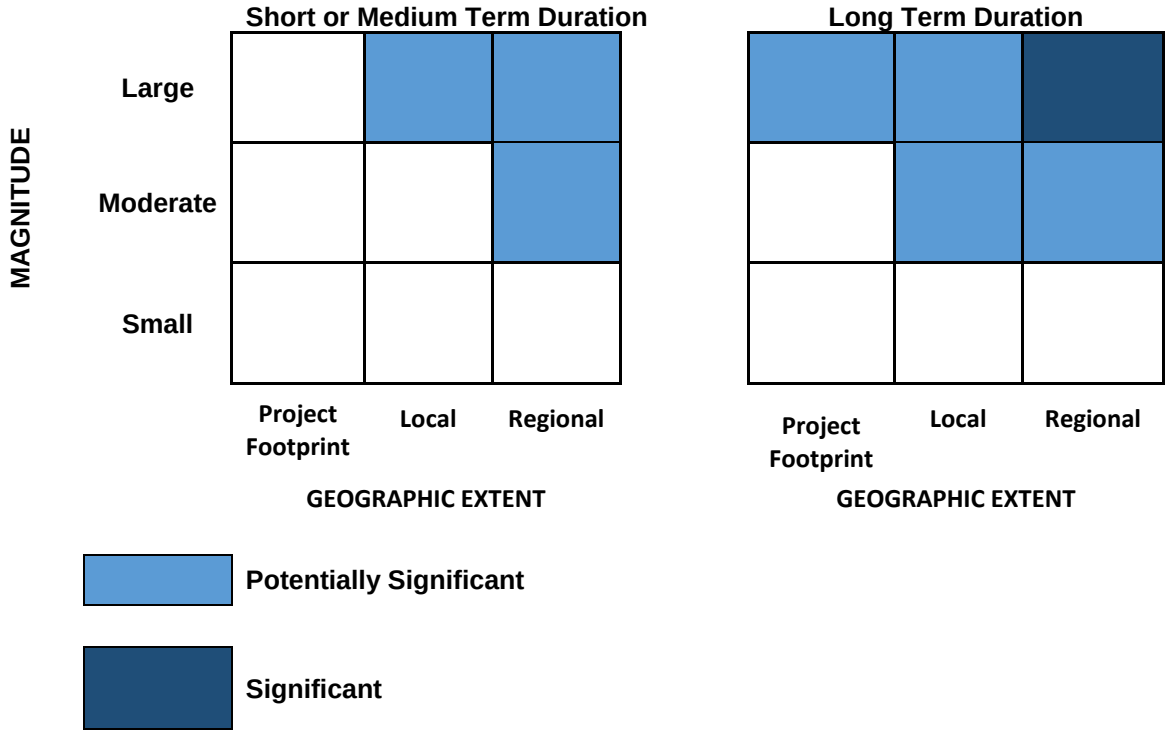
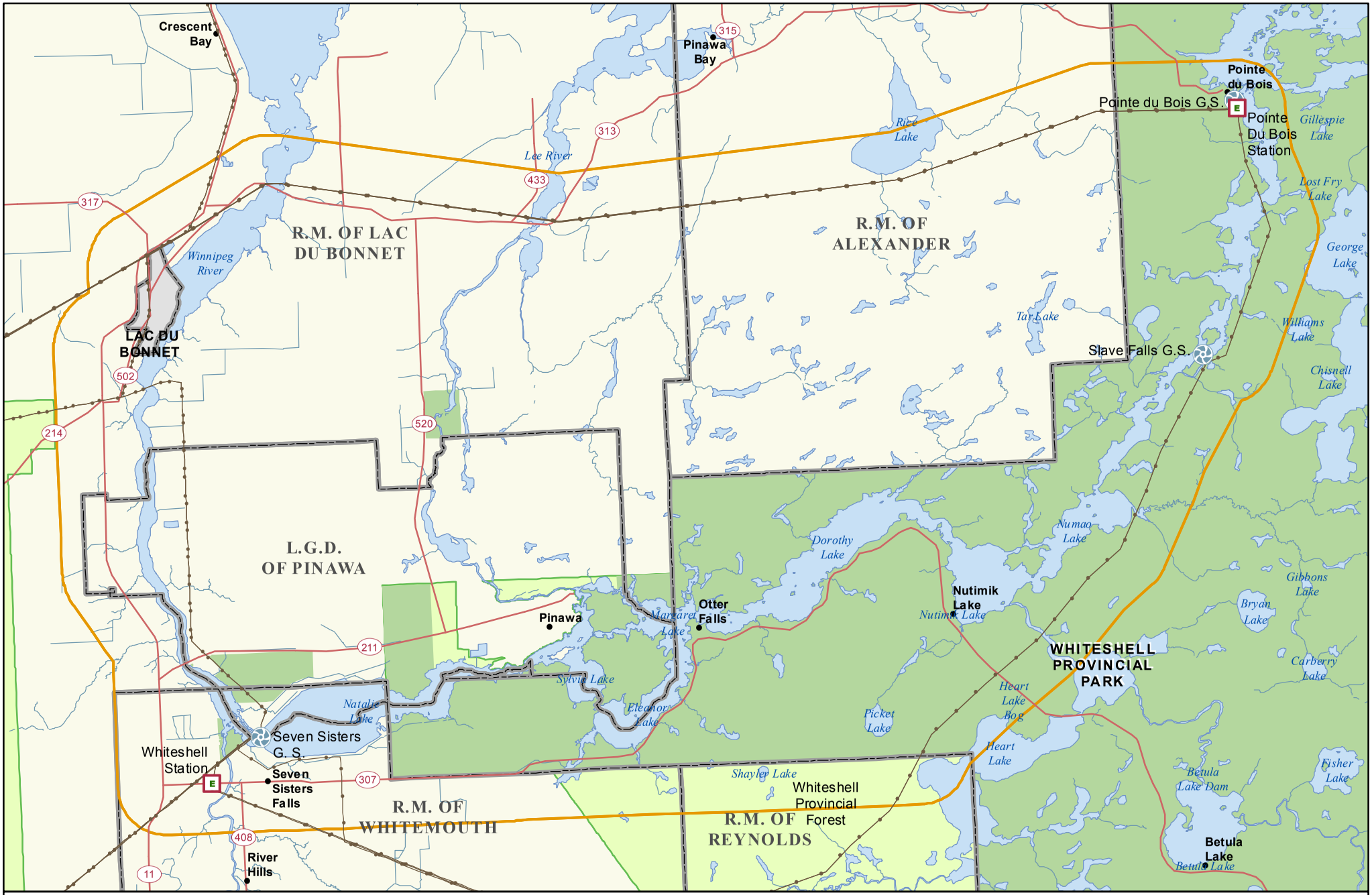


Figure 3-1: Significance Determination

Effects considered potentially significant or significant according to the criteria were further evaluated based on expected frequency and reversibility. Reversible effects were not considered significant. Infrequent or sporadic effects were not considered significant. There is a level of uncertainty about the nature of predicted effects and the level of uncertainty varies depending on the effect. Some effects are predicted based on a moderate to high level of uncertainty while other effects may not be known before they occur. To address this uncertainty, proposed monitoring and follow-up activities will be undertaken to determine the nature and extent of Project effects. These activities are discussed in Chapter 7.

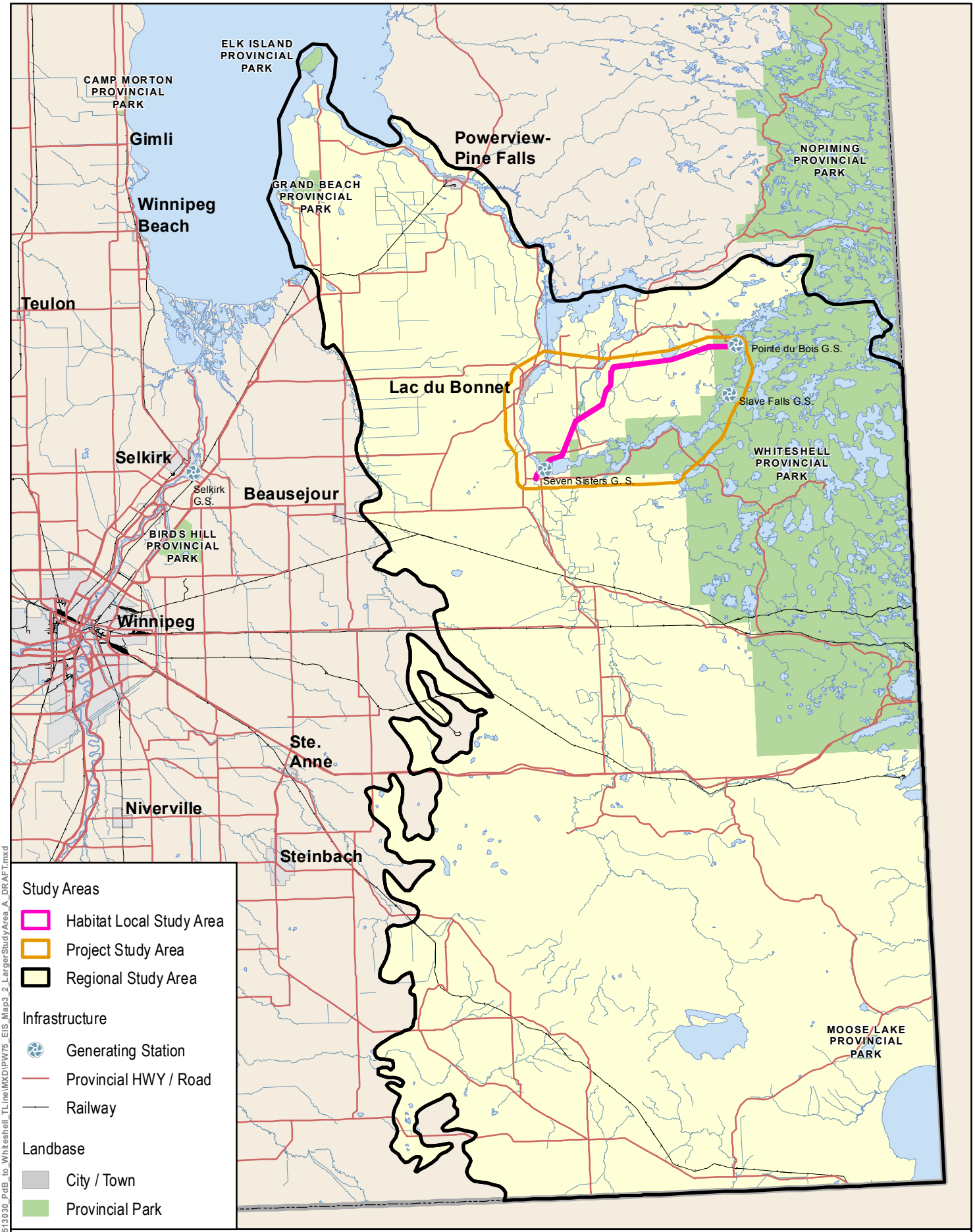


Manitoba Hydro

Pointe du Bois Transmission Project

Project Study Area

Map 3-1



File Location:U:\Projects\5613030_PdB_to_Whiteshell_TLine\MXD\PW75_EIS_Map3_2_LargerStudyArea_A_DRAFT.mxd

Manitoba Hydro

Coordinate System: UTM Zone 14 NAD 83
Data Source: MBHydro, MMM, ProvMB, NRCan, ECOSTEM
Date Created: March 19, 2014

0 20 40 Kilometres
0 10 20 Miles

1:850,000

N

Pointe du Bois Transmission Project
Study Areas

Map 3-2