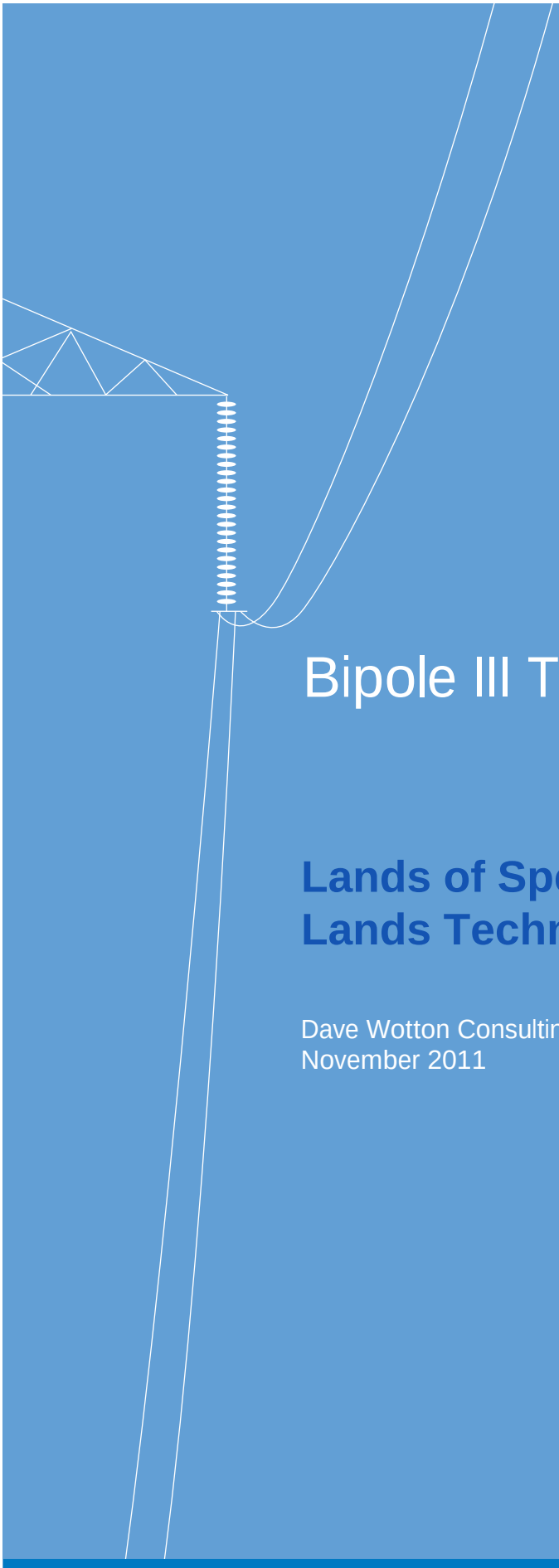


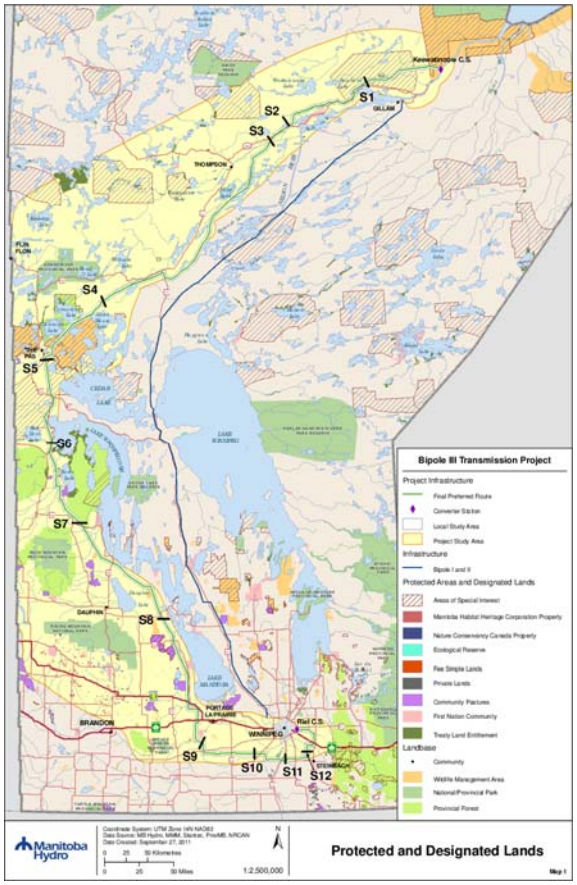
Bipole III Transmission Project

Lands of Special Interest and TLE Lands Technical Report

Dave Wotton Consulting
November 2011

Manitoba Hydro

BIPOLE III LANDS OF SPECIAL INTEREST AND TLE LANDS TECHNICAL REPORT



PREPARED FOR MMM GROUP AND MANITOBA HYDRO

BY

Dave Wotton Consulting

November 2011

Table of Contents

1 INTRODUCTION 1
1.1 Background 1
1.2 Purpose and Scope 2
1.3 Report Outline 3
2 STUDY AREA AND PROJECT DESCRIPTION 4
2.1 General Regional Area Description 4
2.2 Project Description 7
2.2.1 500 kV HVdc Transmission Line 7
2.2.2 Keewatinoow Converter Station/Ground Electrode/Collector Lines 9
2.2.3 Connections to the Northern Collector System 11
2.2.4 Riel Converter Station/Ground Electrode/Collector Lines 11
2.2.5 Connections to the Southern Receiver System 12
2.2.6 Access Requirements Description 13
3 METHODOLOGY 13
3.1 Desktop 13
3.2 Site Selection and Environmental Assessment Process 14
3.2.1 Bipole III Component Evaluation 16
3.2.1.1 Keewatinoow Converter Station 16
3.2.1.2 Northern Electrode Sites 17
3.2.1.3 Northern Collector Lines 17
3.2.1.4 Riel Converter Station 18
3.2.1.5 Southern Electrode Sites 18
3.2.2 VEC Evaluation – Protected Areas 19
3.2.3 TLE Evaluation – Aboriginal Lands 20
3.3 EVALUATION OF CONSTRAINTS 20
3.3.1 Discussion of Protected Areas- Alternative Routes Evaluation 20
3.3.2 VEC - Protected Areas 23
3.3.3 TLE Evaluation – Aboriginal Lands 25
3.3.4 Summary of Evaluation for Alternative Routes 26
3.4 Discussion of Protected Areas - Final Preferred Route 28
3.4.1 Area of Special Interest Stephens Lake 31
3.4.1 Provincial Parks & Ecological Reserves 41
3.4.2.1 Clearwater Lake Provincial Park 41
3.4.2.2 Red Deer River Provincial Park 42

3.4.2.3 Overflowing River Provincial Park 42
3.4.2.4 Lake Winnipegosis Salt Flats Ecological Reserve Addition 42
3.4.2.5 Cowan Bog Ecological Reserve 43
3.4.3 Wildlife Management Areas 43
3.4.3.1 Churchill WMA 44
3.4.3.2 Tom Lamb WMA Addition and Summerberry WMA 44
3.4.3.3 Red Deer WMA 48
3.4.3.4 Steeprock WMA 48
3.4.3.5 Weiden WMA 49
3.4.3.6 Westlake WMA 49
3.4.3.7 Langruth WMA 49
3.4.3.8 Whitemud Watershed WMAs 49
3.4.4 Community Pastures 50
3.4.5 Provincial Forest Reserves – Swan-Pelican Provincial Forest 51
3.4.6 Crown Land 51
3.5 VEC Summary Evaluation of Final Preferred Route 52
3.6 Discussion of Treaty Land Entitlement – Final Preferred Route 54
3.6.1 TLE Framework Agreement Principles of Interest 54
3.6.2 Policy Issues for the TLE Work Program 54
3.6.3 Community Interest Zones (CIZs) 58
3.6.4 Aboriginal Traditional Knowledge and Protected Areas 58
3.6.5 First Nation Communities -Final Preferred Route 60
3.6.5.1 Fox Lake First Nation 60
3.6.5.2 York Factory First Nation 61
3.6.5.3 Tataskweyak Cree Nation 61
3.6.5.4 Opaskwayak Cree Nation 62
3.6.5.5 Sapotaweyak Cree Nation 63
3.6.5.6 Wuskwi Sipihk First Nation 63
3.6.5.7 Long Plain First Nation and Dakota Plains First Nation 63
3.7 TLE Summary Evaluation of Final Preferred Route 64
3.7.1 Reserves and Crown Lands Acquired under the TLE 67
4 ENVIRONMENTAL EFFECTS ASSESSMENT 69
4.1 Environmental Effects Identification/Assessment 69
4.1.1 From Literature 69
4.1.2 From Study Results 70

4.1.2.1 Final Preferred Route Evaluation 70
4.1.2.1.1 VEC – Protected Areas 71
4.1.2.1.2 TLE Evaluation Aboriginal Lands 73
4.1.2.1.3 Summary of Evaluation for Final Preferred Route 75
4.2 Data or Information Gaps 76
4.3 Mitigation Measures 77
4.3.1 Prevention 77
4.3.2 Access restrictions 78
4.3.3 Aesthetics Considerations 79
4.3.4 Compensation 79
4.4 Summary of Environmental Effects – All Project Components 80
4.4.1 HVdc Transmission Line and AC Collector Lines 81
4.4.1.1 Clearing and Construction 81
4.4.1.2 Operation and Maintenance 85
4.4.2 Keewatinoow Converter Station, Ground Electrode and Connecting Lines 86
4.4.2.1 Clearing and Construction 87
4.4.2.2 Operation and Maintenance 87
4.4.3 Riel Converter Station, Ground Electrode and Connecting lines 87
4.4.3.1 Clearing and Construction 88
4.4.3.2 Operation and Maintenance 88
4.4.4. Construction Camps 88
4.4.4.1 Clearing and Construction 88
4.4.4.2 Operation and Maintenance 88
4.4.4.3 Decommissioning 89
4.5 Summary of Mitigation measures 89
4.6 Residual Effects 91
4.7 Follow-up Monitoring 95
4.7.2 Right-of-Way Maintenance 96
4.7.3 Protected Areas 96
4.7.4 Aboriginal Lands from TLE 96
5 SUMMARY 97
6 CONCLUSIONS 98
7 REFERENCES 100
APPENDIX 1 103
APPENDIX 2 MAPS 114

List of Tables

Table 1: Site Description by Segment for Bipole III Final Preferred Route 9
Table 2: Summary of Ranking for Valued Environmental Components (VECs) for PAI and TLE. 21
Table 3: High or medium ranked segments and nodes (in brackets) of the alternative routes 27
Table 4: Bipole III Areas of Special Interest 187, Churchill WMA and 114, Stephens Lake 31
Table 5: Summary of Enduring Feature Characteristics in ASI 114 Stephens Lake 35
Table 6: Summary of Bipole III Interaction with Enduring Feature at Stephens Lake ASI 114 40
Table 7: Summary of Final Preferred Route Segments Ranked High and Medium for VECs 53
Table 8: Status of First Nation Entitlement of TLE Crown Land and Purchased Land 56
Table 9: Final Preferred Route Segments Ranked High and Medium for TLE 66
Table 10: First Nation Purchased Lands Affected by Segments of the Route Corridor 67
Table 11: VEC Ranking for Final Preferred Route – Environmentally Sensitive Sites(ESS) 72
Table 12: Summary of Ranking for Final Preferred Route – TLE & Aboriginal Lands 74
Table 13: Residual Environmental Effect Assessment Summary Table – PAI & TLE 94
Table 14: Evaluation and Ranking of Alternative Routes A, B, and C by Segment and Node 104

List of Figures

Figure 1: Representation of Enduring Features within Manitoba Natural Regions 1a to 12 6
Figure 2: The Four Natural Regions Crossed by the Route Corridor at ASI Stephens Lake 33
Figure 3: Enduring Features, Stephens Lake ASI (Stantec Draft) (Eastern part) 38
Figure 4: Enduring Features, Stephens Lake ASI (Stantec Draft) (Western part) 39
Figure 5: Lake Winnipegosis Salt Flats Ecological Reserve Addition 45
Figure 6: Unique Terrain / Soil features of Tom Lamb Addition and Summerberry WMA (Stantec) 47
Figure 7: Sapotaweyak Cree Nation lands in relation to Bipole III 65
Figure 8: Location of TLE and Fee Simple Lands 68

List of Maps

Map 1 : Protected and Designated Lands in Manitoba with Bipole III Segments 115
Map 2: Manitoba Ecoregions and Ecodistricts 116
Map 3: Keewatinoow Converter Station and Electrode Sites 117
Map 4: Henday Generating Station to Keewatinoow Converter Station 118
Map 5: Riel Converter Station and Ground Electrode Sites 119
Map 6: ASI Stephens Lake Enduring Features 120
Map 7: Clearwater Lake Provincial Park 121
Map 8: Red Deer River Provincial Park 122
Map 9: Tom Lamb WMA Addition and Proposed Summerberry WMA 123
Map 10: Proposed Red Deer River WMA 124
Map 11: Protected Areas on West Side of lakes Winnipegosis and Manitoba 125
Map 12: Protected Areas in Southern Manitoba 127
Map 13: Whitemud Watershed Wildlife Management Areas 128
Map 14: First Nation Reserves and Community Interest Zones 129
Map 15: Fox Lake Cree Nation Land 130
Map 16: York Factory First Nation and Tataskweyak Cree Nation Lands 131
Map 17: Opaskwayak Cree Nation Lands 132
Map 18: Sapotaweyak Cree Nation Lands 133
Map 19: Wuskwi Sipihk Cree Nation Lands 134
Map 20: Long Plain and Dakota Plains First Nation Lands 135
Map 21: Peguis First Nation Schedule C Notice Area 136
Map 22: Bipole III Proposed Alternative Routes 137

LIST OF ACRONYMS

AC	Alternating Current
ASI	Areas of Special Interest
ATK	Aboriginal Traditional Knowledge
CEAA	Canadian Environmental Assessment Act
CEAA	Canadian Environmental Assessment Agency
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DC	Direct Current
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EnvPP	Environmental Protection Plan
ESS	Environmentally Sensitive Sites
FLCN	Fox Lake Cree Nation
FLRMA	Fox Lake Resource Management Area
FPR	Final Preferred Route
GIS	Geographical Information System
HMCP	Habitat Mitigation/Compensation Program
HVdc	High Voltage Direct Current
INAC	Indian and Northern Affairs Canada
ISAC	Integrated Science Advisory Committee
LPFN	Long Plain First Nation
LWSFER	Lake Winnipegosis Salt Flats Ecological Reserve
MMF	Manitoba Metis Federation
NCN	Nisichawayasihk Cree Nation
OCN	Opaskwayak Cree Nation
PAI	Protected Areas Initiative
PFRA	Prairie Farm Rehabilitation Administration
PPR	Preliminary Preferred Route
RMA	Resource Management Area
ROW	Right-of-Way
RSM	Route Selection Matrix
SSEA	Site Selection and Environmental Assessment
SRD	Saskatchewan River Delta
TCN	Tataskweyak Cree Nation
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge
TLE	Treaty Land Entitlement
TLECMI	Treaty Land Entitlement Committee of Manitoba Inc.
TLEFA	Treaty Land Entitlement Framework Agreement
VEC	Valued Environmental Component
WMA	Wildlife Management Areas
WRCS	Wildlife Resource Consulting Services Inc.

EXECUTIVE SUMMARY

This report is one of a series of reports on the evaluation of biophysical and socio-economic characteristics of the proposed Bipole III Reliability Improvement project including the 500 kV high voltage direct current transmission line and the associated infrastructure. The report provides the technical review and evaluation of the three alternative routes and the final preferred route from the perspective of Protected Areas and Aboriginal lands derived from the Treaty Land Entitlement (TLE) process. The valued environmental components (VECs) are identified and an assessment provided for incorporation into the preparation of the project Environmental Impact Statement (EIS) as presented in Manitoba Hydro's June 2010 Environmental Assessment Scoping Document. The information presented in this report was largely provided by government officials and searches of government data bases with support from the GIS technical staff of the Manitoba Hydro study team.

The selection of the three alternative route corridors and the preliminary preferred route was based on the identification of environmental, socio-economic and technical constraints. The assessment process progressed under the principle of avoidance of areas of environmental sensitivity and/or public concern wherever possible. The alternative route planning corridors were established using a 4.8 km width, within which the route was identified based on a 66 m wide right-of-way. The Manitoba Hydro study team conducted a comprehensive evaluation of the alternative routes through a multi-disciplinary assessment exercise based on an Interactive Delphi process in early 2010. The evaluation included the findings of 27 different criteria under five categories: Bio-physical, Socio-economic, Land use/Agriculture, Technical and Stakeholder Response. The Protected Areas and Treaty Land Entitlement components addressed in this report are included in the land use category. A preliminary preferred route resulted from this process which was further studied and refined by the Manitoba Hydro study team leading to the selection of the final preferred route.

The evaluation of VECs for protected areas and TLE lands was based on interaction with the 66 metre ROW or the 4.8 km planning corridor. A value of high was assigned for a direct interaction with the ROW, a medium for interaction with the 4.8 km corridor and a low for no interaction. A medium was also assigned for TLE lands that were in close proximity, 1.6 km, of the 4.8 km corridor. None of the alternative routes was markedly better than the other two.

Alternative route A was found to be the longest and least direct route at 1,485 km. It had 6 segments and 1 node ranked with a high level of constraint all located in ASIs, and 12 segments ranked as medium. Alternative route B was the shortest proposed route at approximately 1,290 km, with 4 segments and 1 node ranked as high and 15 segments plus 3 nodes as medium. The alternative route C provided an intermediate option in length at approximately 1,350 km. It had 4 segments ranked high and 13 segments ranked as medium.

For the 3 alternative routes there were 4 principal areas of concern with high and medium VEC ranking: ASI 114, Stephens Lake; ASI 112, Amisk South; ASI 107, Burntwood River; and ASI 86, Red Deer Lake. In addition, interactions involved Provincial Parks, Ecological Reserves, Provincial Forest Reserves, Wildlife Management Areas and Community Pastures.

Aboriginal lands and lands acquired from the TLE process were found to have high interactions at 8 sites for alternative route A, 10 sites plus 5 nodes for route B and 9 sites for route C. For medium rankings there was 1 node on Route A, 2 segments and 1 node for Route B and 2 segments and 1 node for Route C. Each of the alternative options had a relatively equal number of interactions while each alternative also provided its own unique positive attributes. A complete listing and evaluation of the Bipole III Alternative Routes segments and nodes with the ranking of both VECs (PAI) and TLEs is provided in Table 14 in Appendix 1.

The final preferred route was divided into 13 segments for evaluation under the same protocol as for the alternative routes. The final preferred route in assessment of VECs for protected areas was found to have only 1 high ranking which was a result of the crossing of ASI Stephens Lake in segment 1 immediately west of the Keewatinoow Converter Station. All other northern ASIs identified in the analysis of Alternative Routes were avoided. This was a marked improvement from the alternative route evaluation where route A had 6 high and routes B and C had 4 high respectively.

The final preferred route had 19 medium rankings where the planning corridor was within 1.6 km of a protected area. In the alternative route assessment there were 40 segments and 4 nodes ranked medium. The medium ranked sites included 2 at ASI Stephens Lake, 2 Provincial Parks, 1 Ecological Reserve, 10 WMAs, 1 Forest Reserve and 3 Community Pastures. Mitigation measures for the construction and ongoing maintenance of the transmission line have been identified for each of these areas.

The final preferred route through the SSEA process was successful in having the 66 metre ROW avoid Aboriginal lands to the extent possible. The final preferred route planning corridor was found to be within 1.6 km of 12 sites of which 3 were ranked as high and 9 were ranked as medium. The three areas which were ranked high were all from segment 7 in areas where there were significant limitations for route options due to the physical terrain characteristics, existing infrastructure, and existing aboriginal lands. It is anticipated that in the final planning process Manitoba Hydro will be able to work though the identified areas to minimize interactions.

Environmentally sensitive sites (ESS) are identified for the PAI and TLE interactions and assessed for the construction, operations and maintenance phases of the project development. Mitigation measures are also identified to avoid or minimize adverse effects. For each of the 22

ESSs the potential residual environmental effects after mitigation are identified as well as options for follow-up monitoring of environmental effects.

1 INTRODUCTION

1.1 Background

In 2007/08 Manitoba Hydro announced plans for the development of Bipole III, a new, high voltage direct current (HVdc) transmission line with a scheduled in-service for 2017. The Bipole III transmission line project is required to improve Manitoba Hydro's system reliability and will involve the construction of a new 500-kV high-voltage direct current transmission line and two new converter stations that will link the power produced from the northern generating stations on the Nelson River to the delivery system in southern Manitoba. The northern converter station, Keewatinoow, will be built approximately 90 km downstream east of Gillam. The transmission line will be built on a 66 meter (217 ft.) right-of-way (ROW), with an average tower spacing of 480 m resulting in 2 towers per km (3 to 4 per mile) and will be approximately 1,384 km long, terminating at the new Riel Converter Station site, just east of Winnipeg's Red River Floodway in the Rural Municipality of Springfield (Manitoba Hydro Newsletter #4, 2010). In agricultural areas, self-supporting towers will be used to reduce effects on agricultural operations and guyed towers will be used in forested areas and other areas that are compatible with the use of this tower type.

The two new converter stations are required because hydro-electricity is generated at the northern generating stations as AC power, then converted to DC power for transmission, and inverted at the southern terminus to AC power for end use. In addition, new 230 kV transmission lines will be required to connect the new Keewatinoow Converter Station near the proposed Conawapa site to the existing Henday Converter Station and the Long Spruce Generating Station in Northern Manitoba. Ground electrode facilities will also be required for the operation of the 2 new converter stations, to be located at the Keewatinoow site in the north and the Riel site in the south. Manitoba Hydro is planning for the Bipole III transmission line route utilizing a site selection and environmental assessment (SSEA) process. An Environmental Assessment (EA) Study Team composed of qualified specialists in physical, biological and socio-economic disciplines was assembled to conduct a detailed evaluation of the alternative routes. The EA Study Team used state of the art knowledge and technology to guide the selection process for the preliminary preferred route. The selection process included environmental and socio-economic as well as technical/engineering considerations. Community and public consultation activities for input of local and traditional knowledge was an essential part of the planning process. There were four rounds of meetings and other consultation activities with interested stakeholders, which included local and provincial governments, landowners, mining and forest industries, local Aboriginal communities and the general public.

In late 2009 and early 2010, three main alternative route corridors were evaluated from the perspective of designated protected lands under federal or provincial legislation and Areas of

Special Interest (ASI) identified by Manitoba Conservation's Protected Areas Initiative program. In addition, Aboriginal lands derived from the Treaty Land Entitlement (TLE) process were evaluated for potential issues that may arise from the interaction of the proposed alternative route corridors with these lands. Protected lands, ASIs and TLE lands were identified as **constraints** to the route selection process, because addressing related concerns was considered essential to the successful negotiation and final approval of Bipole III.

The alternative routes were then subjected to a further detailed evaluation by the EA Study Team through a comprehensive multi-disciplinary assessment exercise based on an Interactive Delphi process in early 2010. The evaluation included the findings of 27 different criteria under five categories: Bio-physical, Socio-Economic, Land Use/Agriculture, Technical, and Stakeholder Response. The Protected Areas and Treaty Land Entitlement components addressed in this report were included under the Land Use category as two of the 27 different criteria evaluated.. Following this evaluation process, the preliminary preferred route was selected, and in July 2010 Manitoba Hydro formally announced the selection. Further study and review of the preliminary preferred route by the EA Study Team, through the fall and early winter 2010, lead to the selection of the final preferred route in January 2011. This report provides the technical review and evaluation of the final preferred route and associated converter station and ground electrode facilities from the perspective of Protected Areas and Aboriginal lands derived from the Treaty Land Entitlement (TLE) process.

1.2 Purpose and Scope

This report is one of a series of biophysical and socio-economic evaluation reports that will be used in preparation of an environmental impact assessment of the project. It addresses the potential interaction of the selected preferred route for the Bipole III transmission line with areas of Manitoba that are either:

- Currently permanently protected by legislation or under consideration for protection, for environmental reasons, by the provincial Protected Areas Initiative (PAI) of Manitoba Conservation and identified as Areas of Special Interest (ASI's); or
- Of interest to the Aboriginal communities; these areas include reserve lands and land identified for potential transfer or purchase under the TLE process.

The purpose of this report is to assess the relative significance of such areas, where they occur in close proximity to the alternative routes and the final preferred route selected for Bipole III and associated facilities, and to identify any remaining potential issues that may still apply.

1.3 Report Outline

This report includes the following:

- **Introduction** - a general overview on the Bipole III Reliability Improvement Project including background, scope and purpose of the supporting technical report.

- **Study Area** - an overview description of the general regional study area and project component description, including converter stations, ground electrode site areas and access.

- **Methodology** – an overview of the Site Selection and Environmental Assessment process (SSEA), its purpose and objectives, and the methodology for the component evaluation, the constraint criteria and evaluation criteria, as well as the description and discussion of evaluation for Protected Areas and TLE lands for the Final Preferred Route.

- **Environmental Effects Assessment** – an overview of the environmental effects to Valued Environmental Components from literature and study results, in addition to the evaluation of the three Alternative Routes and Final Preferred Route for the potential effects and mitigative options as well as the determination of residual environmental effects, listing of environmentally sensitive sites and an initial cumulative effects assessment.

- Summary **and Conclusions** – an overview summary and conclusions of the Bipole III project potential environmental effects, mitigation options and proposed follow-up monitoring, potential areas of negotiation or compensation as well as residual effects and cumulative effects from the perspective of Protected Areas and Aboriginal lands.

2 STUDY AREA AND PROJECT DESCRIPTION

2.1 General Regional Area Description

The study area for the proposed Bipole III transmission line, a component of Manitoba Hydro's Reliability Improvement Project, will originate at the (new) Keewatinoow Converter Station, located near the proposed Conawapa Generating Station site east of Gillam in northern Manitoba. It will travel west to Thompson, southwest toward The Pas, south staying west of lakes Winnipegosis and Manitoba and then eastward coming south of Portage La Prairie and Winnipeg to terminate at the new Riel Station, immediately east of the Red River floodway in the RM of Springfield. Map 1 provides an overview of the Bipole III study area and the proposed final preferred route from north to south in relation to both protected and designated lands in Manitoba. To facilitate discussion of the results, the proposed transmission line is divided into a series of segments identified numerically from S1 at the northern Keewatinoow Converter Station to S13 at the southern Riel Converter Station.

The study area covers diverse biophysical regions of Manitoba and includes the components of the 500 kV HVdc transmission line, the northern collector lines, and converter stations sites, as well as the ground electrode sites and distribution line connections.

Manitoba is composed of 6 ecozones and 18 ecoregions which are differentiated from one another by their geographic, climatic and vegetative features (Smith et al., 1998). The existing environment for the Bipole III project involves five ecozones (or portions thereof) and fifteen ecoregions and associated ecodistricts as shown in Figure 1 and Map 2 (see also Sec. 4.2 for Natural Regions). The ecozones include Hudson Plains Ecozone; Taiga Shield Ecozone; Boreal Shield Ecozone; Boreal Plains Ecozone; and Prairie Ecozone. The fifteen ecoregions, approximately north to south are:

1a Selwyn Lake Upland
2a Maguse River Upland
2b Coastal Hudson Bay Lowland
3 Hudson Bay Lowland
4 Boreal Transition
4a Churchill River Upland
4b Hayes River Upland
4c Lac Seul Upland
5a Mid-Boreal Lowland
5b Interlake Plain
6 Aspen/Oak Parkland;
6 Lake Manitoba Plain
7 Mid-Boreal Uplands
9 Tall Grass Prairie
5c Lake of the Woods

The numbers in the above list refer to Manitoba Conservation's Natural Regions' numbers as shown in Figure 1 and Section 2. Natural Regions of Manitoba predate ecoregions but reflect the same ecological characteristics and were used by Manitoba Conservation's Protected Areas Initiative to determine representation of enduring features in Manitoba. For the purpose of this study both terms are used interchangeably. The consideration of ecoregions in the evaluation process is discussed under section 3.0 Methodology.

In summary, from north to south, the study area includes ecozones with the following biophysical characteristics:

Hudson Plains - wetlands, in the form of fens, bogs and ponds, influenced by permafrost with scattered open growth forests dominated by stunted conifer

Taiga Shield - transition between boreal forest and Sub-Arctic zone with open conifer dominated forests, frequently stunted, with shallow soils, wetlands and shallow lakes

Boreal Shield - exposed bedrock, mineral soils and peatland areas covered by dense conifer and deciduous forest communities scattered among small to large lakes

Boreal Plains - a mix of coniferous and broadleaf vegetation over a variety of glacial surficial deposits including wetlands and peatlands in the north and central areas with the southern area dominant in agricultural soils and agricultural activity

The Prairie – the transition from boreal forest to grasslands is dominant in aspen/oak parkland species, human settlements have resulted in loss of native vegetation and conversion to large areas of cropland or rangeland used for haying and grazing

Wildlife species include: bear, caribou, moose, white-tailed deer, elk; and numerous furbearers such as beaver, coyote, fisher, fox, lynx, marten, mink, muskrat, rabbit, weasel and wolf. Representative bird species include: migratory ducks, geese, grosbeaks, gulls, grouse, jays, hawks, owls, ptarmigans, ravens and many other migratory bird species including shorebirds and passerine species. Wildlife species also include a variety of fish, reptiles and amphibians and several endangered or protected species. Detailed assessment information on these species in relation to the proposed transmission line is available in Bipole III Birds: Technical Report (WRCS, 2011), Bipole III Mammals: Technical Report (Joro, 2011) and Bipole III Woodland Caribou: Technical Report (Joro and WRCS, 2011).

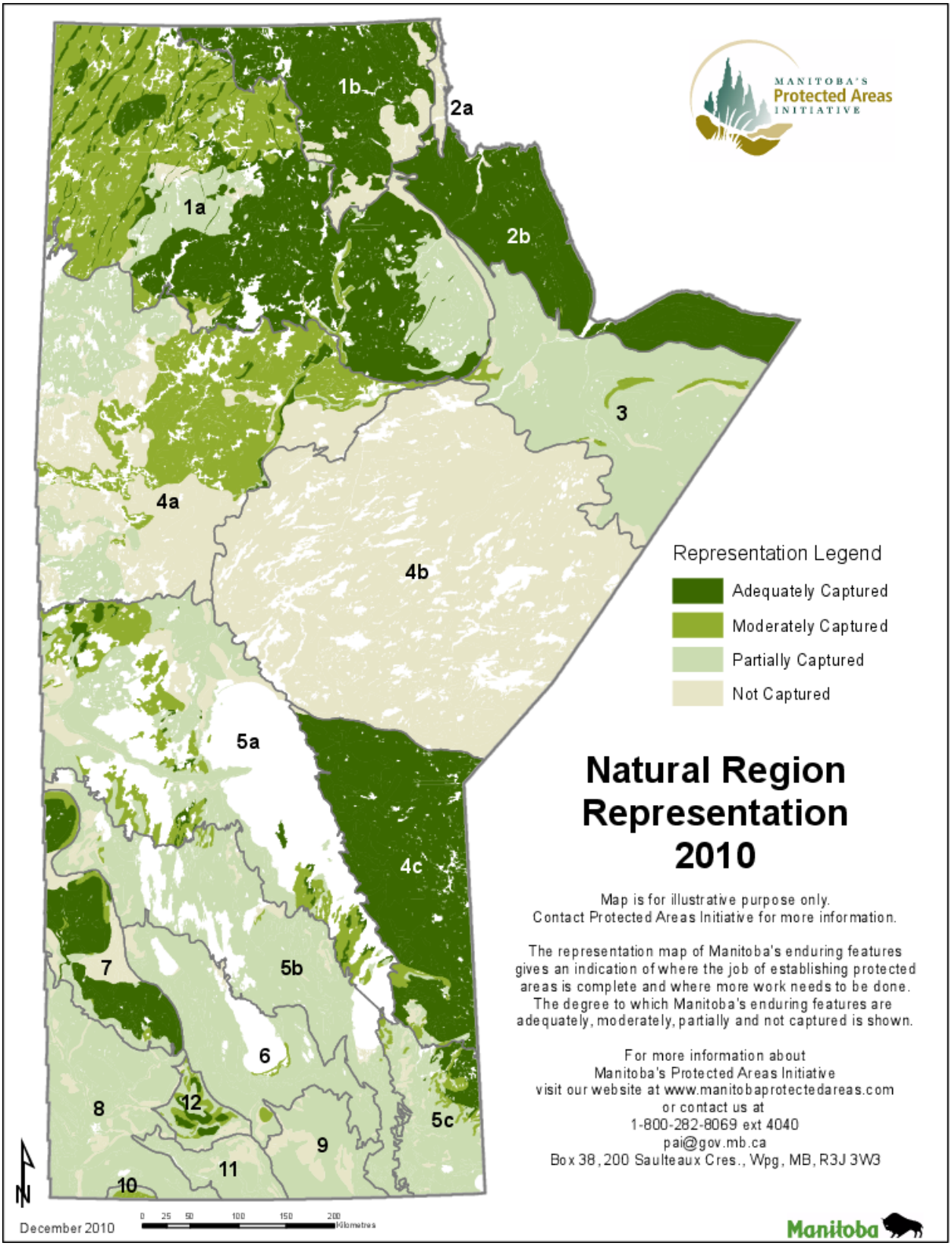


Figure 1: Representation of Enduring Features within Manitoba Natural Regions 1a to 12

2.2 Project Description

In Manitoba, approximately 75% of hydroelectric generating capacity is delivered to Dorsey Station in southern Manitoba via the Interlake corridor shared by the Bipole I and II HVdc transmission lines. The HVdc transmission system is vulnerable to the risk of catastrophic outage, particularly through the length of the shared corridor and at Dorsey Station, due to severe weather events, fire, sabotage, or similar contingencies. The primary function of Bipole III, based on system reliability requirements, is to provide contingent transmission capacity to counter the risk of outages to the existing HVdc transmission system. Subject to system reliability requirements, the additional system capacity will also facilitate delivery of additional power from future northern generating stations and will improve the existing Bipole I and II line losses.

The major components of the Bipole III Reliability Improvement Project are:

- A 500 kV HVdc transmission line;
- A new northern converter station, the Keewatinoow converter station, to be located near the proposed site of the Conawapa Generating Station including a construction camp, wastewater treatment lagoon and construction power supply;
- New 230 kV transmission lines connecting the Keewatinoow converter station to the northern collector system at the existing 230 kV switchyards at Henday Converter Station and Long Spruce Generating Stations;
- A new southern converter station located at the Riel site in the Rural Municipality of Springfield including construction power; and
- New ground electrode sites for each converter station, connected to the station by a low voltage feeder line.

2.2.1 500 kV HVdc Transmission Line

The Bipole III 500 kV HVdc transmission line will originate at the Keewatinoow converter station and terminate at the new southern converter station on the Riel site (Map 1). The overall length of the line is approximately 1,384 km located on a 66 m (216.5 ft.) wide right-of-way (ROW). The project included a planning corridor 4.8 km (3 miles) wide through the study area within which there was flexibility in planning and selection of the final location of the ROW.

Two basic tangent structure types will be used for the straight line sections of the Bipole III HVdc transmission line. In northern Manitoba, the line conductors will be suspended from guyed lattice steel structures (i.e., assemblies of steel structural members with bolted connections). Guyed structures, the main shafts of which have pin type foundations, are most suitable for terrain conditions subject to shifting as a result of seasonal changes in soil

conditions (e.g., conditions found especially in permafrost areas). These structures allow for adjustment of the anchor guys to maintain desired guy loads and forces in the main tower shaft, as well as straightness of the entire structure. In the more intensively developed agricultural areas of southern Manitoba, self-supporting lattice steel structures will be used to minimize potential impact on farming practice (i.e., to reduce the tower footprint). A mix of self-supporting and guyed structures will be used in the central portion of the line, based on the land use in the area of the right-of-way.

The structures will generally be centered in the 66 m (216.5 ft.) right-of-way. This will accommodate conductor "swing-out" under wind conditions equivalent to 90% of the extreme wind speed design parameter for the affected weather zones, using the 150 year return period. Although the tower design will provide for span lengths of up to 550 m (about 1,804 ft.), the average span between structures will be approximately 488 m (about 1,600 ft.) resulting in approximately two structures per km (about 3.3 structures per mile).

Prior to construction, the right-of-way and required easements will first be surveyed and flagged to establish the line alignment. Clearing and disposal of trees on the proposed right-of-way will be undertaken in advance to facilitate construction activities. Clearing requirements for the new transmission line rights-of-way will also require selective clearing of "danger trees" beyond the right-of-way. Such trees could potentially affect the function of the transmission line or result in safety concerns, and are normally identified during initial right-of-way clearing activities and removed.

A variety of methods are available for right-of-way clearing. Typically, these include conventional clearing done by tracked bulldozers, mulching by rotary drums, selective tree removal by feller bunchers (e.g. for removal of danger trees with minimal adverse effect to adjacent vegetation and trees) and hand clearing with chain saws in environmentally sensitive sites. Ground vegetation will not be "grubbed" except at tower sites, where the foundation area will typically be scraped to allow unencumbered access for equipment and safe walking areas for workers.

The segments identified from north to south for the Bipole III final preferred route are presented in Table 1 with a description of the ecoregions (Map 2) for each segment from S1 at the Keewatinoow Converter Station in the north to S13 at Riel Converter Station in the south (Map 1).

Table 1: Site Description by Segment for Bipole III Final Preferred Route

Segment	Natural Region and Ecoregion
S1	(3)* Hudson Bay Lowland
S1	Confluence of (1a) Selwyn Lake Upland, (3) Hudson Bay Lowland, (4a) Churchill River Upland, and (4b) Hayes River Upland
S2	
S2	4(a) Churchill River Upland, (4b) Hayes River Upland
S3	(4a) Churchill River Upland
S4	(4a) Churchill River Upland, (4b) Hayes River Upland, (5a) Mid-Boreal Lowland,
S5	(5a) Mid-Boreal Lowland
S6	(5a) Mid-Boreal Lowland
S7	(5b) Interlake Plain
S8	(5b) Interlake Plain (6) Lake Manitoba Plain Ecoregion, Aspen Parkland
S9	(6) Lake Manitoba Plain Ecoregion, Aspen Parkland
S10	(6) Lake Manitoba Plain Ecoregion, Aspen Parkland, (9) Tall Grass Prairie
S11	(6) Lake Manitoba Plain Ecoregion, Aspen Parkland, (9) Tall Grass Prairie,
S12	(6) Lake Manitoba Plain Ecoregion, (5b) Interlake Plain
S13	(6) Lake Manitoba Plain Ecoregion, (5b) Interlake Plain

*Designated number of Natural Region as presented in Figure 1

2.2.2 Keewatinoow Converter Station/Ground Electrode/Collector Lines

The new Keewatinoow Converter Station name was based on recommendations from Fox Lake Cree Nation. It will be located about 4.8 km southwest of the Conawapa generating station site on the Nelson River in unorganized territory within the Fox Lake Resource Management Area (FLRMA) and the Town of Gillam municipal boundaries (Map 3). The location is physically separated from existing Bipole I and II converter facilities at Radisson and Henday. It is accessible via the existing Conawapa access road. It is reasonably located for connection to the existing northern collector system, and it is well located relative to possible future generating station development at Keeyask and Conawapa.

The principal components of the converter station include a converter building, a high-voltage ac switchyard and a high voltage dc switchyard. These are required to terminate the 230 kV transmission line connections to the northern collector system, to convert the ac power from the collector system to dc power, and to provide the HVdc switching facilities necessary for termination of the new Bipole III transmission line. The dc system is divided into two poles, a positive pole operating at +500 kV, and a negative pole operating at -500 kV with respect to earth (or ground) potential. Both poles will be transmitted on a single transmission line, referred to as the Bipole III HVdc transmission line. The converter station site is estimated to require a roughly rectangular site area of approximately 640 x 640 m in dimension for a total area of 41 hectares including allowances for road access and line approach. The station fence is estimated to be about 31 ha

Construction activities for the converter station development will typically involve site preparation (e.g., removal of existing vegetation and organic topsoil from the site; addition and compaction of inorganic fill material, installation of station surface material) and initial infrastructure development (e.g., installation of station access roads and associated drainage, followed by installation of perimeter fencing and gates). Once general site improvements have been completed, other necessary civil works and systems will be installed (e.g., foundations for building and equipment, grounding arrangements, water supply, oil spill containment, site services and buildings). Station apparatus and equipment installation will follow, including filling of equipment with insulating oil, construction clean-up and commissioning.

The ground electrode required for the converter station will be located approximately 10 km south of the converter station site on the west side of the Conawapa access road (Map 3 and 4). On the assumption of a shallow land ring electrode (similar to the electrodes used at the existing Henday and Radisson converter stations), the electrode will be a buried iron ring approximately 500 m in diameter. It requires a site area in the order of approximately 2,000 m x 2,000 m or 4,000,000 m2 (400 ha), only a portion of which will be cleared and affected by the electrode installation. This includes allowances for items such as access road and electrode line approaches.

There will also be a low voltage (12 kV) overhead distribution line connection between the ground electrode site and the converter station. The low voltage line will be supported on guyed single wood poles and routed along an existing right-of-way.

A temporary construction camp and a treatment lagoon will be established at the future Conawapa Generating Station site to house workers involved in the Keewatinoow converter station and ground electrode.

Construction power for the construction camp, converter station and electrode site will be provided by extending the existing 138 kV transmission line that runs from the Kelsey Generating Station to the Limestone construction power substation by about 31 km, to a new construction power substation located near the Keewatinoow converter station site.

2.2.3 Connections to the Northern Collector System

The power transmitted by Bipole III will originate at generating stations on the Nelson River in northern Manitoba. Existing generating stations are linked to the existing Bipoles I and II by a collector system of high voltage three phase ac transmission lines and switchyards. The collector system carries power from the generating stations on the lower Nelson River (Kettle Rapids, Long Spruce, and Limestone) to the existing Radisson and Henday converter stations in northern Manitoba, where it is converted to dc power for transmission on to Dorsey Station in southern Manitoba via the Bipole I and II HVdc transmission lines. The northern collector system comprises a network of lines and switchyards that offers some flexibility in routing the flow of power from the northern generating stations via Bipoles I and II to southern Manitoba in the event of outages. To enhance that flexibility and reliability further, the new Bipole III Keewatinoow Converter Station will require additional transmission line and switchyard connections to the existing collector system, both to ensure that Bipole III is accessible from the various northern generating stations, and to enable its full capacity to be utilized to transmit power in a wide variety of potential outage conditions.

The proposed connections include five high voltage three phase ac lines. There is one 230 kV transmission line about 55 km in length, from the existing 230 kV switchyard at Long Spruce Generating Station to a new 230 kV switchyard to be developed at the site of the new Keewatinoow converter station (Maps 3 & 4). In addition, four 230 kV transmission lines, each about 27 km in length, will be constructed from the existing 230 kV switchyard at Henday Converter Station to the new 230 kV switchyard at the new Keewatinoow converter station. The lines will share a common right-of-way, 310 m in width. Guyed lattice steel towers will be used for the collector lines. The design concept for the 230 kV switchyard at the new Keewatinoow Converter Station will also make provision for possible future termination of 230 kV transmission lines in the event of new northern generation developments (e.g., Conawapa). The converter station as well as the proposed ground electrode site and connecting lines are all within the Hudson Bay Lowland Ecoregion.

2.2.4 Riel Converter Station/Ground Electrode/Collector Lines

The new southern converter station will include the HVdc switchyard facilities necessary to terminate the new Bipole III transmission line, together with the converters and the ancillary facilities required to convert the dc power from the Bipole III transmission line to ac power at

the 230 kV level necessary for injection into the southern receiving system. The southern converter station will be located at the existing Riel station site on land owned by Manitoba Hydro in the RM of Springfield, just east of the city of Winnipeg and north of the Deacon Water Reservoir along the Red River Floodway (Map 5) which is now under construction for sectionalization purposes. Site development under the sectionalization project will include the portion required for the converter station site. The Riel ground electrode site will require purchase of privately-held lands. Pending final decisions respecting design and route selection, the right-of-way for the low voltage electrode line is expected to be secured by easement. The existing Riel station site occupies a footprint of approximately 110 ha. The station fenced area is nominally 640 m x 1,278 m in dimension, occupying approximately 82 ha of land. The Bipole III facilities at Riel, excepting modifications to the 230 kV switchyard, will generally occupy the northeast portion of the site.

Construction activities for the converter station development will involve necessary civil works and installation of systems (e.g., foundations for building and equipment, grounding arrangements, water supply, oil spill containment, site services and buildings). Station apparatus and equipment installation will follow, including filling of equipment with insulating oil, construction clean-up and commissioning.

The ground electrode required for Riel converter station will be located approximately 20 km from the station site in the R.M. of Springfield (Map 5). The electrode site land requirement will include the entire section (i.e., approximately 1,600 m x 1,600 m or 2,560,000 m^2 [256 ha]), and includes a substantial buffer area surrounding the actual site requirements for installation of the electrode and ancillary facilities. The ground electrode will likely be a shallow ring electrode, estimated to be approximately 400 m in diameter, and situated centrally within the site. The site will be purchased by Manitoba Hydro. The excess land will be leased back to the former owners or others for ongoing non-intensive agricultural use. The surface of the central area of the site (an area of approximately 500 m x 500 m above the ground electrode itself) will be maintained as a grassed area by Manitoba Hydro.

There will also be a low voltage line connection between the ground electrode site and the converter station. The line will be an overhead line supported by single wooden poles routed on a right-of-way on Manitoba Hydro property or within existing road allowances.

Construction power from the Riel sectionalization portion of the Riel station will be used for the Riel converter station and electrode site.

2.2.5 Connections to the Southern Receiver System

The BP III transmission line terminates at the Riel Station converter site, where the connections to the southern receiver system occur. The southern receiver system, serving Winnipeg and

southern Manitoba, is fed from a network of 230 kV transmission lines originating at Dorsey Station and at a number of existing substations in the Winnipeg area. The Riel Sectionalization project includes sectionalization of several of these existing transmission lines, in order to enable injection of power from the sectionalized D602F at Riel.

D602F is the existing international interconnection at the Riel site east of Winnipeg, once sectionalized it will relieve dependence on Bipoles I and II by enabling power from the international transmission line to be injected into the Manitoba Hydro transmission system at either Dorsey or Riel stations. Once completed, Riel Sectionalization will provide an alternative terminal for the existing D602F, enabling the import of power to the southern transmission system in the event of a major HVdc outage involving Dorsey Station and/or Bipoles I and II. Although the resultant capacity of the 230 kV connections at Riel facilitates injection of power from Bipole III, additional transmission capacity will be required. The additional capacity will be provided by sectionalization of the existing Ridgeway-Richer 230 kV transmission line R49R at Riel Station.

2.2.6 Access Requirements Description

For Bipole III construction and maintenance purposes, Manitoba Hydro will use existing highways, municipal and forestry roads, trails and man-made linear features to the extent where possible and feasible, thereby minimizing the need to develop new access routes to the Bipole III Right-of-Way (ROW). Access will be required along the ROW but will be restricted to the ROW to the extent practical. If deviations are required they will be limited to natural terrain features such as rock outcrops, excessively steep slopes, and where ingress and egress to stream crossings are logistically challenging and/or environmentally risky.

Where possible, Manitoba Hydro will limit all-weather access development to spur roads extending from existing roads to: the converter station sites, the northern work camp, the construction power station site and the ground electrode sites. Access related to the construction and maintenance of the ground electrode lines, the construction power line (KN36), collector lines (L61C, C61H, C62H, C63H, C64H) and the Bipole III transmission line will be limited to existing infrastructure and the development of seasonal trails for winter work as much as possible. The access trails on transmission ROWs, will be limited to seasonal trails.

3 METHODOLOGY

3.1 Desktop

In methodological terms, fieldwork was conducted from a socio-economic perspective, i.e., interviews were conducted with knowledgeable staff of the Province of Manitoba, primarily

Manitoba Conservation and staff of Manitoba Hydro. The descriptions of physical environment and the ASI and TLE areas are based on public information and published materials.

3.2 Site Selection and Environmental Assessment Process

Environmental assessment is a planning tool that enables consideration of the potential effects of a project in a careful and precautionary manner before actions are taken to allow that project to proceed. It is a process for identifying a project's potential interactions with the environment, predicting environmental effects, identifying mitigation measures and evaluating the significance of residual environmental effects in order to promote sustainable development, protect the environment, and facilitate the wise management of natural resources. If the project proceeds, the environmental assessment process also provides the basis for setting out the requirements for monitoring and reporting to verify compliance with the terms and conditions of approval as well as the accuracy of predictions and effectiveness of mitigation measures (CEAA website).

Manitoba Hydro transmission projects utilize a Site Selection and Environmental Assessment (SSEA) process to better understand the potential issues and concerns associated with the routing and siting of the transmission line and components, to assess the potential for adverse effects and to identify appropriate mitigation measures to manage the overall effect of the proposed project on the environment. This process was undertaken for the Bipole III transmission line project.

The specific objectives of the SSEA process were to:

- Identify a study area in which to select alternative route options for the study project;
- Identify alternative routes based on desktop analysis;
- Identify a preferred route that considers – biophysical, socio-economic, and technical considerations and stakeholder input;
- Once preferred route is selected – undertake an environmental assessment of the preferred route to identify effects of the project on components of the biophysical and socio-economic environment;
- Identify ways to mitigate adverse effects and enhance positive effects, as well as monitoring and follow-up requirements; and
- To develop a comprehensive environmental impact statement for the project.

Through study area characterization, the locations of sensitive biophysical, socio-economic and cultural features were identified. Technical and costs constraints were also considered in the routing of the transmission line. The SSEA process utilized data from existing published sources and supplemented those sources with data obtained from field studies and feedback received from the public, government, and local communities through consultation activities, including information received from aboriginal and traditional knowledge sources. Soil and terrain characteristics of enduring features for selected ASIs within the Bipole III planning corridor of the preferred route were evaluated through current satellite imagery and field studies conducted by Stantec.

Manitoba Hydro initiated the site selection process by identifying three alternative routes (A,B & C) through a coarse-filtered comparison of broad corridors that were technically viable options and represented regional differences in the study area. The objective of the selection process was to avoid, to the extent possible, areas of environmental sensitivity or concern to stakeholders in the area or the general public. The alternative route planning corridors were established on the basis of a 4.8 km width, within which alternative routes were identified based on a 66 metre wide right-of-way (ROW). Adjustments of the alternative route ROWs could be identified within the broader corridors and provided interconnections of numerous routing options between the three main routes A, B, and C. To assist in identification and evaluation, each alternative route was subdivided and numerically identified by linear segments and a node was identified as an area between segments or areas where segments came together.

A route selection matrix (RSM) was developed to facilitate the evaluation of alternative routes on a segment-by-segment basis. The three alternative routes, A, B, and C, were evaluated and compared, considering geographic features, potential opportunities, technical considerations and professional judgment. In total, 50 consecutively numbered nodes were identified where the segments crossed on the three alternative routes. All segments and nodes were evaluated for PAI and TLE. During the course of the route selection process, several adjustments were made to the original alternative route segments based on additional input provided by the EA study team and various stakeholders (e.g., mining and agricultural interests).

A total of 27 factors were identified to evaluate the alternative routes. These factors included a full range of biophysical, socio-economic, land use, technical and stakeholder considerations. Evaluation criteria were identified for each factor that would facilitate a three-tier (high, medium and low) ranking. Biophysical, socio-economic and land use rankings were based on the degree to which the factor is affected. Technical rankings were based on the degree to which the factor is a constraint while stakeholder rankings were based on the nature and degree of response. A four-tier ranking (very high, high, medium and low) was used for several

biophysical factors where potentially significant implications on protected species and habitats were identified.

Stakeholder factors were applied to the segment rankings after the ratings were determined. Stakeholder response criteria were based on both a numeric count and a general expert assessment of the negative or positive commentary provided for certain segments. General commentary provided (e.g. diagonal routes are not preferred) was considered in the evaluation of relevant segments. The objective of the stakeholder evaluation was to select route segments with the lowest level of concerns or most favoured as expressed by Aboriginal groups, municipal governments, stakeholder groups, and the general public. A three tiered ranking system (fair, good, or poor) was based on numeric counts of comments provided plus expert assessment of feedback from all sources.

Aboriginal Traditional Knowledge (ATK) was considered separately under the various applicable biophysical, socio-economic, land use and stakeholder factors. Where ATK confirmed a scientific finding, no change in ranking was made, but a note to that effect was included for that particular segment. Where ATK provided additional information about any of the 27 factors, it resulted in a higher ranking than what was determined previously.

The conclusion of the route evaluation and analysis process resulted in the selection of a preliminary preferred route (PPR) for the Bipole III transmission line. Following further evaluation by the EA Study Team, the selection of the proposed final preferred route was completed by Manitoba Hydro in January 2011.

Details of Manitoba Hydro's multi-stage approach to identify, analyze and select a preferred transmission line route are found in the report entitled, Bipole III Transmission Line Project: Preferred Route Selection Process prepared M. Falk (Manitoba Hydro, June 2010).

3.2.1 Bipole III Component Evaluation

3.2.1.1 Keewatinoow Converter Station

The Keewatinoow Converter Station is located inside the Churchill Wildlife Management Area (WMA); however, it is also within the designated planning area for Gillam (Map 1 & 3). Manitoba Conservation is currently developing plans for increasing the level of protection in the Churchill WMA but recognizes the hydro-electric activities within the designated Water Power Licence area and upstream to the coast are long established and required to sustain operations in the future. The Water Power Licence area is located adjacent to the south western portion of the WMA and has considerable infrastructure already developed in the area including the Conawapa Road (Map 3). It is understood that Manitoba Conservation will be excluding this

licence area and the new developments from further plans for increased protection within the Churchill WMA or for new protected lands in this area (Suggett, pers. comm., 2010).

3.2.1.2 Northern Electrode Sites

The site selected for the new northern ground electrode associated with the new Keewatinoow Converter Station is shown in Map 3. Initially, there were 22 candidate sites evaluated, the majority of which were located along the north shore of the Nelson River within the Rural Municipal boundary inside the southeast corner of the Churchill WMA. There were 2 proposed candidate sites outside the local municipal boundary one northwest of Keewatinoow, and one northeast upstream on the north shore of the Nelson River within the Churchill WMA. These, however, were not selected for final consideration. The 22 candidate sites were evaluated through a three phase selection process carried out by Teshmont Consultants LP that included: Phase 1, a candidate site search and selection process; Phase 2, a measurement program; and Phase 3, a detailed study and evaluation process. At the five candidate sites displaying best characteristics, there were detailed evaluations through borehole sampling of soils, soil resistivity tests and laboratory tests conducted.

Following this site evaluation process, the site at the Lower Limestone Rapids was selected as the preferred location for the northern DC ground electrode, (NES6), with an alternate preferred site identified to the southeast, (NES7), immediately downstream along the Nelson River (Map 3).

3.2.1.3 Northern Collector Lines

The new 230 kV AC transmission lines serving as collector lines are required to connect the existing Henday Converter Station and Long Spruce Generating Station to the Keewatinoow site near the proposed Conawapa Generating Station (Map 3). This will include one line, approximately 55 km in length, between the 230 kV switchyards at the existing Long Spruce Generating Station and the new Keewatinoow Converter Station; four lines, each approximately 27 km in length, between the 230 kV switchyards at the existing Henday Converter Station and the new station; and extension of the 138 kV line KN36 from Limestone to the proposed Keewatinoow construction power station. For most of the section of these lines northwest of the Nelson River, between Henday and Keewatinoow, all six are proposed to share a common right-of-way, 310 m in width. The lines will be aligned 50 m apart, centre line to centre line, and 30 m from the right-of-way edge. In the shorter section immediately north from Henday, the five collector lines are proposed to share a common 280 m from their terminations in the Henday 230 kV switchyard, with the construction power line centred in a separate 60 m right-of-way to the east (extending from its termination in the Limestone construction power station).

The proposed routes for these collector lines are also within the existing Water Power Licence Area and the development boundary for the town of Gillam. No issues are anticipated to arise from the construction and operation of collector lines from the perspective of protected areas or lands acquired under TLE (Map 4).

3.2.1.4 Riel Converter Station

The Riel Converter Station with its supporting components is a part of the Riel Reliability Improvement initiative project which acquired a license under Manitoba's Environment Act in April 2009. The site is located on 112 hectares of land owned by Manitoba Hydro in an established development area (Map 5). Manitoba Hydro initiated development activity with an earthworks contract in July 2009 and there are no issues anticipated from the perspective of Protected Areas and lands acquired under TLE.

A number of transmission line activities will be associated with the new Riel Converter Station, including the connection of the Bipole III transmission line and cutting and re-terminating other 230 kV transmission line connections at the site. These activities are within existing infrastructure developments and are on lands already owned or controlled by Manitoba Hydro. No issues are anticipated from the perspective of Protected Areas or TLE.

3.2.1.5 Southern Electrode Sites

The ground electrode sites associated with the development of the southern Riel Converter Station are within the Rural Municipality of Springfield. The site selection process was initiated in the early 1980's with identification of 7 sites initially and then expanded by 4 in 2010 for a total of 11 candidate sites evaluated. A rigorous site evaluation process including borehole sampling, soil resistivity tests and laboratory tests were carried-out as part of the on-going Site Selection and Environmental Assessment (SSEA) process. The selected southern ground electrode site (SES1C), south of Hazelridge and adjacent to the west side of PR 303, and the secondary site, northeast of Anola and west of PR 302, are identified in Map 5. The southern converter station and ground electrode and distribution connecting line fall within the Lake Manitoba Plain Ecoregion.

There are no issues anticipated from the perspective of Protected Areas. However, if either selected site were to be located on Crown land, they would be subject to review by the Peguis First Nation. The R.M. of Springfield falls within the Schedule C Notice Area of the Peguis First Nation and all vacant Crown land within this area must be circulated to the Peguis First Nation by Manitoba Conservation as part of the review process (Map 21).

3.2.2 VEC Evaluation – Protected Areas

A valued environmental component (VEC) from a protected areas and TLE perspective was identified as a land area designated for either protection or reserve status. VECs have a unique ecological, social, economic, cultural, aesthetic or other value and are of particular relevance to the environmental assessment for the project. For protected areas, this includes either a designated protected area under legislation such as a park, park reserve, ecological reserve, WMA, forest reserve, community pasture, or an area of special interest (ASI) for future protection. For TLE this includes an area aquired through the TLE process and transferred or identified for transfer from Manitoba to Canada for designation as Reserve Status. In addition there are private purchase lands funded by the TLE process to be incorporated in the First Nation Reserve and Fee Simple lands which are small parcels leased by the province to a First Nation for economic development.

All valued environmental components (VECs) were identified, evaluated, and reported for each segment individually, and ranked for either high, medium or low level of constraint, with high identifying a significant constraint and low identifying no constraint.

According to the level of protection afforded them, protected areas are ranked from high to low as follows (see also Table 2):

- National Parks
- Provincial Parks
- Ecological Reserves
    - Areas of Special Interest
        - Wildlife Management Areas
        - Forest Reserves
            - Crown Lands
            - Community Pastures

Areas under permanent protection (by legislation) include National Parks, Provincial Parks, Park Reserves, Ecological Reserves, Forest Reserves, Wildlife Management Areas, and Private Lands under Conservation Agreements.

Areas of Special Interest are those that are under consideration for permanent protection for their unique ecological features. They may include ecological reserves, wildlife management areas, park reserves, forest reserves, community pastures, and other (usually agricultural) Crown lands.

Potentially, all areas under permanent protection would receive a high constraint ranking, however, no National Parks, Park Reserves , Ecological Reserves, or private conservation lands were found in the direct path of the final preferred route ROW. Wildlife Management Areas and Community Pastures were considered to be moderately affected and rated medium because a transmission line is considered to be compatible with activities such as cultivating hay and pasturing cattle which are allowed in these areas. Forest Reserves were also ranked medium as resource use activities including forest harvesting are allowed.

ASIs were ranked as:

- High - Enduring Features within the area were directly affected by a proposed route segment;
- Medium - the proposed route segment entered an ASI but did not transect an enduring feature, or the ASI was within 1.6 km from a ROW; and
- Low - there was no interaction.

3.2.3 TLE Evaluation – Aboriginal Lands

All Aboriginal lands affected by the proposed route segments were ranked for either high, medium or low level of constraint, high identifying a significant constraint and low identifying no constraint, as follows:

- High – crossed by any segment of the proposed route and the 66-metre ROW;
- Medium - in close proximity (within 1.6 km from ROW) of the proposed route and within the 4.8 km planning corridor; and
- Low - not affected by either the ROW or the 4.8 km planning corridor.

The lands in question are shown in Maps 14 to 21 and Table 2 presents a summary of the ranking.

3.3 EVALUATION OF CONSTRAINTS

3.3.1 Discussion of Protected Areas- Alternative Routes Evaluation

The three alternative route corridors were evaluated through the SSEA process and a route selection matrix was developed to facilitate the assessment of the alternative routes on a segment-by-segment basis, as discussed in Section 3.2.2 (see Table 2). The three alternative routes were evaluated and compared, considering geographic features, potential opportunities,

Table 2: Summary of Ranking for Valued Environmental Components (VECs) for PAI and TLE.

VECs	HIGH		MEDIUM		LOW	
	ROW Traverses	Corridor within 1.6 km	ROW Traverses	Corridor within 1.6 km	ROW Traverses	Corridor within 1.6 km
Parks (National/Provincial)	H	H				
Ecological Reserves	H	H				
Areas Special Interest (ASIs) Manitoba	H			M		
Forest Reserve Land Manitoba			M			L
Wildlife Management Areas (WMA), Manitoba			M			L
Community Pastures PFRA / RMs			M			L
Aboriginal Lands - Treaty Land Entitlement (TLE)	H	H				
Aboriginal Lands from Private Purchase (TLE)	H	H				
Fee Simple Lands Leased to First Nations by Crown	H			M		
Peguis First Nation Notice Area - Traditional Use			M	M		

technical considerations and professional judgment. A detailed report on the Alternative Route evaluation was prepared by Wotton (2010).

The three alternative route corridors, A, B & C within the Bipole III study area are presented in Map 22. All three originate from the proposed northern Keewatinoow Converter Station adjacent to the Nelson River near the proposed Conawapa Generating Station. The alternative routes then travel west, southwest and then south before moving easterly and north to terminate at the Riel Converter Station adjacent to the Red River Floodway east of Winnipeg in the R.M. of Springfield.

The three alternative routes all share a common corridor from Keewatinoow to the northwest arm of Stephens Lake. Alternative route A becomes the northernmost route from this point travelling north of Nelson House and Nisichawayasihk Cree Nation (NCN) reserve lands to a node south of Burntwood Lake northwest of the Town of Snow Lake. Alternative route A then proceeds south along the west side of the Town of Snow Lake, then turning west and crossing south of the Grass River Provincial Park to the east side of Namew Lake near the Manitoba/Saskatchewan border. A subsection route AA2 originating at the node intersection south of Burntwood Lake travels to the southwest crossing along the west side of Grass River Provincial Park, through the community of Cranberry Portage, to a point in the R.M. Kelsey southwest of The Pas.

The southernmost route is alternative route B which travels south of the City of Thompson, and through the east side of the municipal boundary for the Town of Snow Lake. Alternative route B then moves southwest to the south of the community of Cormorant and Clearwater Lake Provincial Park, before reaching The Pas area on the south side of the town limits. A sub-segment of alternative route B is aligned to the east of Pisew Falls Provincial Park and Sasagiu Rapids Provincial Park, north of the community of Wabowden, before rejoining a common node intersection with alternative routes B and C northeast of Tom Lamb Wildlife Management Area.

Alternative route C provides the central route through this area crossing to the south of NCNs reserve land to a common node point with alternative route A west of the community of Snow Lake. Alternative route C then proceeds southerly to join with alternative route B at a common node point northeast of Tom Lamb WMA before continuing in the southwest direction to a common point south of The Pas.

Alternative route A is the most westerly alternative, moving from the RM of Kelsey, southwest of The Pas, traversing through the Porcupine Forest Reserve and along the west side of the Duck Mountains and Riding Mountain National Park before moving southeast to a common node intersection in the Neepawa area. The two routes B and C generally proceed in a southerly direction, south of The Pas, west of Moose Lake (North and South) and Cedar Lake

down between Red Deer Lake and Lake Winnipegosis, then between the Porcupine Forest Reserve and Swan Lake to a common node intersection west of Pine Creek First Nation and northeast of Duck Mountain Provincial Park.

Alternative route B, and its sub-alternatives, continue as the most easterly alternative route, passing between Dauphin Lake and Lake Manitoba, to a common node intersection with alternative routes A and C southwest of Portage la Prairie. Travelling south from the common node intersection northeast of Duck Mountain, alternative route C continues in the central route passing between Dauphin Lake and Riding Mountain National Park, to the common node intersection with alternative route A, southeast of Neepawa. Routes ABC all extend south across the Assiniboine River southwest of Portage la Prairie and the Long Plain/Dakota Plains First Nations.

The three routes then travel in an easterly direction to the south of Winnipeg before turning north and terminating at the Riel Station site east of Winnipeg. In this final approach, alternative route A is the most southern route before crossing the Red River south of Ste. Agathe. Alternative route A then becomes the most easterly route before joining a common route segment with alternative routes A and B and extending west into Riel Station. Alternative route B, and its sub-alternatives, is the most northerly route, crossing the Red River between Glenlea and Ste. Agathe, before proceeding north as the most westerly route to a common route segment into Riel Station. Alternative route C is the central route, also crossing the Red River between Glenlea and Ste. Agathe, and then proceeding north as the central route to the common route segment with alternative routes A and B into Riel Station.

3.3.2 VEC - Protected Areas

The alternative route evaluation found that all three routes could potentially cause conflict with the valued environmental components of the provincial Protected Areas Initiative and the Aboriginal lands acquired through the TLE process and Fee Simple allocation. However, the majority of the high and medium constraint rankings occurred at five large ASIs in northern Manitoba which are still undergoing evaluation by Manitoba Conservation. The individual ASIs (ASI 114 Stephens Lake, ASI 112 Amisk South Addition, ASI 107 Burntwood River, and ASI 91 Tom Lamb WMA and ASI 86 Red Deer WMA) have unique enduring features. It was also recognized that the Protected Areas Initiative is currently working toward final selection and designation of ASI 86 Red Deer WMA along with other proposed lands in the Saskatchewan River Delta (SRD), an addition to Tom Lamb WMA and the proposed Summerberry WMA. Proposals for the initiative were announced in the fall of 2010 and were included in the evaluation of the final preferred route.

Alternative route A was found to be the longest and least direct route at 1,485 km with its route corridor aligned the furthest to the north, to the west and then furthest south at the southern terminus. Route A had six segments and one node ranked with a high level of constraint and twelve segments ranked as medium. The high rankings were assigned in the north in four different VEC areas (ASIs previously noted): ASI 114, Stephens Lake; ASI 112, Amisk South Addition; ASI 107, Burntwood River; and ASI 86, Red Deer WMA; in addition Route A crossed the western edge of two provincial parks, Grass River and Duck Mountain. The medium rankings for route A applied at ASI 187, Churchill Wildlife Management Area (WMA); two in ASI 114, Stephens Lake; ASI 112, Amisk South Addition; ASI 107, Burntwood River; and at the Cormorant, Porcupine and Duck Mountain forest reserves, as well as a community pastures in the RM of Kelsey southwest of The Pas, the Saskeram and the Whitemud Watershed WMA and on land protected by the Manitoba Wildlife Federation.

Alternative route B is the shortest proposed route at approximately 1,290 km and most direct of the three alternatives. In consideration from north to south it appears to be the most southern, eastern and northern of the three alternative routes. However, it offers the least separation distance between Bipole I and II. In particular the route skirts the west side of lakes Winnipegosis and Manitoba avoiding Amisk, Burntwood River ASIs and Porcupine and Duck Mountain Forest Reserves. The evaluation of alternative route B found four segments and one node ranked as high, three segments and a node were located in ASI 114, Stephens Lake and the ROW cut the edge of the Cowan Ecological Reserve. There were fifteen segments and three nodes in route B ranked as medium. One segment is located in ASI 187, Churchill WMA and four segments as well as two nodes in ASI 114, Stephens Lake. One segment (B11) is located in ASI 91 Tom Lamb WMA, Clearwater Lake Provincial Park and Cormorant Forest Reserve, one segment and a node are on the western edge of Steeprock WMA at B18, one at Swan-Pelican Provincial Forest Reserves and three WMAs, Weiden, Westlake and Langruth, and two community pastures, Alonsa and Lakeview.

The alternative route C provides an intermediate option in length at approximately 1,350 km and is a combination of both alternative routes A and B for short segments. In particular, this includes the northern segments from Keewatinoow to Split Lake, west of the Town of Snow Lake, from Dyce Lake southeast of Cormorant and Clearwater lakes to The Pas area, south of The Pas to the Minitonas area, and through the central plains area between Neepawa and a point south of the Assiniboine River and southwest of Portage la Prairie. The proposed route C had four segments ranked high and thirteen segments ranked as medium. Two high segments were found in ASI 114, Stephens Lake and one in ASI 86, Red Deer WMA and one at Cowan Ecological Reserve. There was one segment ranked medium in ASI 187, Churchill WMA; three segments in ASI 114, Stephens Lake; 1 segment northeast of Wuskwatim Lake; one in ASI 91, Tom Lamb WMA; one in Clearwater Lake Provincial Park; one in Cormorant Forest Reserve; one

at Swan-Pelican Provincial Forest and a segment through two Community Pastures, Lenswood and Ethelbert; as well as one through Whitemud Watershed WMA and one through land protected by the Manitoba Wildlife Federation (A17C24).

In summary, for the three alternative routes there were four principal areas of concern with high and medium VEC ranking: ASI 114, Stephens Lake; ASI 112, Amisk South; ASI 107, Burntwood River; and ASI 86, Red Deer Lake. In addition to lands encountered in WMAs, Forest Reserves and Community Pastures between the Keewatinoow Converter station across the north and western portions of the route to the south end of Lake Manitoba. From this point, as the three routes travel in the easterly direction to the south of Winnipeg before turning north and terminating at the Riel Station site, they do not encounter any land constraints from a protected area or TLE perspective. A complete listing and evaluation of the Bipole III alternative routes segments and nodes with the ranking of both VECs (PAI) and TLEs is provided in Table 14 in Appendix 1.

3.3.3 TLE Evaluation – Aboriginal Lands

In the evaluation for Aboriginal lands acquired through Treaty Land Entitlement, private purchase, or special allocation by Crown lease identified as Fee Simple Land, a ranking of high was assigned when the Aboriginal land was crossed by a proposed segment, medium when such land was within close proximity (1.6 km) of a ROW and low when there was no crossing or interaction. A high ranking identifies a significant constraint, medium a moderate level of constraint, and low, no constraint.

In total, there were 27 high ranking interactions among segments and 5 at nodes (Table 3). Proposed alternative route A had 8 segments, route B had 10 segments and 5 nodes and route C had 9 segments ranked high. For medium rankings, there was 1 node identified in route A, 2 segments and 1 node in route B, and 2 segments and 1 node in route C. In Appendix 1, Table 14 presents a summary of the Treaty Land Entitlement rankings along alternative route segments.

The location of the TLE and Fee Simple lands found affected by alternative routes and their buffers is presented in Figure 8. The Fee Simple lands are small parcels that have generally been designated to a First Nation for economic development in their traditional area. These lands are acquired through the Northern Flood Agreement and are under Crown lease. There are 5 Fee Simple sites affected by the proposed alternative routes. The first, an approximately 162 ha parcel at Stephens Lake adjacent to PR 280 leased to Tataskweyak Cree Nation may be affected by segment B4C4 and node B4C4_B5C5_BA2_B. The second, a small 2 acre site located at segment A9, is the Notigi Service Centre site leased by the Nisichawayasihk Cree Nation. In addition, the Route B planning corridor interacts with 3 Fee Simple sites west of Swan Lake. The ROW is adjacent to the west boundary of 1 site, and 2 sites are within the planning corridor

(Map 19). Wuskwi Sipihk First Nation selected these parcels in accordance with the TLE Framework Agreement and they are under Fee Simple title until such time that they are transferred to Canada to be incorporated in the community Reserve (Stevenson, pers. comm., 2011).

Lands that were purchased by First Nations for transfer to Reserve Status as part of the TLE process may be affected at 6 segments of the proposed alternative routes and are ranked as high. There are 17 individual parcels involved, purchased by four First Nations (Table 14). These are Opaskwayak Cree Nation, Sapotaweyak Cree Nation, Wuskwi Sipihk Cree Nation, and Long Plain First Nation.

Peguis First Nation identified, as part of their TLE, an area of land, largely in the Interlake between lakes Winnipeg and Manitoba and extending south of Dugald on the east side of Winnipeg in the R.M. of Springfield, where they are to receive the right of first refusal for any Crown land becoming available for sale or lease. If Crown land is identified and requested for acquisition, the province has agreed to provide the information to Peguis First Nation for their review. Map 21 shows the extent of the area involved. Five segments, A23, B28, B29, C30, C31 and the final three nodes of the alternative routes are ranked medium because of this potential conflict with Peguis First Nation interests. These segments are all located at the southern end of the alternative routes as they move toward the Riel Converter Station.

3.3.4 Summary of Evaluation for Alternative Routes

Route A, the northern and westernmost route, was found to be the least desirable as it had the most rankings of high for VECs, although it was the least with TLE. It was also the longest route at 1,485 km and interacted with high profile VECs including 4 ASIs (Stephens Lake, Amisk South Addition, Burntwood River & Red Deer) as well as Grass River Provincial Park, and 3 provincial forest reserves, Cormorant, Porcupine and Duck Mountain.

Alternative route B was the shortest at 1,290 km and the most direct avoiding the Amisk South Addition and Burntwood River ASIs, the Grass River and Clearwater Lake Provincial parks and was closest to the west side of lakes Manitoba and Winnipegosis. This was a desirable feature as the land in this area is less valuable for large scale agricultural production than farther west. The current common land-use activities of grazing and pasturing on the soils closer to the lakes are more compatible to a transmission line development than those lands further west.

Alternative route C at 1,350 km is an intermediate option in distance and also avoids the ASIs Amisk South Addition, Burntwood River and Red Deer Lake. Route C travels southeast of Cormorant and Clearwater lakes to The Pas area then south of The Pas to the Minitonas area, through the central plains between Neepawa and a point south of the Assiniboine River, and southwest of Portage la Prairie. The route travels east of Riding Mountain Provincial Park and

crosses large tracts of agricultural lands that are more productive than those closer to lakes Winnipegosis and Manitoba.

All three routes were found to have interactions with VECs and each route had its own unique attributes. Route C in one of its configurations was found to pose the least amount of potential conflict with VECs and route A with TLEs but differences are slight, as identified in Table 3 (summarised) and Table 14 (detailed). Interactions with the most important enduring features were also considered significant and given the high ranking from the perspective of PAI and the results found a close comparison between alternative routes. Although main portions of route C are least likely to interfere with VECs, route A avoids most of the potential conflict with TLE lands and overall route B provides the desirable feature of traversing closest to lakes Winnipegosis and Manitoba. There were no constraints from a PAI or TLE perspective found for the 3 alternative routes along the southernmost routing options from south of Portage La Prairie to the Riel terminus.

Table 3: High or medium ranked segments and nodes (in brackets) of the alternative routes

	VEC		TLE	
Route	**High**	**Medium**	**High**	**Medium**
A	6 (1)	12 (0)	8 (0)	0 (1)
B	4 (1)	15 (3)	10(5)	2 (1)
C	4 (0)	13 (0)	9(0)	2(1)
Total	14 (2)	40(3)	27 (5)	4 (3)

In summary, the three alternative routes served to highlight the options available to Manitoba Hydro and bring forward the range of constraints for follow-up analysis required to advance the project to the next stage.

The avoidance of constraint features for the selection of a preferred route was then based on the constraint sensitivity to the project from the perspective of environmental, land-use and jurisdictional considerations as well as system security including separation distances from the existing Bipole I and II and other major transmission corridors. On an ongoing basis, issues and concerns identified during the course of the SSEA research and public consultation process served to refine the constraint features and their evaluation. The final analysis involved an inter-disciplinary assessment by the Environmental Assessment Study Team in addition to technical and cost considerations which were then applied through the SSEA process to identify first a preliminary preferred route and then the final preferred route.

3.4 Discussion of Protected Areas - Final Preferred Route

Manitoba's protected areas network is made up of a collection of Crown lands (or portions thereof) with different land designations including provincial parks, ecological reserves, wildlife management areas, and provincial forests (excluding forest reserves). In addition, Community Pastures administered by the federal Agriculture Environment Services Branch (AESB) of Agriculture and Agri-Food Canada, (formerly the Prairie Farm Rural Administration (PFRA) of Agriculture Canada), are also included for southern prairie ecosystems. The PAI includes land, freshwater or marine areas and where designated by legislation, the lands prohibit logging, mining, hydroelectric development and oil and gas development. The selection process for Areas of Special Interest (ASIs) to establish new protected areas may prohibit activities that significantly and adversely affect habitat (i.e. intensive agriculture, urban or major recreational developments). However, activities such as hunting, trapping and fishing as well as activities associated with First Nation rights and agreements are permissible within protected areas (Manitoba Conservation 2011).

Manitoba's Network of Protected Areas is founded on a policy established from the Natural Lands and Special Places Strategy of the early 1990's which set out Manitoba's commitment to Canada's Endangered Spaces Campaign of the World Wildlife Fund. The objective is to permanently protect an adequate sample of all the province's diverse landscapes that represent the biodiversity in each of Manitoba's Natural Regions. The network of protected areas is selected based on enduring features identified through soils and geological landforms under the assumption that biological diversity is connected to the landscape (Manitoba Conservation website 2010). The Natural Regions of Manitoba, differentiated from one another by their geographic, climatic and vegetation features, were considered as Ecozones and Ecoregions, as presented in Figure 1. These are as follows:

1 - Northern Transition Forest

- 1a - Selwyn Lake Upland
- 1b - Kazan River Upland

2 - Arctic Tundra

- 2a - Maguse River Upland
- 2b - Coastal Hudson Bay Lowland

3 - Hudson Bay Lowlands

4 - Precambrian Boreal Forest

- 4a - Churchill River Upland

4b - Hayes River Upland

4c - Lac Seul Upland

5 - Manitoba Lowlands

5a - Mid Boreal Lowland

5b - Interlake Plain

5c - Lake of the Woods

6 - Aspen/Oak Parkland

7 - Western Upland

8 - Souris Till Plain

9 - Tall Grass Prairie

10 - Turtle Mountain

11 - Pembina/Tiger Hills

12 - Assiniboine Delta

The final preferred route travels through each of these natural regions except the Coastal Hudson Bay Lowland, Southwest Manitoba Uplands including Turtle Mountain and Pembina/Tiger Hills, as well as the Lac Seul Uplands and Lake of the Woods (Map 2).

The enduring features were initially evaluated and selected using best available data at the time within a Geographic Information Systems (GIS) and are captured within ASIs. Enduring feature analysis through GIS provides an initial design for a proposed ASI which is selected to maximize the area's ecological integrity, within the existing resource constraints (Beaubien, pers. comm., 2009). Representation is the underlying principle in designing Manitoba's network of protected areas. "Representativeness" is a measure of the degree to which an individual protected area or the network portrays the enduring features, and by inference, the biological diversity of the natural regions (Figure 1). Data on which these map presentations are based were reviewed and analysed to select VECs/ASIs from the Protected Areas Initiative's perspective.

The classification system for describing the frequency or type of occurrence for each enduring feature in a natural region, developed by Manitoba Conservation, provides a 3-tier ranking of Common, Rare and Single which are considered the Land Unit Occurrence Descriptors (Roberge, pers. comm., 2009). To determine the classification of an enduring feature within a natural region the number of discrete units within the enduring feature must be assessed and evaluated for how the units are clustered throughout the natural region, as well as the total area covered by the units. The criteria for classifying land unit occurrence are as follows:

- **Common**: five or more discrete units spread over multiple geographic locations within a natural region or comprising a large portion of the natural region.
- **Rare**: two to four discrete units concentrated in one or two localized geographic areas within a natural region. Restricted enduring features refers to rare features as well.
- **Single**: one discrete unit within a natural region; may cover a large or small portion of the natural region.

Representation is the measure of the degree to which a protected area or system of protected areas portrays and preserves biological and physiographic diversity of the whole within a Natural Region. The rationale is that by protecting examples of the full range of environmental gradients provided by enduring features the full spectrum of biological community variation will be represented (Roberge, pers. comm., 2009). The criteria for classifying enduring feature representation are as follows:

- **Adequate:** includes examples of all characteristic regional enduring features; is self-sustaining; is proportionally and spatially representative; and provides for genetic diversity by including protected lands in widely separated areas within large natural regions, especially those spanning several degrees of latitude.
- **Moderate:** significant portions of an enduring feature are captured within a protected area but there is some doubt as to its ability to maintain ecological integrity over time.
- **Partial:** minor parts of an enduring feature are captured within a protected area.
- **Inadequate:** an enduring feature is not captured within a protected area or the protected areas are too small to maintain the ecological integrity of the feature.

Assessing gaps in representation within a natural region requires identification of all enduring features that characterize the region and determining the extent to which they are already captured in existing protected areas. The occurrence of enduring features directs representation classification within a natural region by determining the spatial area that must be captured, the challenge to achieve adequate capture, and is the focus of initial capture efforts (Beaubien, pers. comm., 2009).

Ecological integrity is defined by the PAI as the condition where the structure and function of an ecosystem are unimpaired by human activity and are likely to persist. An ecosystem is considered to have integrity when it is deemed characteristic for its natural region, including the composition and abundance of native species and biological communities, rates of change and supporting processes.

The flexibility to design ASI boundaries to preserve ecological integrity and achieve adequate representation can be limited if an ecologically unique enduring feature is single or restricted (rare) or small in size (less than 800 ha). Representation is designated moderate if there is not enough protected land surrounding the unique feature to allow for recovery following landscape disturbances. The Protected Areas Initiative of MB Conservation considers the minimum area necessary for the maintenance of plant and small animal communities to be 1,000 ha (Mb Conservation website, 2010).

3.4.1 Area of Special Interest Stephens Lake

ASI 114 is located immediately north of Stephens Lake, north of the town of Gillam and the traditional territory of the Fox Lake First Nation (Maps 3, 6, and 15). It is a large area representing the confluence of four Natural Regions (N.R.) as identified by MB Conservation's Protected Areas Initiative (Figure 2). These are

- Natural Region #1a, Selwyn Lake Upland of the Northern Transition Forest
- N.R. #3, Hudson Bay Lowlands
- N.R. #4a, Churchill River Uplands and
- N.R.#4b, Hayes River Uplands of the Precambrian Boreal Forest (Map 6).

The area is unique in that it captures the representation of twelve Enduring Features: DB/M, DB/023, ES, GD/M/M, GD/023/G, GD/023/M, ND/M, ND/023, ND/023/B, ND/023/G, T1/M, and T1/023. Four of these Enduring Features are rare and one is a single occurrence. The enduring features found above are described in Landscape Units which identify the characteristics of Surficial Geological Deposits, and Soil Type or Soil Landscape as well as the locally significant terrain features that may modify the landscape unit.

Table 4 presents the ranking of the final preferred route segments for both ASI 187 Churchill River WMA and for ASI 114, Stephens Lake.

Table 4: Bipole III Areas of Special Interest 187, Churchill WMA and 114, Stephens Lake

Segment	VEC Areas of Special Interest	PAI Rank
S1	ASI 187 Churchill WMA	M
S1	Enduring Features of 4 Natural Regions (1a,3,4a,4b) Four features are Rare and one is a Single Occurrence	H
S2	ASI 114, Stephens Lake	M

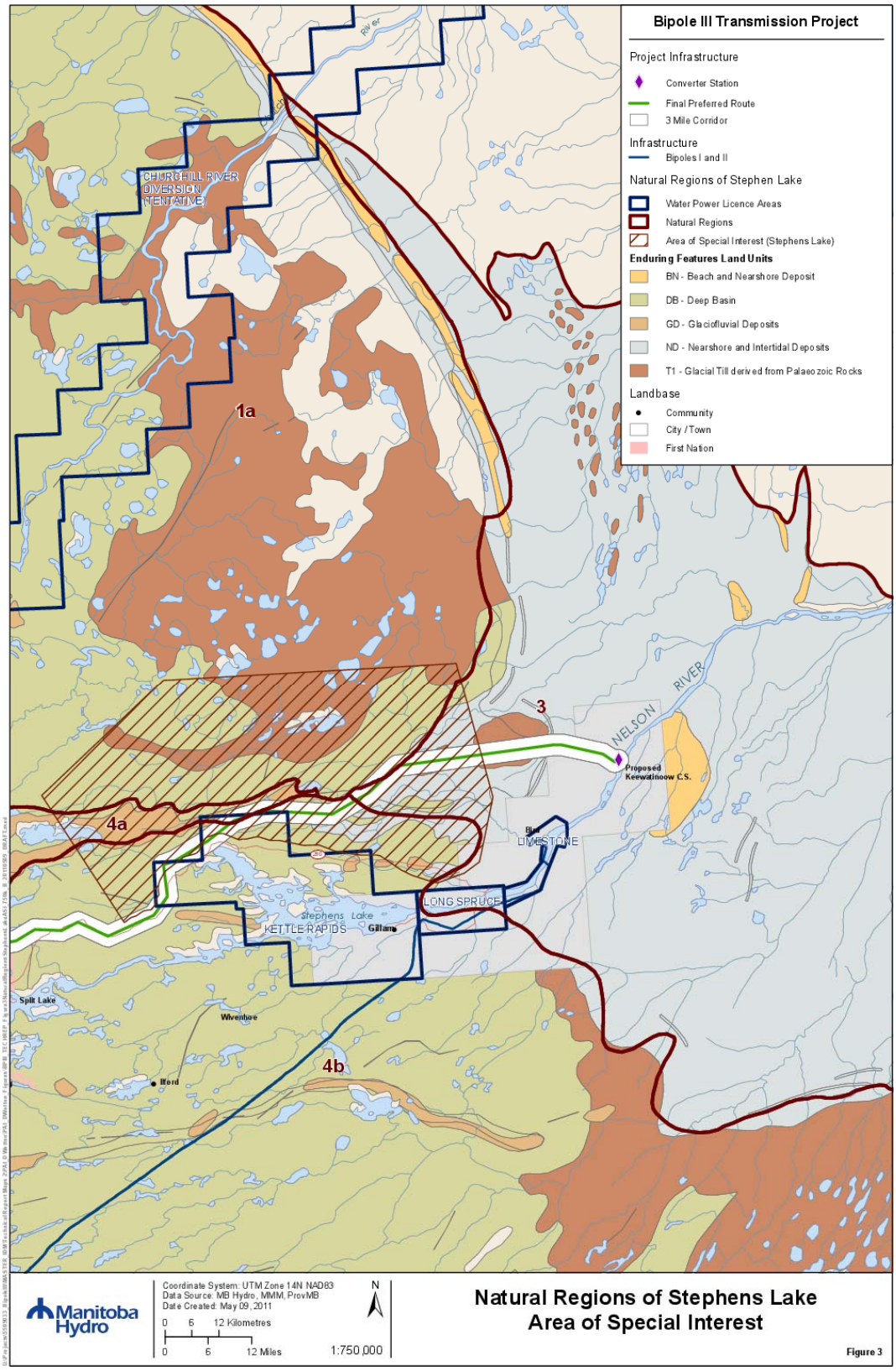


Figure 2: The Four Natural Regions Crossed by the Route Corridor at ASI Stephens Lake

A Medium ranking was assigned to S1 which traverses west from the Northern Converter Station through the southern tip of ASI 187, Churchill WMA to Morrison Creek between the Weir River watershed on the north side and Limestone River watershed on south side. The Churchill WMA is a designated area for protection under *The Wildlife Act*. A Wildlife Management Area (WMA) is not protected to the same high standard as an ASI designated for permanent protection under *The Provincial Parks Act* which, once completed, does not allow any activity considered as intrusive to the natural ecosystem, such as mining, forestry or hydro developments (Beaubien, pers. comm., 2009).

The province has selected ASI 114 Stephens Lake to be considered for permanent protection under *The Provincial Parks Act.* As a result, high rankings were assigned to proposed route segments of the final preferred route through those areas where an enduring feature is affected, and medium where no enduring features are involved. Where the route does not enter an ASI but runs within 1.6 km distance of an ASI, especially an enduring feature, a medium ranking was assigned.

Table 5 presents a summary of the enduring features found in ASI 114, Stephens Lake. This ASI has been selected for the unique characteristic of representing the confluence of four Natural Regions as previously identified (1a, 3, 4a, and 4b) and spans the transition from boreal forest to tundra. MB Conservation's position is that the transition zone contains species from both zone types that lead to greater diversity of species and higher biodiversity of the ecosystem. Twenty-one individual Enduring Features are located in the 4 Natural Regions listed in Table 5. An important factor is that five of the enduring features in ASI 114, Stephens Lake are rare and one is a single occurrence, and none of them has been adequately captured under the PAI to date.

The segments of the final preferred route ranked high and medium may directly affect enduring features. In Natural Region 1a the Enduring Feature GD/023/M is noted as rare and in Natural Region 3 DB/M, a Deep Basin with Eutric Brunisol soils and an Esker are rare. These features are particularly vulnerable to disturbance. Also in Natural Region 4b, Glacial Fluvial Deposits of two categories (GD/023/G & GD/023/M) are identified as rare. In addition, a Near Shore and Intertidal Deposit (ND/023/G) is designated as a single occurrence which identifies a feature of the highest ecological significance because, if directly or indirectly disturbed, it may be lost forever. Direct includes disturbance to the enduring feature during construction, indirect may involve disturbing a water course or other feature in the vicinity that would cause a change in the ecosystem over time.

However, it is recognized that the environmental assessment process has resulted in the acquisition of current detailed information on the bio-physical characteristics of the landscape within the Bipole III study area, including new photography, updated remote sensing data, and

on-site field information. Stantec provided this new and updated information which permits a more accurate identification of location and characterization of enduring features than what was previously available in the scientific information base of Manitoba Conservation (from which the current high and medium rankings were determined). Further investigation and evaluation of the specific enduring features encountered along the final preferred route segments may provide a more acceptable route through the Stephens Lake ASI, one that would cause minimal disturbance to the rare and single-occurrence enduring features, or avoid them entirely. This will be addressed during final planning stages of the preferred route and will require special consideration during construction and operation of the transmission line.

Table 5: Summary of Enduring Feature Characteristics in ASI 114 Stephens Lake

Natural Region	Enduring Feature	Surficial Geological Deposits	Soil Landscape	Terrain Features	Occurrence	PAI / GAP 2009 Representation*
1a	DB/023	Deep Basin	Organic Cryosol (mesic woody forest)		Common	Adequate
	ES	Esker			Common	Moderate
	GD/023/M	Glaciofluvial Deposits	Organic Cryosol (mesic woody forest)	Moraine	Rare	Not Captured
	ND/023	Near Shore & Intertidal Deposits	Organic Cryosol (mesic woody forest)		Common	Not Captured
	T1/023	Glacial Till derived from Palaeozoic Rocks	Organic Cryosol (mesic woody forest)		Common	Partially Captured
3	DB/M	Deep Basin	Eutric Brunisol		Rare	Not Captured
	ES	Esker			Rare	Not Captured
	DB/023	Deep Basin	Organic Cryosol (mesic woody forest)		Common	Not Captured
	ND/M	Near Shore & Intertidal Deposits	Eutric Brunisol		Common	Not Captured

Natural Region	Enduring Feature	Surficial Geological Deposits	Soil Landscape	Terrain Features	Occurrence	PAI / GAP 2009 Representation*
	ND/023	Near Shore & Intertidal Deposits	Organic Cryosol (mesic woody forest)		Common	Partially Captured
	ND/023/B	Near Shore & Intertidal Deposits	Organic Cryosol (mesic woody forest)	Beach Ridge	Common	Not Captured
	T1/M	Near Shore & Intertidal Deposits	Eutric Brunisol		Common	Not Captured
4a	DB/M	Deep Basin	Eutric Brunisol		Common	Partially Captured
	ES	Esker			Common	Partially Captured
	GD/M/M	Glaciofluvial Deposits	Eutric Brunisol	Moraine	Common	Moderate
4b	ND/023/G	Near Shore & Intertidal Deposits	Organic Cryosol (mesic woody forest)	Glacial Spillway	Single	Not Captured
	GD/023/G	Glaciofluvial Deposits	Organic Cryosol (mesic woody forest)	Glacial Spillway	Rare	Not Captured
	GD/023/M	Glaciofluvial Deposits	Organic Cryosol (mesic woody forest)	Moraine	Rare	Not Captured
	DB/023	Deep Basin	Organic Cryosol (mesic woody forest)		Common	Not Captured
	ES	Esker			Common	Not Captured
	ND/023	Near Shore & Intertidal Deposits	Organic Cryosol (mesic woody forest)		Common	Not Captured

*Within the Natural Region

The selection of the final preferred route through Stephens Lake ASI for approximately 76 km was made following extensive investigations and evaluations of alternative route options west of the Keewatinoow Converter Station. The analyses included soils and terrain analysis from a technical perspective, biophysical evaluations including mammals, birds, terrestrial invertebrates, amphibians, vegetation, aquatics, and fisheries, and socio-economic considerations. The terrain characteristics were examined through numerous flights over the area, new satellite imagery, new aerial photography and field studies.

Figures 3 and 4 show the specific locations and physical characteristics of the enduring features of the four natural areas outlined in Figure 2, based on recent information provided by Stantec. Both the previous mapping information from Manitoba Conservation and the updated mapping by Stantec are identified. A summary of this updated soils and terrain information follows in Table 6 and is provided in more detail in the Stantec Technical Report (Stantec, 2011).

The summary of enduring feature characteristics presented in Table 5 for Stephens Lake identified one “single” and five “rare” features with potential to interact with the preferred route. The updated information on the ASI from Stantec presented in Table 6 identifies one single and four rare enduring features, of which only two rare features potentially interact with the ROW of the proposed preferred route. These enduring features are:

- DB/M Deep Basin / Eutric Brunisol Morraine was intersected for 36 ha (2%) of the 1,657 ha rare occurrence PAI enduring feature that occurs in the ASI east-northeast of Little Limestone Lake. Stantec conducted detailed soil and terrain assessments of the area and identified a total of 13,299 ha of similar features within and outside the ASI, (9,476 ha, 56 ha and 2,110 ha northeast and southeast + 1,657 ha). It is estimated that approximately 13,263 ha (13,299 – 36) or 99.7 % of similar enduring features in the area would not be affected by the project footprint and would be potentially available for protection.

- GD/023/M Glaciofluvial Deposits/Organic Cryosol (mesic woody forest) Moraine located southwest of Little Limestone Lake was intersected by the ROW for 42 ha (3%) of the 1,441 (1,373 + 42) ha rare occurrence PAI enduring feature with the majority found in the planning corridor. Stantec identified a total of 4,653 ha with similar features to GD/023/M within and outside the ASI. It is estimated that approximately 4,611 ha (4,653 – 42) or 99 % of the similar enduring features in the area would not be affected by the project footprint and would be potentially available for protection.

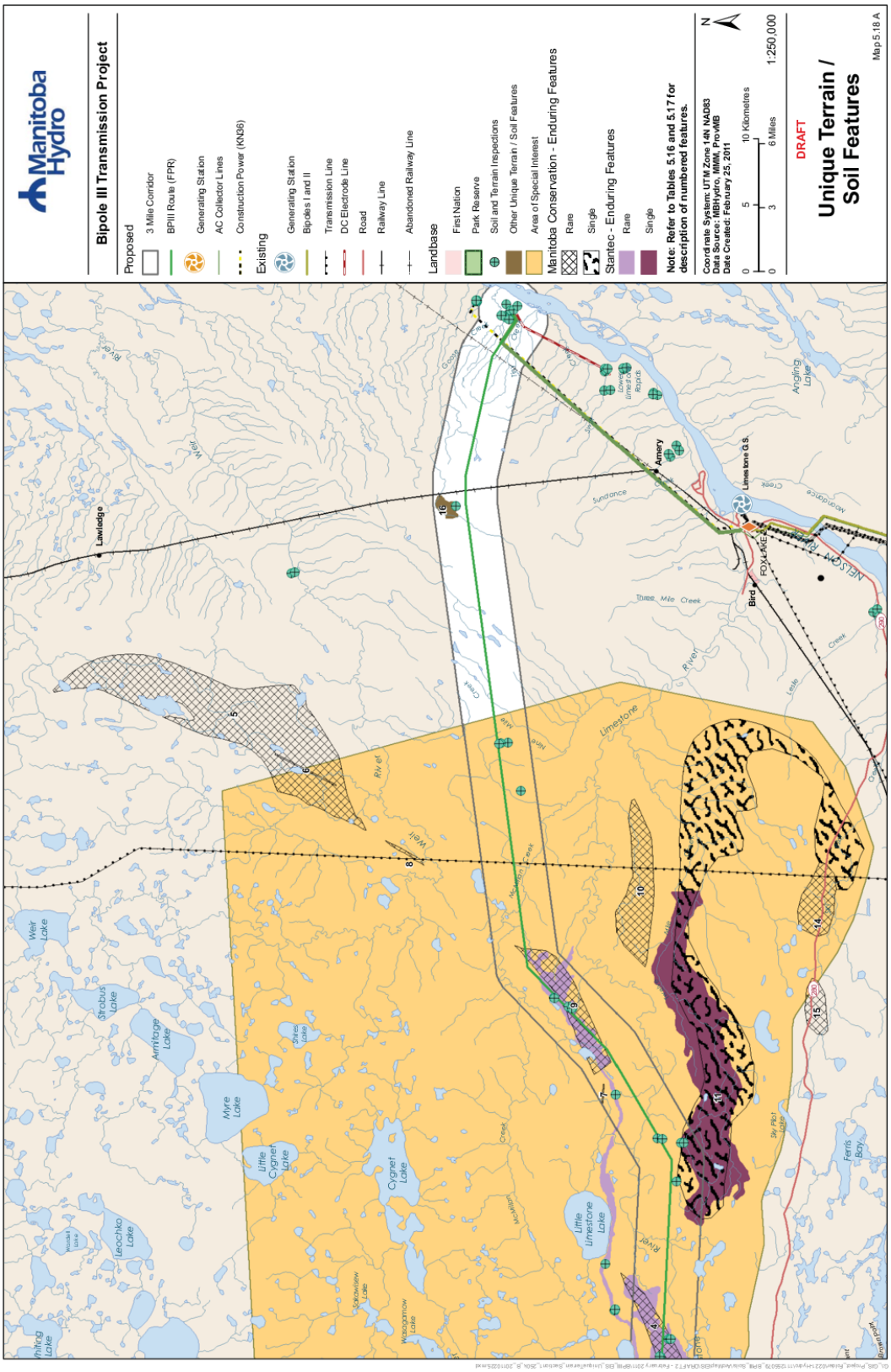


Figure 3: Enduring Features, Stephens Lake ASI (Stantec Draft) (Eastern part)

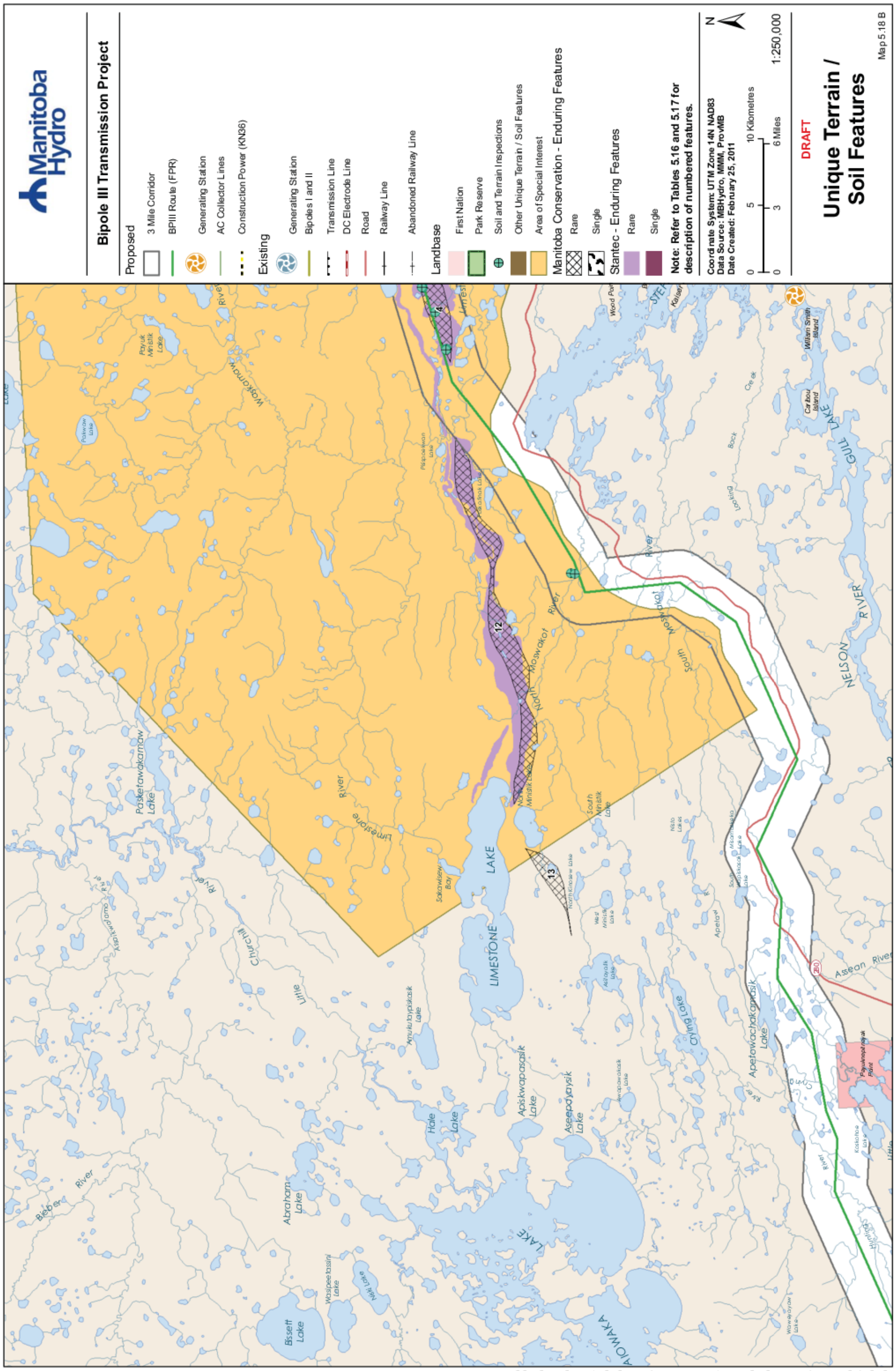


Figure 4: Enduring Features, Stephens Lake ASI (Stantec Draft) (Western part)

Table 6: Summary of Bipole III Interaction with Enduring Feature at Stephens Lake ASI 114

Natural Region	Occurrence	Enduring Feature	Surficial Geological Deposits Soil Landscape	Area / (%) 3-mile Corridor	Area / (%) 66-metre ROW	Similar Features within & outside ASI	Total Area of Similar Features not affected by Bipole Project
3	Rare	DB/M Moraine	Deep Basin /Eutric Brunisol	1,657 ha (100%)	36 ha (2.17%)	13299 ha (56ha, 9476 ha & 2,110 ha NE and SE + 1657)	13,263 ha (99.7%)
	Rare	Esker		580 ha (31%)		1900 ha Northeast	1,320 ha (69%)
4b	Rare	GD/023/G Glacial Spillway	Glaciofluvial Deposits Organic Crysol (mesic woody forest)	1 ha (0.1%)			2,755 ha (99.9%)
	Rare	GD/023/M Moraine	Glaciofluvial Deposits Organic Crysol (mesic woody forest)	1,374 ha (95.3%)	42 ha (2.88%)	4653 ha (	4,611 ha (99.1%
	Single	ND/023/G Glacial Spillway	Near Shore & Intertidal Deposits Organic Cryosol (mesic woody forest)	952 ha (6.3%)			15,130 ha (93.7%)

The final preferred route in ASI Stephens Lake crosses between the Weir and Limestone river watersheds in the eastern portion of the ASI which results in a minimum number of stream crossings and limits the crossings to smaller streams in the headwaters. The route travels southeast of Little Limestone Lake west and southwest through the southern portion of the ASI. It minimizes effects on the rare enduring features DB/M and GD/023/M while avoiding the Esker to the north and the single feature ND/023/G to the south. The recent imagery

information noted that approximately 75% of the preferred route within the ASI is located within recent burn areas.

In summary, the rationale for the final preferred route travelling through the ASI was based on detailed evaluation of terrain and bio-physical characteristics. The route was selected to minimize the number of stream crossings and minimize effects on enduring features, while maintaining minimum requirements for stability of the tower structures. In addition, for reliability purposes the final preferred route was also selected to meet separation distances between the Henday and Radisson converter stations as well as Bipole I and II.

3.4.1 Provincial Parks & Ecological Reserves

In Manitoba provincial parks are governed by The *Provincial Parks Act*. A System Plan was established for the administration and management of Manitoba's Provincial Parks. The parks are designated into five categories: heritage parks, natural parks, recreational parks and wilderness parks as well as park reserves. The system plan identifies the boundaries, classifications and land use categories of every provincial park and park reserve in Manitoba. It also identifies provincial park and park reserve lands that contribute to Manitoba's network of protected areas. The system plan is updated when new provincial parks or park reserves are established and when there are regulatory amendments to boundaries, classifications and land use categories. Park Reserves are created to identify candidate sites for expansion.

Provincial parks and ecological reserves are designated under provincial legislation and are protected at the highest level including the prohibition of forestry, mining and hydro development. The 66 metre Right of Way (ROW) for the final preferred route does not interact with any provincial park, however the 4.8 km (3 mile) planning corridor falls within the boundaries of 2 parks: Clearwater and Red Deer River provincial parks and is in close proximity to Overflowing River Provincial Park.

3.4.2.1 Clearwater Lake Provincial Park

Clearwater Lake Provincial Park (Map 7) is a large park (593 sq. km) east of The Pas Airport which has a portion of its southern boundary within the 4.8 km planning corridor for Bipole III. This area is Township 57 Range 24 WPM, Township 58 Range 24 WPM, and Township 58 Range 23 WPM. The Parks and Natural Areas branch raised concern as there is existing infrastructure within this area of the park including a Boy Scout Camp, P.R. 287, as well as several new cottages just outside the corridor on the lakeshore. However, in this area, adjacent to the southwest corner of Clearwater Lake Provincial Park, for approximately 6 km the final preferred route is located on the eastern edge of existing right-of ways for the Wuskwatim transmission line and the railway which lie in-between Bipole III and the park. The final preferred route

location should result in no additional change to the approved land use in the area and should not have any additional effect on Clearwater Provincial Park.

3.4.2.2 Red Deer River Provincial Park

Red Deer River Provincial Park (Map 8) is a small park 0.996 hectares in size located near the mouth of the Red Deer River where it flows into Dawson Bay on the west shore of Lake Winnipegosis. The park provides picnic and day use facilities and functions as a highway rest stop (MB Conservation website 2010). The park is located within the 4.8 km wide planning corridor in Township 45 Range 25 WPM. It is within the final preferred route corridor and may be visible for approximately 1 km. The Parks and Natural Areas branch has requested that no towers be placed within the park which should be accommodated. The tower spans have flexibility to avoid such constraints, as the average span of 480 m can vary from 420 to 550 m and the ROW is west of the park. This will be addressed during the final planning stages.

3.4.2.3 Overflowing River Provincial Park

The Overflowing River Provincial Park is located on the northeast shore of Overflow Bay on Lake Winnipegosis along the Overflowing River (Figure 5). The Bipole III planning corridor is close to the western edge of the park, however, the 66 m right-of-way will be west of the park boundary by about 2 km. There is also infrastructure from an existing transmission line and PTH #10 between the ROW and the park (Map 8). There should be no effect from either construction and/or maintenance activities of the Bipole III transmission line on the Overflowing River Provincial Park.

3.4.2.4 Lake Winnipegosis Salt Flats Ecological Reserve Addition

Ecological Reserves are created to preserve unique and rare examples of plants, animals, and geological features. Since 1987, all ecological reserves, ecologically significant areas and other natural and cultural heritage sites have been brought under the umbrella of the Provincial Government's Special Places Strategy and Protected Areas Initiatives. Ecological reserves are established under *The Ecological Reserves Act* and are permanently protected. Areas that contain rare or sensitive habitats can be set aside as ecological reserves with accompanying restrictions on uses and activities to ensure their enjoyment by future generations. Designated reserves are owned by the Province of Manitoba and managed by Manitoba Conservation. There are seven ecological reserves in the study area consisting of 3,642 hectares of protected land and the final preferred route avoids all sites. However, the ROW is in close vicinity to the proposed addition to the Lake Winnipegosis Salt Flats Ecological Reserve. In addition, the Cowan Ecological Reserve is in the vicinity of the planning corridor.

The Lake Winnipegosis Ecological Reserve is located east of PTH #10 on the southwest shore of Overflow Bay in Lake Winnipegosis (Figure 5). Manitoba Conservation has announced plans to develop a substantial addition to this ecological reserve to the north, south and west. The Bipole III planning corridor lies within 100 m of the Lake Winnipegosis Salt Flats Ecological Reserve Addition for approximately 2 km. A sensitive salt water spring that feeds the salt flats located within the corridor has also been identified as of concern to the Parks and Natural Areas Branch of Manitoba Conservation (Elliott, 2010). It is not anticipated that Bipole III will affect the ecological reserve, as the transmission line only occupies a 66 m ROW within the 4.8 km planning corridor and there should be suitable flexibility within the tower spans to avoid the salt water spring as well as the proposed addition to the ecological reserve. There is also infrastructure for an existing transmission line and PTH #10 between the preliminary preferred route and the west boundary of the ecological reserve which should buffer any effects of construction or maintenance activities of the transmission line on the ecological reserve.

3.4.2.5 Cowan Bog Ecological Reserve

The Cowan Bog Ecological Reserve is located northeast of the town of Cowan in Township 36 Range 23 WPM. The ecological reserve protects a wetland complex in the area. It is recognized that the 4.8 km planning corridor for the preliminary preferred route lies just outside the ecological reserve. There is existing infrastructure and right-of-ways for PTH #10 and the railway to the immediate east of the reserve. The final preferred route is located east of PTH #10 and the transmission line's 66 metre ROW should not influence the watershed. The road and railway should buffer any effects of construction and potential alterations to water regimes that influence the ecological reserve.

3.4.3 Wildlife Management Areas

The Wildlife Act provides for the designation of Crown lands as Wildlife Management Areas (WMA's) for management, conservation and enhancement of the wildlife resource of the province. The first WMA was established in 1961 and since then almost 2 million hectares (5 million acres) of wildlife habitat have received protection throughout the province. Wildlife Management Areas exist for the benefit of wildlife and for the enjoyment of people. They play an important role in biodiversity conservation and provide for a variety of wildlife-related forms of recreation. Hunting and trapping is generally permitted in WMA's, but these activities may be prohibited or restricted in a few areas, including the use of vehicles, off-road vehicles, watercraft, power boats, or airboats. Each WMA has its own set of restrictions in place to protect the integrity of the area (Manitoba Conservation website 2010).

There are 21 WMAs located within the initial study area, and 16 of the WMAs contribute in whole or in part to Manitoba's protected areas network (i.e., are permanently protected under

The Wildlife Act) prohibiting resource extraction activities. Two WMAs are permanently protected except for petroleum activities (i.e., Upper Assiniboine and Parklands). In addition, there are seven WMAs that are candidates for protection as part of the protected areas network while five WMAs that are not protected as part of the protected areas network. The final preferred route planning corridor was successful in avoiding all but 9 of the 21 WMAs and the ROW interacted with only 4, Churchill, Tom Lamb, Summerberry, and Red Deer WMAs (Beaubien, pers. comm., 2011).

3.4.3.1 Churchill WMA

The first segment of the final preferred route begins at the Northern Converter Station within the southern edge of ASI 187, Churchill WMA (Map 3) and runs west, leaving the WMA at the Hudson Bay railway line. The Churchill WMA is the largest in the province and is important for polar bear denning and caribou as well as wildlife viewing and research. Its landscape of open spruce with tundra ponds, marshes, fens, and bogs includes arctic, subarctic and boreal species of plants and animals. The segment S1 was ranked medium for being located in the Churchill WMA for approximately 14 km.

Alternative routing options had been investigated both north and south of the current location but were deemed not suitable due to the terrain and vast wetlands in the area. The final preferred route was selected to minimize stream crossings and to provide the most suitable soils and terrain for transmission tower footings. The route is generally located between the Weir River (north) and the Limestone River (south) watersheds and minimizes the number of stream crossings and size of streams crossed by selecting crossings at the headwaters. The route was also selected for reliability purposes in meeting separation distances between Henday and Kelsey Converter Stations as well as Bipoles I & II.

3.4.3.2 Tom Lamb WMA Addition and Summerberry WMA

The final preferred route follows the northwest edge of ASI 91 Tom Lamb WMA. However, the segment largely follows a corridor used for an existing transmission line and the railway and is not expected to be controversial with the PAI or environmental interest groups. The Tom Lamb WMA includes a large portion of the Saskatchewan River Delta. The area is flat, with several limestone ridges and river levees providing relief. Aspen, jack pine, and black spruce grow on the ridges, poplar, willow, Manitoba maple, and green ash are associated with the levees. It is a major breeding area for waterfowl and provides habitat for furbearers, moose, wolves and black bears. Bald eagles use the WMA for feeding, staging, and occasionally nesting.

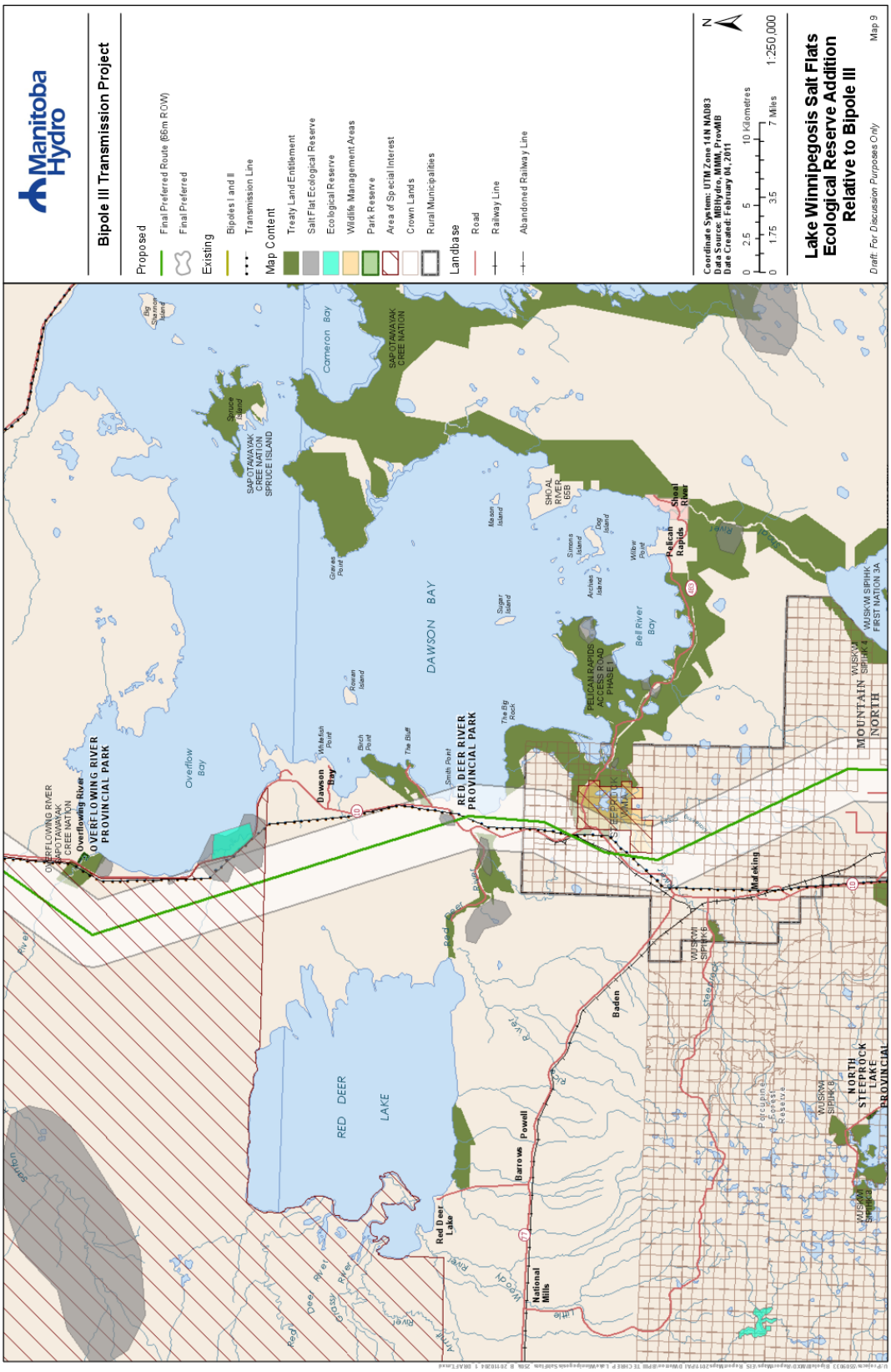


Figure 5: Lake Winnipegosis Salt Flats Ecological Reserve Addition

There are two rare and one single occurrence enduring features intersected by the 4.8 km planning corridor within the Tom Lamb WMA, Tom Lamb Addition and Summerberry Proposed WMA. Stantec in their evaluation of Unique Terrain/Soil features of the Bipole III Transmission project have identified the following characteristics of these features (Figure 6).

- An Alluvial Deposit/Organic Mesisol (mesic sedge) unit was identified as a single occurrence PAI enduring feature occupying a total of 36,396 ha of land within ASI 91, approximately 67 ha or 0.2% is intersected by the ROW and 4,738 ha or 13% of which occurs within the planning corridor. It is estimated that the portion of this rare enduring feature within and outside the ASI that would not be affected by the ROW is 36,299 ha (36,396 – 67) or 99.8%.
- An Alluvial Deposit / Organic Mesisol (mesic woody forest) unit was identified as a rare occurrence PAI enduring feature occupying a total of 288 ha of land within ASI 91, 126 ha or 44% of which occurs within the planning corridor, none of which is in the ROW.
- An Alluvial Deposit / Organic Mesisol (mesic woody forest) unit was identified as a rare occurrence PAI enduring feature occupying a total of 2,485 ha of land, approximately 16 ha or 0.6% is intersected by the ROW and91, 773 ha or 31% of which occurs within the study corridor. It is estimated that the representation or total proportion of this enduring feature type that is not affected by the ROW is 2,757 (2,485-16 + 288) or 99.4%.

The Protected Areas Initiative of Manitoba Conservation is currently leading a process known as the Saskatchewan River Delta Protected Areas Planning Exercise. The PAI have established an Integrated Science Advisory Committee (ISAC) with representatives from the local Aboriginal community, Ducks Unlimited who cooperate in managing the marshlands are included in the Tom Lamb WMA, and local resource managers. In September 2010, Manitoba Conservation announced plans to increase the protection in this area by a proposed addition to the Tom Lamb WMA and by creating the new Summerberry WMA, a portion of which will be protected and a portion which will not be protected (Map 9). The final preferred route travels through the lands identified under this new initiative following an existing transmission line ROW. The route traverses approximately 50 km in the Tom Lamb WMA and approximately 17 km in the protected portion of the proposed Summerberry WMA and 29.3 km in the unprotected portion. It is anticipated that the Bipole III line will result in minimal, if any loss of wildlife habitat in the identified area of expansion.

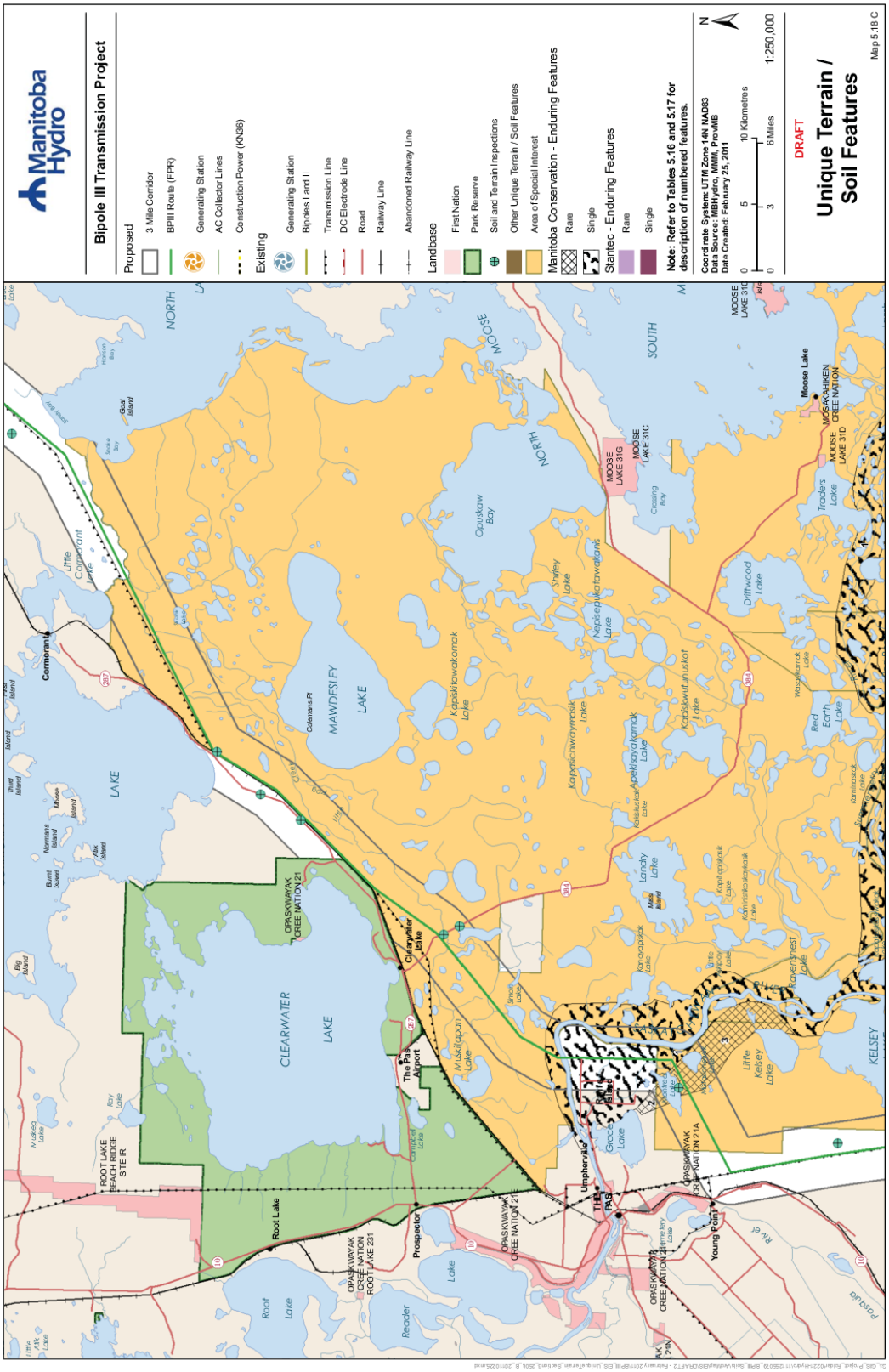


Figure 6: Unique Terrain / Soil features of Tom Lamb Addition and Summerberry WMA (Stantec)

3.4.3.3 Red Deer WMA

The Red Deer Wildlife Management Area is a newly proposed WMA of 163,000 hectares located north of Red Deer Lake approximately 30 km south of The Pas (Map 10). This proposed WMA encompasses a vast, diverse landscape with representative samples of the five major wetland types that occur in Manitoba: bogs, fens, swamps, freshwater and salt marshes, and extensive areas of open water. The proposed WMA is approximately 90 % wetland and water. Over half the area is considered "peatland", made up of flat bogs, horizontal and patterned fens which store large amounts of carbon. The proposed WMA area is used extensively by The Bog Range woodland caribou herd. They are listed under the federal *Species at Risk Act* (SARA), and considered threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The shores of Red Deer Lake provide suitable habitat for the piping plover, listed as endangered in regulations made under *The Endangered Species Act*. This species is also listed under SARA and considered threatened by COSEWIC (Mb Conservation website 2010).

Remote sensing and field work by Stantec identified the unique terrain/soil feature of salt flats within the proposed Red Deer WMA. These enduring features developed from salt springs and occupy a total area of 354 ha in the proposed WMA. There were 59 ha found within the 4.8 km corridor, which represents 16.3 % of total salt flats identified in the WMA. However there were no salt flats identified within the 66 metre ROW. For further information see Stantec's Bipole III Technical Report 2011

The final preferred route will follow existing infrastructure through the majority of this newly proposed WMA for approximately 27 km. Detailed evaluation of options for the final preferred route included a route in close proximity to PTH# 10; however, this route and other options were deemed not feasible. In this particular section, the routing alignment is constrained by First Nation lands at both the Overflowing River and the Red Deer River. The land required for the 66 metre ROW would have to be excluded by Manitoba Conservation in developing the final survey designating new WMAs such as Red Deer and Summerberry as well as any addition to existing WMAs.

3.4.3.4 Steeprock WMA

The Steeprock Wildlife Management Area comprises 1,905 hectares located north of Mafeking, adjacent to PTH #10 on the west side of Dawson Bay (Map 8). It was established due to the area's high value for furbearers as well as the rich habitat for waterfowl and wildlife. The WMA is composed of spruce forest, bogs and a major managed wetland. The final preferred route will be in close proximity to the WMA for approximately 6 km but should not have any interaction with the designated lands of the WMA. The preliminary preferred route follows existing

infrastructure in this area to the extent possible. Any alternative options to the proposed route crossing through this area are limited by the close proximity of First Nation Lands.

3.4.3.5 Weiden WMA

This wildlife management area is composed of 851 hectares located northeast of Dauphin Lake, 15 km southeast of the village of Fork River, off PR 364 (Map 11A & 11B). The WMA provides habitat for deer, waterfowl and upland game birds. It includes habitat typical of the Westlake till plain with Aspen dominating the well-drained ridges, and wetlands in the swales between the ridges. The final preferred route planning corridor skirts the eastern edge of this WMA for about 2 km and the 66 metre ROW of the transmission line should not interact with the WMA.

3.4.3.6 Westlake WMA

The Westlake Wildlife Management Area is relatively large, at 5,760 hectares. It is located 20 km west of Cayer, east of Dauphin Lake (Map 11A & 11B). The WMA is composed of an Aspen forest interspersed with grassland and shrubs. The habitat is important as a white-tailed deer wintering area, and for upland game birds such as ruffed and sharp-tailed grouse. The final preferred route corridor is in close proximity to the northern and eastern boundaries of the WMA for approximately 10 km but the 66 metre ROW is not expected to interfere with wildlife habitat in this WMA.

3.4.3.7 Langruth WMA

The Langruth Wildlife Management Area is 1,813 hectares in size and located 4.8 km north and 2 km northwest of Langruth and southwest of Sandy Bay Ojibway First Nation (Map 11B). It is reported to be an attractive habitat for neo-tropical migratory birds and provides habitat for deer, waterfowl and grouse. The WMA is characterized by aspen and grasslands on higher areas and wetlands in low lying areas. Langruth WMA is noted for being used as a practice bombing range for the Royal Canadian Air Force during the Second World War (Manitoba Conservation website). The final preferred route planning corridor included the eastern half of the WMA and the ROW is adjacent to the eastern edge of the WMA for approximately 6 km. The 66 metre ROW is not anticipated to directly interact with wildlife habitat in this WMA, however, it is recognized that Manitoba Conservation prefers a buffer of 1.6 km from WMA boundaries.

3.4.3.8 Whitemud Watershed WMAs

The Whitemud Watershed Wildlife Management Areas is comprised of 13 widely-spaced units which provide important habitat for deer, upland game birds, amphibians and other wildlife located southwest of Long Plain First Nation (Map 13). The Lower Assiniboine Unit located along the Assiniboine River is made up of parcels that include riparian areas, forest, and

previously cultivated segments seeded to grasses and forage. Some parcels also have sand dune formations and native mixed-grass prairie (Manitoba Conservation website 2010).

The final preferred route will travel along the north side of the Assiniboine River among several units of the Lower Assiniboine group (Maps 12 & 13). Manitoba Conservation has expressed concern for this routing, in particular where the preferred route is adjacent to the eastern edge of one parcel, close to the southwest corner of a second and including these two, a total of four parcels are inside the planning corridor in this vicinity with potential interaction for about 1 km. Alternative routing options have been explored in detail and are limited in this area due to private farmland, terrain and unique ecological features such as the Arden Ridge and the Spruce Woods sand habitat complex with listed species such as the loggerhead shrike, skink, and skipper.

3.4.4 Community Pastures

Community Pastures are administered by the federal Agriculture Environment Services Branch (AESB) of Agriculture and Agri-Food Canada in cooperation with Manitoba Agriculture, Food and Rural Initiatives, formerly the Prairie Farm Rehabilitation Administration (PFRA). The 22 community pastures located in Manitoba are primarily utilized for grazing of cattle and horses from the surrounding local communities (PFRA website 2010). Community pastures are leased Crown lands and are of interest to the Protected Areas Initiative because the majority of the lands in the southern agricultural area of Manitoba are private and not available for ecological protection. Manitoba Conservation has been co-operating with Manitoba Agriculture, Food and Rural Initiatives to evaluate areas of ecological significance within community pastures (Beaubien, pers. comm., 2010). The final preferred route avoided 19 of the 22 sites; however, it follows the west edge of the Lenswood Community Pasture southwest of Swan Lake for approximately 7.5 km and on the west side of Lake Manitoba, the northeast edge of a large community pasture south of Alonsa for approximately 4 km and the eastern edge of the Lakeview Community Pasture at Langruth for approximately 4.8 km (Maps 11 A & B).

The selected route offered the fewest biophysical and socio-economic effects in comparison to the alternatives on the west side of the lakes Winnipegosis and Manitoba and was supported by the municipal leaders and landowners in the consultation process. The land closest to the west side of the lakes is valued less than the intensively farmed areas further west that have better soils. The farms are smaller in size and utilize smaller equipment than those further west where they farm cereal and row crops. The transmission line towers are less of an obstacle to farmers in the vicinity of the final preferred route as the equipment, being smaller, is more maneuverable and the use of aerial applications of chemicals is much reduced than further west as there is less concern over the spread of weeds from towers. If the line went further west, the practice of irrigation would be limited by the presence of a transmission line, but for

the soils along the selected route irrigation is generally not considered. Land use along the preferred route, such as native and developed pasture, and native and tame forage crops, are known to be compatible with transmission lines and the towers are considered to minimally interfere with livestock operations. Clearing in areas of native pasture along the transmission ROW are considered to improve the grazing conditions and increase carrying capacity for livestock.

Although of considerable interest to the Protected Areas Initiative as they represent some of the only lands not in private control in the southern areas of the province, the pastures are, by the nature of their use, "disturbed" lands and a case for protection may be controversial in the local community. A transmission line, once established on the landscape, should not compromise the original intent and use of the land as a community pasture.

3.4.5 Provincial Forest Reserves – Swan-Pelican Provincial Forest

In the late 1800s and early 1900s Manitoba set aside a number of forest reserves for the protection of the high quality timber resources. Today there are 15 provincial forests covering a total of approximately 22,000 square kilometers of land used for sustainable harvesting of resources, wildlife protection and recreation. The Swan-Pelican Provincial Forest was established in 1987 on approximately 3,705 square kilometers east of Swan Lake and including the west and north shore of Lake Winnipegosis and the east shore of Dawson Bay. It includes the Kettle Stones Provincial Park and Pelican Lake (Manitoba Conservation website, 2011). The final preferred route traverses the edge of the southwest corner of the Swan-Pelican Provincial Forest east of Lenswood and south of Swan Lake for approximately 15 km. Although there will be some disruption during construction, the presence and maintenance operations of the 66 metre ROW is not anticipated to cause a significant effect on this large provincial forest where other resource based activities such as forest harvesting are permitted.

3.4.6 Crown Land

The Protected Areas Initiative of Manitoba Conservation has been working toward identifying Crown land for protection on the west side of lakes Winnipegosis and Manitoba for several years. In conjunction with Community Pastures these lands represent the last available source of natural habitat in this area of the province (Beaubien, pers. comm., 2010). The final preferred route has been located as close as possible to the west shore of lakes Winnipegosis and Manitoba and as a result there are a number of Crown parcels being crossed. Map 11A & B shows the Crown lands in relation to the route.

The rationale for selection is that the land in this area is primarily used for livestock operations which are known to be compatible with a transmission line. The lands toward the lakes are of

lesser value in terms of the agricultural use. The land west and south of the selected route is of more value for agriculture due to its sandy soil conditions and can support pivot irrigation for higher value crops. In this selected area the Bipole III towers would be less of an impediment to farmers as they use smaller equipment than in areas to the west or south where the farms grow cereal and row crops. There is less concern for the spread of weeds from tower sites than in intensively farmed areas. In addition, the final preferred route avoids unique ecological features such as the Arden Ridge with its enduring features and the Spruce Woods sand habitat complex that supports listed species (such as loggerhead shrikes, skinks and skippers).

3.5 VEC Summary Evaluation of Final Preferred Route

The final preferred route includes one segment ranked high for enduring features; located in ASI 114 Stephens Lake at the confluence of 4 natural regions (1a, 3, 4a & 4b). There are no other high rankings identified along the final preferred route. There are 19 medium ranked segments, all other component segments were ranked low, with no effect (Table 7).

Two segments ranked medium occurred in ASI 114, one located along the proposed route immediately west of crossing through Stephens Lake ASI, the other near the western edge of it. ASI 114 Stephens Lake remains as an area of concern, with high and medium VEC rankings. It is recognized that more information is required on enduring feature interaction in this area of special interest. A medium ranking was also applied to Clearwater Lake Provincial Park and Red Deer River Provincial Park which were located within the final preferred route corridor. A medium ranking was assigned to Lake Winnipegosis Salt Flats Ecological Reserve as the planning corridor is adjacent to the western edge of the ecological reserve addition for approximately 2 km and a salt spring providing salt water to the reserve was identified as being within the 4.8 km corridor.

In addition to protected areas, the final preferred route had 10 medium rankings due to interaction with 9 WMAs. These WMAs are Churchill, Tom Lamb, Summerberry (proposed), Red Deer (proposed), Steeprock, Weiden, Lakeview, Langruth, and 2 parcels of the Whitemud Watershed WMA. There are also 3 medium rankings due to interaction with Community Pastures. These are Lenswood, Alonsa and Lakeview Community Pastures. In addition, there was one medium ranking for the Swan-Pelican Provincial Forest Reserve located south and east of Swan Lake where the 66 metre ROW traverses the forest reserve for approximately 15 km.

Table 7: Summary of Final Preferred Route Segments Ranked High and Medium for VECs

	VEC		Location	Length Segment	Length in VEC
Segment	**High**	**Medium**		**~km**	**~km**
S1		1	Churchill WMA	106	5
S1	1	1	Stephens Lake ASI 114 (east)		61
S2		1	Stephens Lake ASI 114 (west)	118	15
S3				28	
S4				290	
S5		1 1	Clearwater Lake Provincial Park Tom Lamb WMA	100	6 50
S6		1 1 1 1	Proposed Summerberry WMA Red Deer River Provincial Park Proposed Red Deer WMA Lake Winnipegosis Salt Flats Ecological Reserve Addition	104	17 (29)* 1 27 2
S7		1 1 1	Steeprock WMA Lenswood/Birch River Community Pasture Swan-Pelican Provincial Forest	112	6.0 7.5 15
S8		1 1	Weiden WMA Westlake WMA	156	2 10
S9		1 1 1 2	Langruth WMA Alonsa Community Pasture Lakeview Community Pasture Whitemud Watershed WMA (2 Units Lower Assiniboine Group)	168	6 4 5 1
S10				76	
S11				42	
S12				35	
S13				49	

*17 km of the route traverses protected zone and 29.3 km traverses unprotected zone

3.6 Discussion of Treaty Land Entitlement – Final Preferred Route

The Treaty Land Entitlement (TLE) Framework Agreement (TLECMI, 1997) outlines principles for the Selection and Acquisition of land by nineteen First Nations in Manitoba. Issues in dispute that cannot be resolved by the parties to the Framework Agreement may be referred to the Implementation Monitoring Committee.

3.6.1 TLE Framework Agreement Principles of Interest

A key principle in the Manitoba approach is timely negotiation of land settlements to ensure certainty of access to Manitoba's land base and the recognition and protection of existing third party interests, such as those of the mining and exploration industry. In the negotiation of the TLE agreement the intention is to ensure that the impact of the settlements on the industry is minimal (TLECMI, 1997).

An entitled First Nation may select Crown land or acquire other land from its treaty area or traditional territory within Manitoba. An entitled First Nation may select Crown land outside its treaty area or traditional territory but within Manitoba where, on a case by case basis, it can establish a reasonable social or economic development objective and Manitoba concurs with the selection.

Certain entitled First Nations may acquire land from within their treaty areas or traditional territories within Manitoba, or from outside their treaty areas or traditional territories but within Manitoba, where on a case by case basis, they can establish a reasonable social or economic development objective.

Selections must be at least 1,000 acres in size, unless suitable Crown land is not available in a location that is preferred by the entitled First Nation. The purpose of the choice of land, whether historic, cultural, economic, or social, necessitates a selection of less than 1,000 acres, or the land is located in reasonable proximity to an existing Reserve of the entitled First Nation. Land must be selected or acquired where the owner or lawful user of another parcel of land is not deprived of access to that other parcel (TLECMI, 1997).

3.6.2 Policy Issues for the TLE Work Program

The land selection criteria of the TLE Framework agreement provides guidance as to what land may be selected. In all cases, there has been an attempt to achieve a balance between government obligations and the protection of third party interests, while also preserving the ability of the province to promote future development. For example, mineral claims are classified as a third party interest and access to claims is guaranteed (TLECMI, 1997).

Crown land selections must be completed within three years and acquisitions within fifteen years of the date that the entitled First Nation's Band-specific Treaty Entitlement Agreement comes into force.

The critical component for successful negotiation of any proposed change in status for selected TLE lands will be the leadership of entitled First Nations on one hand and the elected representatives of the provincial and federal governments on the other. First Nation lands in Manitoba including TLE acquired lands, Traditional Territory and Community Interest Zones in relation to the Bipole III final preferred route are presented in Map 14.

The Government of Canada entered into seven treaties with Status Indians in Manitoba between 1871 and 1910. One of the provisions of these treaties was that Canada would set aside a certain amount of land as reserve for the Status Indians, based on their population at the time of the original Reserve surveys. Not all First Nations received the full amount of land entitled at the time of the original Reserve surveys and this shortfall is the basis for the present TLE negotiations and allocation of Crown land.

Manitoba's participation in TLE process results from its obligations to Canada under the 1929-1930 Manitoba Natural Resources Transfer Agreement (MNRTA). The MNRTA transferred the administration and control of all unallocated crown lands to Manitoba and required Manitoba to set apart sufficient unoccupied Crown land so that Canada could satisfy its outstanding treaty obligations, a constitutional obligation (TLECMI, 1997).

Manitoba Aboriginal and Northern Affairs is the lead provincial agency on Treaty Land Entitlement. Initially there were 26 First Nations with outstanding TLE claims, seven of which have been settled. On May 29, 1997, Canada, Manitoba and the TLE Committee on behalf of nineteen First Nations who have not completed their TLE selections entered into a Framework Agreement which addresses the rights of the nineteen Entitled First Nations to obtain land of sufficient area to fulfill the requirements of the terms of their treaties.

The TLE Framework Agreement provides for a total of 985,949 acres of unoccupied Crown land that will be transferred to reserve status, the majority of which is located in northern Manitoba. This settlement represents a total of ¾ of 1% of the land mass of Manitoba. The guiding principles for land acquisition set out in the Framework Agreement are that acquisition must be undertaken on a "willing buyer and willing seller" basis and neither Canada nor Manitoba will expropriate any land or interest in land (TLECMI, 1997).

The Rolling River First Nation, The Long Plain First Nation and the Wuski Sipihk Cree Nation have been identified as having purchased private lands eligible to transfer to Reserve status and a number of these land parcels were found to be overlapped by the Bipole III planning corridor,

although they did not overlap the 66-m wide right-of way. It should also be noted that First Nations have been actively seeking purchases of road allowances from municipal governments, mainly where it would serve to consolidate existing tenure (Stevenson, pers. comm., 2010).

Each entitled First Nation may select up to its agreed share of 985,949 acres of Crown land entitlement acres, however, it was recognized that not all First Nations were located in areas where crown land was available. The First Nations that are located in areas where there is insufficient Crown land to meet the objectives of the Framework Agreement were provided an option. In this case the Government of Canada made provision for financial assistance for the First Nations to purchase private land up to 114,677 acres to meet their obligations (Other Land Acres, Table 8). This applies most frequently to First Nations in the agricultural area (Stevenson, pers. comm., 2009).

A second mechanism for First Nations to acquire land is known as the Fee Simple process, and allows for small acreages to be acquired for economic development by lease from the province of Manitoba. This occurs mainly in northern Manitoba and several parcels were found to overlap with the alternative route planning corridor. The final preferred route corridor interacted with only 1 Fee Simple land parcel, that of Tataskweyak Cree Nation, and 3 parcels of Wuskwi Siphik Cree Nation.

The status of Treaty Land Entitlement in Manitoba by First Nation Area as of February 2011 is presented in Table 8.

Table 8: Status of First Nation Entitlement of TLE Crown Land and Purchased Land

Treaty Entitlement Agreement	Crown Land Entitlement Acres	"Other Land" Acres	Minimum Entitlement Acres*
2008 Pequis Treaty Entitlement Agreement			
Peguis	**55.038**	**111,756**	**9,637**
1997 Framework First Nations – Signed Treaty Entitlement Agreements (TEA)			
Barren Lands	66,420		
Brokenhead	4,344	10,137	2,049
Buffalo Point	3,432	607	2,348
Bunibonibee	35,434		
God's Lake	42,600		

Treaty Entitlement Agreement	Crown Land Entitlement Acres	"Other Land" Acres	Minimum Entitlement Acres*
Manto Sipi	8,725		
Mathias Colomb	217,364		
Nisichawayasihk	61,761		
Northlands	94,084		
Norway House	104,784		
Opaskwayak	47,658	8,410	3,095
Rolling River	2,356	44,756	5,152
Sapotaweyak	108,134	36,045	9,633
War Lake	7,156		
Wuskwi Sipihk	44,168	14,722	3,934
Sub Total	848,420	114,677	26,211
1997 Framework First Nations – No Signed Treaty Entitlement Agreements (TEA)			
Fox Lake	26,391		
Marcel Colomb	17,007		
O-Pipon-Na-Piwin	17,674		
Sayisi Dene	22,372		
Shamattawa	24,912		
York Factory	29,173		
Sub Total	137,529		
Total TLE Framework Agreement	**985,949**		
1994 Island Lake Tribal Council TLE Agreements			
Garden Hill	45,339		
Red Sucker Lake	9,487		
Wasagamach	13,610		
St. Theresa Point	34,908		

Treaty Entitlement Agreement	Crown Land Entitlement Acres	"Other Land" Acres	Minimum Entitlement Acres*
Sub Total	103,344		
Grand Total TLE	**1,144,331**		
Individual TLE Agreements (No Crown Land Amount)			
Roseau River (March 19, 1996)		16,218	5,861
Swan Lake (March 30, 1995)		13,035	4,484
Long Plain (August 3, 1994)		26,437	4,169
Sub Total		**55,690**	**14,514**
Total Purchased Land TLE		**282,123**	**50,362**

*TLECMI 1997

(Source: Crown Land and Aboriginal Lands Program, Manitoba Conservation, February 2011)

3.6.3 Community Interest Zones (CIZs)

First Nations Reserves may have Community Interest Zones (CIZ) surrounding their main reserves as part of the Treaty Land Entitlement process. A CIZ is a temporary area of protection adjacent to a First Nation's main reserve. The CIZ is a 30 km area extending from the outside boundaries of the reserve portion where the administrative office is located. This zone of protection is intended to restrict development on land adjacent to the community until the First Nation has completed its TLE land selection process. First Nation Reserves and CIZs are presented in Maps 14 to 19.

Manitoba is required to give First Nations notice of any proposed disposition of Crown Lands within their CIZ. Following notice, the First Nation has 60 days to express an interest in selecting the land, and 180 days in which to make the selection. If the First Nation exercises both of these options, the Province will not make the disposition. The Province may make the proposed disposition if the First Nation does not express an interest in the selection within 60 days of the date of notice or having expressed such an interest, does not proceed to make the selection within 180 days of date of notice (TLECMI, 1997).

3.6.4 Aboriginal Traditional Knowledge and Protected Areas

Traditional Knowledge is used as an indicator of the extent to which community members understand and use their values, worldviews and traditional practices through oral tradition,

meaning oral stories and history. Opaskwayak Cree Nation (OCN) prefers to use the reference "Aboriginal Ecological Knowledge (AEK)". Their position is that AEK is more representative of the past, present and future, as opposed to ATK. The position being that the term "traditional" may be interpreted as knowledge that implies past activities that are no longer part of today or have not been considered as part of the future (OCN AEK Study, 2011). To assemble ATK, workshops were held with Aboriginal communities within the study area. Oral history and mapping interviews were conducted based on a series of questions that were developed to include aspects of the biophysical and socio-economic environment associated with the Project. The intent of the interviews was to assist in the characterization of the existing biophysical and socio-economic environment for the purposes of evaluating alternative routes, to select the preliminary preferred route and the overall assessment of biophysical and socio-economic components along the preferred route. Potential ATK constraints within the study area were identified on a series of 1:50,000 NTS maps and the knowledge gathered incorporated into all aspects of the Environmental Assessment process (MMM and NLHS, 2011).

In relation to protected areas that were within the Bipole III study area, ATK information served to support the historical and ecological significance of certain areas to Aboriginal people. In particular the history of use and local knowledge of unique areas like the Kettle Hills blueberry patch were noted to be of cultural importance as well as for social and economic values to First Nation communities in the area. This includes the communities of Sapotaweyak and Wuskwi Sipihk Cree Nations.

The Kettle Stones Provincial Park, a small park, (4km^2) within the Swan-Pelican Provincial Forest, was established at the south end of Swan Lake to protect the heritage stone kettle features and support the significance of the area. Manitoba Conservation recognizes that the Kettle Hills have been and continue to be used by local First Nations people for traditional resource harvesting, trapping, gathering berries and plants for food and ceremonial use (Manitoba Conservation website, 2011). The Kettle stones themselves are considered to be sacred and have been in use for the past 3,500 years for gathering and subsistence hunting and trapping. This area may be vulnerable to a potential increase in access as a result of the construction and maintenance of the transmission line.

The ATK studies have been valuable in providing knowledge of soils, aquifers and saline deposits within the Manitoba Lowland. Salt-making was an important industry in the early history of the area between Red Deer River and Neepawa. The early historical records indicate that there was a knowledge and use of the salt springs by Aboriginal people. ATK gathered at Barrows confirmed the site of the Northern Salt Syndicate on the south side of the Red Deer River near the Highway 10 Bridge (Petch, 1990). This is in close proximity to the Red Deer River Provincial Park (Map 8).

It is well recognized that forests and wetlands provide aboriginal communities with a wide variety of natural plants for medicinal purposes. ATK shared by communities in the Bipole III Study Area provided a list of plants to address almost every ailment and sickness. Labrador tea was identified as a powerful medicine used to cleanse the blood as well as being used as a tea. The leaves and roots of other plants like mint, blueberry, and strawberry were also cited as being used separately or together with other ingredients to create specialized teas for certain ailments (MMM and NLHS, 2011). Those who gather plants for medicinal use do not sell the medicines but generally prepare them ahead of time in anticipation of different common ailments and provide them to those in need. It was recognized that plant gatherers try to gather the plants important to them close to their communities. However, they were familiar with other areas which required them to travel for specific plants (MMM and NLHS, 2011). Access to traditional gathering sites as a result of the Bipole III project has been identified as a potential issue for First Nation individuals and communities (Table 15).

3.6.5 First Nation Communities -Final Preferred Route

3.6.5.1 Fox Lake First Nation

The Fox Lake Cree Nation (FLCN) settled in and around the areas of Fox Lake, Bird and Gillam along the Hudson Bay railway to Churchill (Map 15). Formal recognition as a separate Band was provided by Canada in 1947. The FLCN was established as one of two new Bands from the main body of the York Factory First Nation. FLCN is recognized as a signatory to the 1910 Adhesion to Treaty #5 through the signing of the parent Band, York Factory First Nation (www.foxlakecreenation.com).

In 1985, the home community was established at Bird when it was made into a reserve, however the majority of members reside in the town of Gillam. Gillam is located approximately 1,023 km north of Winnipeg and 203 air kilometers northeast of Thompson. Bird is located 53 km east of the Town of Gillam adjacent to the Limestone Generating Station (Map 15). There are approximately 1,000 members of the FLCN, with about 500 members living in the communities of Bird and Gillam. In addition approximately 350 members reside in Manitoba communities such as Churchill, Thompson and Winnipeg as well as about 150 members outside Manitoba. The Bird Reserve has a local population of some 200 members.

The Keewatinoow Converter Station, ground electrode site, and final preferred route for Bipole III are all located within the Community Interest Zone (Map 15). This is in addition to Manitoba Hydro existing infrastructure of Kettle, Long Spruce and Limestone Generating Stations and the proposed Keeyask Generating Station with their associated converter stations. The preferred route does not interact or overlay any existing First Nation Reserve lands, however in July 2011 FLCN identified the Keewatinoow Converter site as a TLE parcel. This will continue to be subject

to ongoing discussion between Manitoba Hydro and FLCN. The community is well experienced with working in cooperation with Manitoba Hydro in their Traditional Territory.

3.6.5.2 York Factory First Nation

York Factory was established in 1671 as a trading post of the Hudson Bay Company during the fur trade of the 18th and 19th centuries. In 1957 the Hudson Bay Company closed its doors at the trading post following 250 years of trading in the area. The Cree population of York Landing were originally from the York Factory region and located in a community on the north shores of the Hayes River, approximately six miles inland from the coast of Hudson Bay. The closing of the Hudson Bay trading post and store was the main reason for the relocation of York Factory Cree Nation to an area now known as York Landing which received reserve status in 1989 (Map 16).

The location is 117 km east of Thompson on the southeast shore of Split Lake and only accessible by air or boat. The Reserve is approximately 3,680 ha (2,300 acres) with a population of 400 on reserve and 535 off reserve (http://york_factory_fn_304.tripod.com/comminfo.htm). The final preferred route does not interact with any of the First Nation's land.

3.6.5.3 Tataskweyak Cree Nation

In 1908, Tataskweyak Cree Nation (Split Lake Band) signed an Adhesion to Treaty 5 with the intention of sharing their traditional lands with the Crown in exchange for the benefits of Treaty 5. This included protection of Aboriginal hunting and fishing rights. In 1977, Tataskweyak Cree Nation (TCN) was a signatory of the Northern Flood Agreement with four other Cree Nations, Manitoba Hydro, Manitoba and Canada. The registered population is 3,374 individuals with 2,168 registered on the Reserve, 1,115 off Reserve and 89 on other Reserves as well as 2 on Crown Land (INAC website 2011).

TCN is located on the north shore of Split Lake and the south shore of Assean Lake between 55 and 60 degrees latitude. The community of Split Lake is located along PR 280 north of York Landing and approximately 135 km from Thompson (Map 16). There are 3 parcels of land including Split Lake 171 (14,468.3 ha), Split Lake 171A (2,990.7 ha) and Split Lake 171B (135.6 ha) for a total of 17,594.6 ha. The final preferred route corridor overlays Reserve land and the Community Interest Zone on the north side of Little Assean Lake. The 66 metre ROW of the transmission line is crossed by PR 280 approximately 10 km east of this area and will result in access to the Community Interest Zone. In addition, the ROW will traverse 215 km through the Split Lake Resource Management Area and the community has concern for disturbance and loss of wildlife which will effect hunting and trapping in the community (TCN Report, 2011). Mitigation measures to discourage and limit access are recommended for incorporation in the final planning process. In addition, the route planning corridor is close to a parcel of Fee Simple

land of approximately 162 ha located on the northeast shore of the northwestern end of Stephens Lake. However, it is not anticipated that there will be an issue with this Fee Simple land which was acquired for potential economic development as it is located adjacent to PR 280.

3.6.5.4 Opaskwayak Cree Nation

The Opaskwayak Cree Nation (OCN) has had a long history in the area of The Pas and has been influenced by European traders since they came to the Saskatchewan River area and Laverendrye built the first Fort Paskoyac in 1743 on the southwest shore of Cedar Lake. On September 7, 1876 The Pas Treaty Band signed Treaty 5. The OCN is located on the north shore of the Saskatchewan River and the Town of The Pas on the south shore following incorporation in 1912 (Map 17). The registered population is 5,296 individuals with 3,185 living on the Reserve and 2,100 off the Reserve with 11 members living on other Reserves (INAC website 2011). The reserve consists of 20 parcels of land totaling 10,088.7 ha which vary in size from 4.1 to 3520.6 ha.

In 1999, OCN signed the Treaty Land Entitlement Agreement (TLEA) which provided entitlement to an additional 22,669 ha (56,068 acres) to be set aside as reserve land. The province of Manitoba also committed to provide 7,805 ha (19,287 acres) of Crown land and Canada committed to $2,153,051.00 to enable OCN to purchase up to 3,403 ha (8,410 acres) of land where Crown land is not available. Canada also provided $1,364,397.00 for the use and benefit of the band members as part of the TLEA. (http://www.opaskwayak.ca/history.php 2011).

OCN traditional territories represent an estimated 1,000,000 acres of land in Manitoba alone. It is estimated that 83 kilometers of land based territory consists primarily of Right of Ways (ROW) for highway, rail and transmission lines; not inclusive of access roads necessary for industry to engage its activities (OCN Study, 2011). The most recent being the Wuskwatim Transmission line.

The Bipole III final preferred route in relation to OCN lands is illustrated in Map 17. Although the planning corridor is in close proximity to the community, the ROW of the preferred route is not overlying any existing reserve land but the planning corridor does overlap 2 parcels of TLE land. In addition, OCN in May 2011 identified a TLE parcel along the proposed preferred route for the Bipole III line. This TLE selection will be subject to ongoing discussion between Manitoba Hydro and OCN. The preferred route follows pre-existing infrastructure of roads, railway and transmission lines to the extent possible in the area.

3.6.5.5 Sapotaweyak Cree Nation

The Sapotaweyak Cree Nation is located between 50 and 55 degrees latitude on the west side of Dawson Bay in Lake Winnipegosis with Shoal River its largest community. There are 10 parcels of land for a total of 41,746.6 ha ranging from 37.1 ha to 28,204.8 ha (INAC website 2011). Sapotaweyak Cree Nation has a registered population of 2,140 individuals with 886 living on Reserve and 1,151 off Reserve with 73 on other reserves and 30 individuals on Crown lands (INAC website 2011).

Map 18 and Figure 7 present the Sapotaweyak Cree Nation lands in relation to Bipole III final preferred route. The planning corridor overlays the edge of reserve lands located on the west side of Dawson Bay north of the Red Deer River and also at the junction of PTH 10 & 483. The ROW of the final transmission line is not anticipated to be an issue as the route follows existing infrastructure of Hwy 10 and existing transmission lines through this area.

3.6.5.6 Wuskwi Sipihk First Nation

Wuskwi Sipihk First Nation is located on the west side of Swan Lake east of Bell Lake Provincial Park between 50 and 55 degrees latitude. The Reserve is composed of 15 parcels of land totaling 5,850 ha which range between 2.20 ha to 1,524.2 ha. There is a total registered population of 623 individuals with 196 living on Reserve and 422 off Reserve as well as 5 living on other reserves (INAC website 2011).

The final preferred route corridor overlies eleven parcels including 4 Reserve and 7 TLE acquired land as illustrated in Map 19. Three parcels have been acquired under the TLE Framework Agreement and are being held under Fee Simple title until such time that they are transferred to Canada to be incorporated as reserve land (Stevenson, pers. comm., 2011). The ROW is adjacent to the east boundary of 1 of these sites and the west boundary of 2 sites as well as the southwest corner of a reserve parcel (Map 19).

The 66 metre ROW of the preferred route will be in close proximity of the Wuskwi Sipihk First Nation lands and issues may arise in regard to aesthetics of the towers and increased access to community lands from the ROW. These issues should be addressed in the final planning process.

3.6.5.7 Long Plain First Nation and Dakota Plains First Nation

Long Plain First Nation is located southwest of Portage La Prairie west of PR 242 and east of PR 305. The registered population of Dakota Plains First Nation (FN) is 252 individuals with 159 living on Reserve and 82 off reserve with 11 members living in other reserves. The Dakota Plains FN is composed of one parcel of 530.10 hectares. In 1999, Long Plain First Nation signed the

Treaty Land Entitlement Agreement and has acquired numerous parcels of private land through the TLEA.

The final preferred route corridor is in close proximity to several parcels of TLE acquired land as illustrated in Map 20. The preferred route's ROW will be in close proximity to the west side of the Long Plain First Nation lands, however the planning corridor does not overlay any First Nation lands. Issues may arise regarding aesthetics of the towers and line as well as increased access to community lands from the ROW. This may include potential health related effects from EMF on the community members and wildlife. In addition, their ability to sustain traditional lifestyles, including hunting, trapping, fishing and harvesting natural food sources (Long Plain Report, 2011). These issues should be addressed in the final planning process.

3.7 TLE Summary Evaluation of Final Preferred Route

In the evaluation for Aboriginal lands acquired through Treaty Land Entitlement, private purchase, or special allocation by Crown lease identified as Fee Simple land (Map 14), a ranking of high was assigned when the Aboriginal land was crossed by a proposed segment of the final preferred route, medium when such land was within close proximity (1.6 km.) of the route ROW or 4.8 km planning corridor and low when there was no crossing. A high ranking identifies a high level of constraint, medium a moderate level of constraint, and low, no constraint.

Table 9 lists all segments assigned high or medium level of constraint vis-a-vis the TLE. For the site numbers see Figure 8.

The final preferred route corridor touches onto 3 high and 8 medium ranked TLE parcels of land, however the ROW or the 230 kV ac transmission collector lines do not cross any existing First Nation Reserve lands or TLE. The high rankings all occur in S7 in a tightly constricted area due to terrain and existing encumbrances such as infrastructure.

As part of the TLE process, some First Nations have CIZs surrounding their main reserves and the preferred route crosses through the Fox Lake, TCN, OCN, Sapotaweyak Cree Nation and Wuskwi Sipihk Cree Nation CIZs. The ac collector lines cross through the Fox Lake CIZ. Given the total length of the final preferred route, the potential for adverse effects on aboriginal lands during construction are anticipated to be negative, small, local, and short-term in duration.

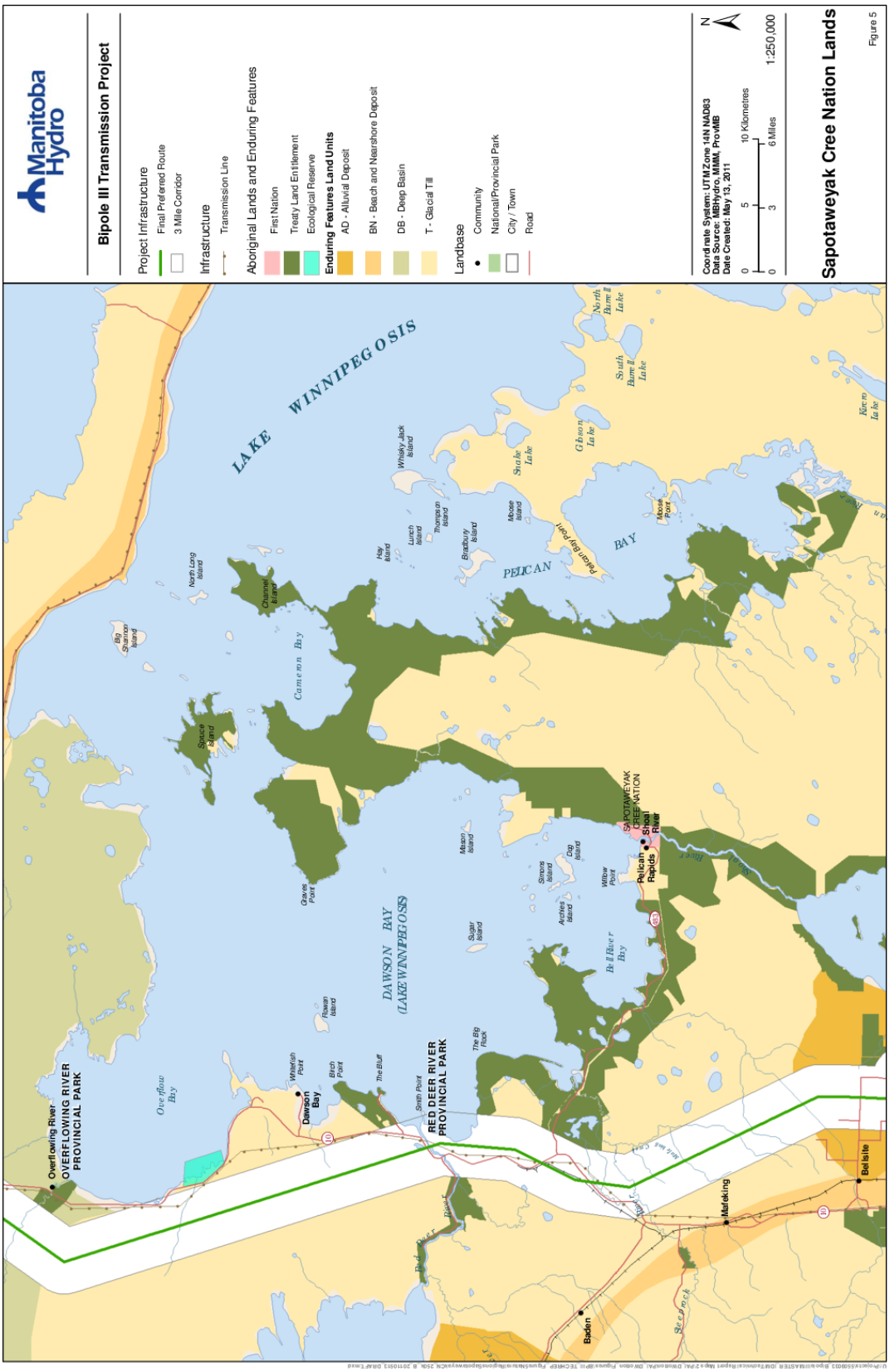


Figure 7: Sapotaweyak Cree Nation lands in relation to Bipole III

Table 9: Final Preferred Route Segments Ranked High and Medium for TLE

Segment		TLE (see also Map 14)	TLE Rank
S2	Junction S2 on south side of project corridor	Stephens Lake Fee Simple Site, Tataskweyak CN within 1.6 km of planning corridor	M
S2	Mid S2 south side of project corridor	Tataskweyak CN Reserve land at NE end Little Assean Lake within 1.6 km of planning corridor	M
S5	North Junction	Site #2-06(1412), 21A South, Opaskwayak CN, planning corridor in vicinity 21A	M
S6	West Overflow Bay	Site #2-02 (972) Overflowing River, Sapotaweyak CN	M
S6	West Red Deer Lake east of Dawson Bay	Site # 3-99 (583), The Bluff (revised), Sapotaweyak CN at the junction of PTH 10 and PR 483.	M
S7	South Junction S6 & S7	Site #7-02 (997) Red Deer River South, Wuskwi Sipihk CN	H
S7	South junction S6 & S7	Site 5-02 (970), Pelican Rapid Access Rd. Phase- 3, Sapotawayak CN	H
S7	West of Swan Lake	Site # 6-99(518) Various Crown/Crown lease Ag. Lands, Site #3 (805)(purchased), All 30-41-24 WPM (3) Palmondon, Wuskwi Sipihk CN,	H
S9	North of Junction S9 & S10	Site #4 (665), #5 (666), # 13 (1281), # 1-06 (1352) purchased Land, Long Plain FN.	M
S9	Just North junction S9 & S10	Site # #14 (1282), #15 (1283), #16 (1284), #17 (1285), #18 (1286), Purchased Lands, Long Plain FN.	M
S13	R.M. Springfield	Peguis FN Notice Area, R.M. Springfield	M

3.7.1 Reserves and Crown Lands Acquired under the TLE

Lands that were purchased by First Nations for transfer to Reserve Status as part of the TLE process may be affected at 2 segments of the final preferred route and are ranked as high. There are 17 individual parcels involved, purchased by four First Nations. A summary of the two segments and the 17 land parcels affected is presented in Table 10, along with the site numbers used as identifiers in Figure 8.

Peguis First Nation identified, as part of their TLE, an area of land, largely in the interlake between lakes Winnipeg and Manitoba and extending south of Dugald on the east side of Winnipeg, where they are to receive the right of first refusal for any Crown land becoming available for sale or lease. If Crown land is identified and requested for acquisition, the province has agreed to provide the information to Peguis First Nation for their review. Map 21 shows the extent of the area involved. The final segment S13 of the preliminary preferred route was ranked medium in the area close to the final terminus at the Riel Converter Station.

Table 10: First Nation Purchased Lands Affected by Segments of the Route Corridor

Segment	Site # Fig. 8	Description	First Nation
S7	6-99	Various Crown/Crown Lease Ag. Lands	Wuskwi Sipihk Cree Nation
S7	3	All 30-41-24 WPM, (3) Palmondon (616.08 acres)	Wuskwi Sipihk Cree Nation
S9	4 (Part)	SE7N ½ 7-10-8 WPM includes 18 & 19 Macdonald (Zacharias) (483.51 acres)	Long Plain First Nation
S9	4 (Part)	SE7N ½ 7-10-8 WPM includes 18 & 19 Macdonald (Zacharias) (163.57 acres)	Long Plain First Nation
S9	1-06	Part 13-10-9 WPM and 18-10-8 WPM (1-06) Donald (1146.89 acres)	Long Plain First Nation
S9	1-06	Part 13-10-9 WPM and 18-10-8 WPM (1-06)Donald (165.96 acres)	Long Plain First Nation
S9	1-06	Part 13-10-9 WPM and 18-10-8 WPM (1-06) Donald (478.52 acres)	Long Plain First Nation
S9	5	SE ¼ 24-10-9 WPM (5) McDonald (Zacharias) (161.60 acres)	Long Plain First Nation

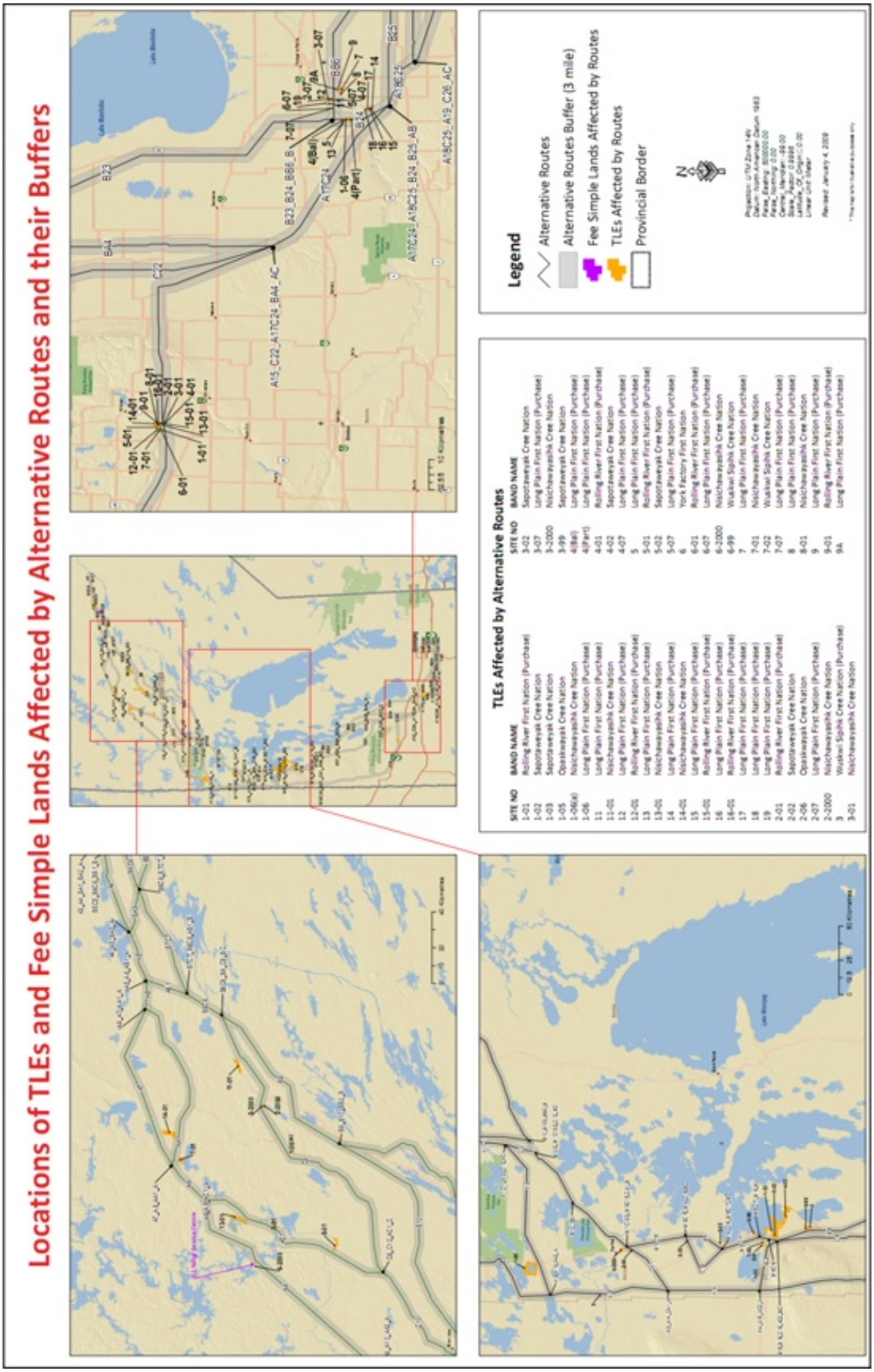


Figure 8: Location of TLE and Fee Simple Lands

4 ENVIRONMENTAL EFFECTS ASSESSMENT

4.1 Environmental Effects Identification/Assessment

4.1.1 From Literature

A review of previous work indicates that the most important impact of transmission lines on enduring features of landscape occur during construction, as a direct result of the physical activities necessary to prepare the site and erect the line. Secondary effects may result from line maintenance and also from easier access to lands that may have been previously inaccessible (B.C. and Nfld. Websites, 2011). With respect to protected areas and TLE lands, simple distance of the features from the final preferred route was used as the main surrogate for any potential impact, as no specific studies of these sites vis a vis transmission lines are available.

The degree of impact of a proposed transmission line is determined by the quality of the existing environment along the proposed route. The quality of the existing environment is determined by the uniqueness of the resource, degree of existing disturbance, and the threat of future disturbance. In an area that has been logged, drained, developed, cultivated, or otherwise substantially altered then the alteration has to be assessed and evaluated in regard to the proposed development of the transmission line. Areas of Special Interest are selected for their unique ecological characteristics and their enduring features that are rare or uncommon and require protection for future generations. Any disturbance may have a significant effect that could result in loss of the enduring feature. Aboriginal lands may have unique community importance for cultural, spiritual or heritage reasons and increased access to such sites could be a significant issue.

The construction of a transmission line involves both long-term and temporary impacts. Long-term impacts can exist as long as the line is in place and include land use restrictions and aesthetic impacts. Temporary impacts occur during construction or at infrequent intervals such as during line repair or ROW maintenance. Temporary impacts during construction can include noise and damage to vegetation which can be addressed through mitigation. (Wisconsin Public Service Commission 2011).

In general, transmission lines may be considered as very low impact developments to the environment. Following construction there is very little activity associated with a transmission line. In terms of Bipole III, there will be minimal clearing requirements in the northern sections where cover types do not support tree or tall growth vegetation, including large areas such as fens and bogs or in areas that have been recently burned. In the northern climate vegetation

management cycles are long due to reduced growth rates in this more severe environment and not as frequent or intense as found in southern areas of the province.

4.1.2 From Study Results

4.1.2.1 Final Preferred Route Evaluation

The assessment and evaluation process for the final preferred route, from the protected areas and Aboriginal lands perspective, focused on the following:

- Valued Environmental Components (VECs) for the designated protected lands and Areas of Special Interest to Manitoba's Protected Areas Initiative (PAI); and
- Aboriginal Lands that are acquired under Treaty Land Entitlement (TLE).

To establish the VECs for the Areas of Special Interest to Manitoba's PAI and the Aboriginal lands derived from TLE, the founding policies, principles and criteria for both programs were analysed and evaluated. Meetings were held with Officials of Manitoba Conservation for both PAI and TLE with follow-up consultations as required. Research of the literature and on the internet was conducted throughout the study period.

The valued environmental components (VECs) from a Protected Areas perspective are characterized by Enduring Features which are unique ecological combinations of landscapes that include the soils, geology, vegetation, wildlife and terrain features. The Protected Areas Initiative of Manitoba Conservation conducts enduring feature analysis to determine features that should be designated for permanent protection or identified as Areas of Special Interest (ASIs) for consideration of permanent protection in whole or in part (Manitoba Conservation, 2010). Protection of Biodiversity for future generations is the objective for designation of an area under permanent protection within the PAI program. The purpose of protecting the enduring features of an area is to capture an adequate representation of the diversity of a natural region and to conserve the ecological integrity of that region (Figure 1). Once designated under legislation, the access and activities allowed within a Protected Area are restricted from development under the same rigorous standard as an Ecological Reserve or a national or provincial Park, which excludes forestry, mining or hydro-electric developments.

Lands designated as permanently protected, such as national or provincial Parks, Ecological Reserves, or lands designated as Areas of Special Interest due to their unique ecological characteristics were considered to have the highest VEC rating if traversed by the proposed route corridor. Lands designated as Forest Reserves, Wildlife Management Areas (WMAs) or Community Pastures are recognized as areas where protection standards are not as rigorous and activities such as forest harvesting, resource development, cattle grazing and hay

production may occur. These areas are ranked as medium because a direct interaction with the transmission line or its ROW is considered to represent a moderate or short term impact to the respective land base.

Aboriginal lands designated as Reserves or acquired lands under TLE from the Crown or by private purchase or as Fee Simple lands were also ranked high if there was direct interaction with a segment of the proposed route corridor. Fee Simple lands are small parcels leased by Lands Branch of Manitoba Conservation, generally for economic development, e.g., a service station or a motel adjacent to a roadway, where disturbance to the environment will occur because of construction and operation. The ranking of these lands in response to an interaction with the planning corridor was considered to be medium to low.

In summary, a high level constraint identified a direct interaction when the proposed route and its 66 metre ROW traversed lands designated under PAI or Aboriginal lands acquired from TLE or as Fee Simple lands. These constraints received a high ranking. A medium ranking of VEC was applied if the proposed 4.8 km (3 mile) route corridor came within 1.6 km (1 mile) of land designated for protection or was aboriginal land. This recognized that an indirect interaction from the construction or operation of the proposed transmission line in the vicinity of this land may result in an environmental or socio-economic issue at time of development or in the future. A low ranking of the VEC occurred if there was no interaction from the proposed route corridor (Wotton, 2010).

The ranking methodology was discussed in Sections 0 above (see Table 2).

For the purpose of the VEC and TLE evaluation, the final preferred route was split into 13 segments, starting with S1 at the northern Keewatinoow Converter Station and ending with S13 at the southern terminus. The segments are illustrated in Map 1, along with designated protected lands, ASIs as determined by Manitoba Conservation, and known Aboriginal lands.

4.1.2.1.1 VEC – Protected Areas

In the analysis of the alternative route options, Manitoba Hydro's objective was to avoid constraints wherever possible, as a principle of the SSEA process. In particular, the route selection process attempted to limit proximity to, and avoid or minimize the effects to protected areas and known areas of importance to government agencies such as Manitoba Conservation and Aboriginal communities. The 66 metre ROW avoided Provincial Parks and Aboriginal lands in the final preferred route selection process and where ASIs and other protected lands were unavoidable, interactions were minimized and mitigation measures identified. The final preferred route and planning corridor are shown in Map 1. Table 11 presents a summary of the VEC rankings for protected areas, Table 12 for Aboriginal Lands

acquired through TLE. A site with a ranking of high or medium was considered to be sensitively. A high ranking was identified on 1 site and a medium ranking on 19 sites, which is small in consideration of the 1,384 km of final preferred route.

Table 11: VEC Ranking for Final Preferred Route – Environmentally Sensitive Sites(ESS)

Site No.	Seg.	Rank	ESS Name	ESS Description
1	S1	M	Churchill WMA	Bipole III ROW traverses the southwest corner of this WMA, west of Keewatinoow Converter Station and west of the railway.
2	S1	H M	ASI Stephens Lake (East)	The ASI lies west of Keewatinoow, final preferred route transects rare enduring features and corridor transects single enduring feature at the confluence of 4 Natural Regions.
3	S2	M	ASI Stephens Lake (West)	In the western portion of the ASI the final preferred route crosses a rare enduring feature.
4	S5	M	Clearwater Lake Provincial Park	The park is located east of The Pas airport and the planning corridor is within the park boundary, the ROW is outside on existing ROW.
5	S5	M	Tom Lamb WMA Addition	Preferred Route travels along the northern edge of this WMA and south through an area planned for expansion, ROW follows existing infra-structure. Area is well known for its wetlands and migratory bird habitat.
6	S6	M	Summerberry WMA (proposed)	Preferred route crosses the western side of this proposed WMA following existing infrastructure. Area well known for its wetlands and birds.
7	S6	M	Lake Winnipegosis Salt Flats Ecological Reserve Addition	Located east of PTH 10 on the southwest shore of Overflow Bay in Lake Winnipegosis. Natural salt springs feed the flats with saltwater and 1 saltwater spring has been identified within the planning corridor.
8	S6	M	Red Deer River Provincial Park	The park is a small roadside recreational area adjacent to PTH 10, the park falls within the planning corridor but not the ROW.
9	S6	M	Red Deer WMA (proposed)	Preferred route crosses the northeast portion and southeast tip of this proposed WMA north of Red Deer Lake and west of Overflow Bay.
10	S7	M	Steeprock WMA	The WMA (1905 ha) is located east of PTH 10, south of the PTH 483 junction, southwest of Dawson Bay, and the planning corridor transects

Site No.	Seg.	Rank	ESS Name	ESS Description
				the western half of WMA but not the ROW.
11	S7	M	Lenswood Community Pasture	The pasture is southwest of Swan Lake, the western portion is within the planning corridor and ROW is adjacent to the SW boundary.
12	S7	M	Swan-Pelican Provincial Forest Reserve	This large forest reserve (3,705 sq. km) is east of Minitonas, south & southeast of Swan Lake, the ROW traverses through the southwest corner.
13	S8	M	Weiden WMA	Weiden is a small WMA (851 ha) located northeast of Dauphin Lake off PR 364 and the planning corridor crosses the northeast portion, not the ROW.
14	S8	M	Westlake WMA	The WMA (5760 ha) is located 20 km west of Cayer east of Dauphin Lake, the planning corridor is within the northern and eastern edge of the WMA but not the ROW.
15	S9	M	Langruth WMA	The WMA (1813 ha) is southeast of Sandy Bay Ojibway F.N., 5 km north of Langruth, planning corridor includes the eastern half of WMA, and the ROW is adjacent to the eastern boundary.
16	S9	M	Alonsa Community Pasture	This large pasture is located south of Alonsa, the eastern edge is within the planning corridor and the ROW is adjacent to a portion of the eastern boundary.
17	S9	M	Lakeview Community Pasture	A large pasture southeast of Langruth, the planning corridor is within the eastern portion and the ROW is adjacent to the east boundary.
18	S10	M M	Whitemud Watershed WMAs	The Whitemud Watershed WMA is composed or 13 units of which the Lower Assiniboine Unit north of the Assiniboine River has 4 units in the planning corridor and the ROW is on the boundary of 2 units.

4.1.2.1.2 TLE Evaluation Aboriginal Lands

Manitoba Hydro, in the selection of the final preferred route through their SSEA process, were successful in having the ROW avoid Aboriginal lands to the extent possible. The final preferred route planning corridor was found to be within 1.6 km of 11 sites of which 3 were ranked as high and 8 were ranked as medium (Table 12). The three areas which ranked high were all from

segment 7 found in particular areas where there were significant limitations for route options due to the physical terrain characteristics, existing infrastructure, and existing Aboriginal lands.

Table 12: Summary of Ranking for Final Preferred Route – TLE & Aboriginal Lands

Site No.	Seg.	Ranking	ESS Name	ESS Description
1	S2	M	Tataskweyak Cree Nation	The proposed Bipole III planning corridor is close to the north edge of a Fee Simple land parcel on the northwest end of Stephens Lake.
2	S2	M	Tataskweyak Cree Nation	The Tataskweyak CN Reserve land at the NE end of Little Assean Lake is within 1.6 km of the preferred route planning corridor, the ROW is not within the reserve but the CIZ
3	S5	M	Opaskwayak Cree Nation	Opaskwayek is located on the north shore of the Saskatchewan River, Site #2-06 (1412), 21A south are close to the corridor, however there is no direct interaction with the ROW.
4	S6	M	Sapotaweyak Cree Nation	Sapotaweyak is located on Dawson Bay and TLE selected land at West Overflowing River, Site 2-02(972) is within the planning corridor, but no interaction with the ROW.
5	S6	M	Sapotaweyak Cree Nation	The planning corridor overlays the edge of Site#3-99 (583), The Bluff (revised) and at the junction of PTH 10 & 483. The ROW follows existing infrastructure within the Community Interest Zone.
6	S7	H	Wuskwi Siphk Cree Nation	Wuskwi Sipihk FN is located on the west side of Swan lake east of Bell Lake Provincial Park. The route corridor and the ROW are located on the edge of; Site #7-02 (997), at junction of S6 & S7.
7	S7	H	Sapotaweyak Cree Nation	The final preferred route corridor and the ROW are located on the edge of #5-02 (970), south of junction S6 & S7 at Pelican Rapid Access road, Phase 3.
8	S7	H	Wuskwi Siphk Cree Nation	The final preferred route corridor and the ROW are located on the edge of several parcels – Site#6-99 (518), various crown leases (Fee Simple), All 30-41-24 WPM (3) and Site 3(805) (purchased).

Site No.	Seg.	Ranking	ESS Name	ESS Description
9	S9	M	Long Plain First Nation	Long Plain FN is located southwest of Portage La Prairie west of PR 242 and east of PR 305. The planning corridor is within 1.6 km of TLE purchased land Site 4 (655), # 5, 13, & 1-06 but no interaction with the ROW.
10	S9	M	Long Plain First Nation	The Bipole III planning corridor is within 1.6 km west of TLE purchased lands #18, 16 & 15 but the transmission line and ROW do not interact.
11	S13	M	Peguis First Nation	The Peguis First Nation has a Notice Area for access to available Crown Land that extends into the RM of Springfield. If crown land is required for the Bipole III project, MB Conservation will circulate to Peguis.

4.1.2.1.3 Summary of Evaluation for Final Preferred Route

The final preferred route for VECs of protected areas was found to have only one high ranking which was a result of the crossing of ASI Stephens Lake in Segment 1 immediately west of the Keewatinoow Converter Station, all other northern ASIs identified in the analysis of alternative routes were avoided. This was a marked improvement from the alternative route evaluation where route A had 6 high segments and routes B and C had 4 each. The final preferred route had 19 medium rankings where the planning corridor was within 1.6 km of a designated area for protection or a special area. In the alternative route assessment there were 40 segments and 4 nodes ranked medium. The 19 medium ranked sites in the preferred route included 2 at ASI Stephens Lake, 2 at Provincial Parks, 1 Ecological Reserve, 10 WMAs, 3 Community Pastures and 1 Forest Reserve. The high and medium rankings were found in Segments 1, 2, 5, 6, 7, 8, 9 and 10.

The final preferred route corridor was within 1.6 km of 11 sites on 6 segments where interactions with Aboriginal lands may occur. These are segment 2, 5, 6, 7, 9 and 13 and the rankings were 3 sites high and 8 sites medium. There were 3 highs in segment S7 west of Swan Lake in an area with limited options for the line to travel due to the physical characteristics of the landscape, existing infrastructure and the presence of existing land encumbrances. This is a similar scenario for S6 east of Red Deer Lake and S5 in the area of The Pas where there were little options. In these areas, the preferred route was located on the right-of-ways from the existing infrastructure of railways, roads or transmission lines to the extent possible.

In summary, the evaluation of the alternative routes for TLE revealed 27 segments and 5 nodes ranked high and 4 segments and 3 nodes ranked medium. Route A was found to have 8 high segments, B with 10 high segments and C with 9 high segments. The final preferred route has successfully minimized possible interactions on Aboriginal lands and for interactions for protected areas by reducing the rankings to 3 high and 8 medium. It is anticipated that where interactions have occurred, Manitoba Hydro will be able to further reduce potential effects by adjustments during the final planning process and through mitigative measures.

4.2 Data or Information Gaps

The Protected Areas component of the study has reviewed all lands designated for protection within the Bipole III project area in the following categories:

(a) Areas of Special Interest

(b) Federal and Provincial Parks

(c) Wildlife Management Areas

(d) Forest Reserves

(e) Crown Lands

(f) Community Pastures

It is recognized that there are ongoing activities to select crown lands for designated protection by Manitoba Conservation in the Saskatchewan River Delta, west of lakes Winnipegosis and Manitoba as well as in northern Manitoba. The final decisions by government on designation of lands for protection in these areas are not anticipated to be completed prior to submission of the EIS.

The Protected Areas program has identified a major concern for the planned routing of the final preferred route through the ASI Stephens Lake due to the significance of the ASI location at the confluence of four Natural Regions (Beaubien 2010). The preferred route travels close to this confluence and the significance of the potential effect requires evaluation.

The Wildlife and Ecosystem Protection Branch of Manitoba Conservation is planning to increase Wildlife Management Areas by creating the Red Deer WMA south of The Pas and in expansion of Tom Lamb WMA in the Saskatchewan River Delta which will include the new Summerberry WMA, as well as plans to increase protection in the Churchill WMA (Suggett, pers. comm., 2010).

The Parks and Natural Areas Branch of Manitoba Conservation has announced plans to increase the size of the Lake Winnipegosis Salt Flats Ecological Reserve on the west side of Lake

Winnipegosis. In addition they have identified a natural salt water spring in this area which provides salt water to the nearby Ecological Reserve (Elliott, pers. comm.,2010). They have requested special consideration to ensure that this natural feature is avoided during the final planning of the transmission line.

Information gaps for Aboriginal Lands Acquired by Treaty land Entitlement include the following:

(a) Crown land transferred to Reserve Status - Identification of crown lands acquired through TLE and transferred from Manitoba to Canada for designation as First Nation Reserves is current to November 2010. This is an ongoing process and there may be information gaps from additional land transfers before the EIA is submitted. For example TLE selections in 2011 include Fox Lake Cree Nation identified the Keewatinoow site in July and Opaskwayak Cree Nation identified a TLE site within the preferred route in May 2011.

(b) Private Purchase Lands - Identification of crown lands and private lands purchased with funds from TLE and transferred from Manitoba to Canada for designation as First Nation Reserves is current to February 2011. This is an ongoing process and there may be information gaps from additional land transfers before the EIA is submitted.

(c) Fee Simple Lands - Identification of crown lands acquired through TLE or lease from Manitoba to First Nations is current to February 2011. This is an ongoing process and there may be information gaps from additional land transfers before the EIA is submitted.

4.3 Mitigation Measures

Mitigation measures have been incorporated in the Bipole III project planning from the outset, with Manitoba Hydro's SSEA process that evaluated alternative route segments with the objective to avoid Valued Environmental Components. The final preferred route was selected to ensure minimum disturbance to environmental, ecological and socio-economic aspects of the land base along the transmission line—as the first level of mitigative action in the proposed development.

4.3.1 Prevention

Disturbance of natural ecosystems designated for protection, Areas of Special Interest, or First Nations lands is most likely to occur during the construction, operation, and maintenance phases of the transmission line project. Manitoba Hydro's Environmental Protection Plan (EnvPP) specifies ways, such as winter construction where possible, to limit disturbance of vegetation communities or wildlife habitat and to reduce compaction and erosion of soils. If transmission line construction occurs in the growing season or in areas of special designation

(for example, wildlife management areas) then disturbance and loss of designated lands may occur. Although EnvPP may limit habitat disturbance or loss of special areas, compensation to provide alternate lands may be considered as a mechanism to provide no net loss of wildlife habitat within a specific ecoregion.

The EnvPP will also serve to minimize potential effects caused by Manitoba Hydro crews during routine operations and maintenance or in response to emergency situations.

The Bipole III 500 kV HVdc transmission line is proposed to be constructed using steel lattice towers in agricultural Manitoba and structures with guy wires in non-agricultural Manitoba. Guyed structures are also used in hay, pasture and treed lands in agricultural Manitoba. There may be some flexibility in the location within the ROW where feasible and practical to avoid small highly sensitive areas as an additional mitigative measure. However, this mitigative measure is limited by the design for each particular segment of the transmission line (i.e., span requirements between towers).

The project planning and implementation stages of the Bipole III project should incorporate the measures mentioned in the assessment (e.g., varying the tower span), and a low-impact maintenance schedule during operation. In some instances, habitat enhancement measures undertaken in other respective ecoregions may be feasible to compensate for habitat or enduring feature loss, perceived or real, within particular protected areas affected by the route.

4.3.2 Access restrictions

Access to the ROW is a significant concern and must be addressed by careful planning and monitoring during construction and maintenance. The use of existing highways, municipal and forestry roads, trails and man-made linear features where possible and feasible should minimize the need to develop new access routes to the ROW. Access will be required along the ROW for construction and maintenance but should be restricted wherever possible. If deviations are required they will be limited to natural terrain features such as rock outcrops, excessively steep slopes, and where ingress and egress to stream crossings are logistically challenging and/or environmentally risky. Manitoba Hydro plans to limit all-weather access development to spur roads extending from existing roads to the converter station sites, the northern work camp, the construction power station site and the ground electrode sites. Access trails on transmission line ROWs can also be limited to seasonal use such as in winter, avoiding sensitive areas or seasons, e.g., breeding or brood rearing, fish spawning, or large mammal migration or calving times.

4.3.3 Aesthetics Considerations

To most people the aesthetic effect of a transmission line is likely to be negative, particularly where the proposed lines cross the view of a surrounding terrain from a personal or a community property or affects a natural landscape.

The aesthetic impact generally depends on the relationship with an individual or community, the distance and sightline of the viewer, the activities of the person, and the background or context. If a person is concerned about the line being close to spiritually significant areas or special hunting areas then they will likely perceive the disturbance as more significant. A viewer may also perceive that a transmission line is degrading the surrounding environment by intruding on the view of the landscape.

Manitoba Hydro has endeavored to avoid areas considered to be VECs, as well as potential constraints such as Areas of Special Interest, Aboriginal lands, or lands acquired through TLE.

Aesthetics are to a large extent based on individual perceptions. Access, siting, design, construction, and ROW management can mitigate some of the adverse aesthetic effects of a line. In some cases the planting of trees as visual or wind barriers may provide a mitigative measure to address areas where aesthetic concerns have been raised.

A summary of environmentally sensitive sites by sector, presented in Section 4.4 describes the VEC or TLE interaction by the preferred route and possible mitigation measures for aesthetics that may be implemented during construction and maintenance of the transmission lines.

4.3.4 Compensation

The physical or perceived effects of a transmission line on the environment cannot be eliminated by mitigation. Easement agreements with provisions to compensate landowners for the physical impacts associated with a transmission line are a common practice in the agricultural sector. Manitoba Hydro compensates landowners by purchasing an easement for the right-of-way and by payment for structure placement on agricultural land. Where unavoidable effects to natural habitat or special areas within the final preferred route occur, compensation options may be considered.

For example, Manitoba Conservation in 1998 developed a compensation agreement, Habitat Mitigation/Compensation Program (HMCP), with Manitoba Infrastructure and Transportation, then Manitoba Highways & Transportation, to address the mitigation of wildlife habitat from disturbance resulting from highway development projects. A Wildlife Habitat Mitigation Policy has been developed by the Wildlife and Ecological Protection Branch of Manitoba Conservation and is currently being reviewed. Manitoba Conservation endorses an objective of “no net loss”

of wildlife habitat and this may be addressed by avoiding and minimizing impacts on the ROW as well as off-site mitigation in the form of compensation agreements on private lands to protect habitat. Reclamation of similar habitat within the same ecoregion may also be considered to achieve the "no net loss" objective (Suggett, 2010).

In summary, if a development results in an adverse impact on wildlife habitat the proponent is to minimize the impact and where such impact is unavoidable, replace the habitat by restoring, enhancing or otherwise securing habitat elsewhere to offset impacts. On some development projects, the Manitoba Habitat Heritage Corporation has acted as a third party facilitator of a designated Habitat Mitigation Compensation Fund to be used to implement a mitigation program that acquires, enhances or otherwise secures replacement habitat. Sensitive sites from the perspective of protected areas and aboriginal lands include protected areas with unique terrain features or areas with valued and protected species and habitats as well as heritage and cultural sites, and other important locations requiring specific protection. For each environmentally sensitive site located along or immediately adjacent to transmission line rights-of-way or within the 4.8 km planning corridor, the potential environmental effects and suggested environmental protection or mitigation measures are summarized in Section 4.4 from the perspective of PAI and TLE.

4.4 Summary of Environmental Effects – All Project Components

The development of the transmission line and converter station infrastructure will include the short term activities of site clearing, site preparation and construction as well as the long term activities for operations, maintenance and monitoring. The potential environmental issues that may arise for the development are described by individual project component in the following sections. The major environmental issues from the perspective of Protected Areas and TLE lands are discussed in general terms with the activities identified below:

- Land clearing, or contamination from spills (i.e. fuel spills, herbicide spills);
    - Affecting ecological integrity of enduring features within a protected area through disturbance of surface soils and surface waters;
    - Causing disturbance to habitat or loss of protected plant or animal species;
- Removal of forest and ground cover during construction and vegetation control during maintenance, causing introduction of non-native species as well as increased risk of spills of toxic substances;
- Loss or alteration of important/critical wildlife habitats, decreased abundance (e.g., moose populations), disturbance to habitat or loss of protected wildlife

species as well as loss of riparian areas and effects on bird species or habitat; and

- Construction, operation and maintenance, causing:
    - Presence of the line causing a perceived loss of aesthetic values by individuals or communities within the sight line or in the vicinity; and
    - Increased access from construction or maintenance causing an issue relating to disturbance of cultural or heritage sites traditionally used by an individual or a local community.

This report focuses on protected areas and lands acquired by TLE. The bio-physical environmental effects noted above are dealt with in technical reports from the respective discipline specialist. Detailed information on bird species including environmentally sensitive areas and mitigation are found in Bipole III Birds: Technical Report by WRCS,2011. For detailed information on mammals see Bipole III Mammals: Technical Report by Joro and WRCS, 2011. For detailed information on cultural and heritage sites see Bipole III Aboriginal Traditional Knowledge (Petch, 2011).

4.4.1 HVdc Transmission Line and AC Collector Lines

4.4.1.1 Clearing and Construction

The preferred route was found to interact directly or indirectly with protected area sites that may be considered environmentally sensitive from the perspective of Protected Areas or Aboriginal lands. These areas will be affected by clearing and construction and are as follows:

Designated Protected Areas:

There are no designated protected areas crossed by Bipole III, however it is in close proximity to two provincial parks, Clearwater and Red Deer River, in which the boundaries fall within the 4.8 km planning corridor. At Clearwater Provincial Park the preferred route parallels the Hudson Bay Railway line and the Herblet Lake to Rall's Island Stations (H75P) 230 kV transmission line. As these are existing infrastructure, no additional effects are anticipated.

Red Deer River Provincial Park is a small roadside recreational park located adjacent to PTH 10 and is approximately 1.0 km from the proposed preferred route. There are no negative direct effects anticipated but there may be aesthetic issues arise from park visitors.

Areas of Special Interest:

ASI114 Stephens Lake is the only designated ASI identified by the Protected Areas Initiative that is traversed by the preferred route, all others have been avoided. The proposed route crosses through approximately 76 km of the ASI and was selected to avoid enduring features to the extent possible. The planning corridor was found to interact with four rare and one single enduring feature (Table 6). However, the 66 metre ROW only interacts with two rare features:

- DB/M Deep Basin / Eutric Brunisol Morraine was intersected for 36 ha (2%) of the 1,657 ha rare occurrence PAI enduring feature that occurs in the ASI east-northeast of Little Limestone Lake. Stantec conducted detailed soil and terrain assessments of the area and identified a total of 13,299 ha of similar features within and outside the ASI, (9,476 ha, 56 ha and 2,110 ha northeast and southeast + 1,657 ha). It is estimated that approximately 13,263 ha (13,299 - 36) or 99.7 % of similar enduring features in the area would not be affected by the project footprint and would be potentially available for protection.

- GD/023/M Glaciofluvial Deposits / Organic Cryosol (mesic woody forest) Moraine located southwest of Little Limestone Lake was intersected by the ROW for 42 ha (3%) of the 1,441 (1,373 + 42) ha rare occurrence PAI enduring feature with the majority (1373 ha) found in the planning corridor. Stantec identified a total of 4,653 ha of areas with similar features to GD/023/M within and outside the ASI. It is estimated that approximately 4,611 ha (4,653 – 42) or 99 % of the similar enduring features in the area would not be affected by the project footprint and would be potentially available for protection.

The planning corridor was found to interact with the single occurrence feature of Near Shore & Intertidal Deposits and therefore potentially affected 952 ha of this enduring feature with 14,178 ha (93.7%) not directly interacting with the planning corridor, the total being 15,130 ha. However, the ROW for the final preferred route avoided this enduring feature type as well as the other two rare features and no disturbance is anticipated from the Bipole III project.

Ecological Reserves:

All Ecological Reserve lands are avoided by the preferred route ROW but the 4.8 km planning corridor is in close proximity to the existing and proposed addition to the Lake Winnipegosis Salt Flats Ecological Reserve. However, it is recognized that PTH 10 and an existing transmission line are also adjacent to the existing and proposed addition to the ecological reserve. A salt water spring that provides salt water to the flats has been identified within the planning corridor by Manitoba Conservation and they have requested that this spring be avoided to

ensure no negative impact on the spring itself and indirectly on the ecological reserve or its proposed addition. Manitoba Hydro will endeavour to work with Manitoba Conservation to address this issue through selective location of towers or other measures.

Wildlife Management Areas (WMAs):

The preferred route interacts with nine Wildlife Management Areas (WMAs) in total, however, the 66 m ROW directly crosses only four; Churchill, Tom Lamb, Summerberry and Red Deer WMAs. The ROW traverses the Churchill WMA for 14 km and the Tom Lamb WMA for 50 km of which approximately 20 km of the route parallels the existing HBR rail line and the H75P 230 kV transmission line. In the proposed Summerberry WMA the route crosses for 17 km in the protected portion (PAI) and 29.3 km in the unprotected portion. For the proposed Red Deer WMA the preferred route crosses for approximately 27 km.

In respect to enduring features, the ROW intersected one rare and one single enduring feature in the Tom Lamb WMA, Tom Lamb Addition and Summerberry WMAs. These are:

- Single Occurrence, Alluvial Deposits / Organic Mesisol (mesic sedge), was intersected by the ROW for approximately 67 ha or 0.2 % of this 36,396 ha enduring feature, located within the Tom Lamb WMA, Tom Lamb Addition and proposed Summerberry WMA east and southeast of The Pas, along the Saskatchewan River. Limited routing options in the area prohibited avoidance of the feature. Stantec in its detailed analysis of the soil and terrain characteristics in the area estimated that the representation or total proportion of the Alluvial Deposits / Organic Mesisol (mesic sedge) feature that would not be affected by the Bipole III project within and outside the ASI is 36,329 ha (36,396 – 67) or 99.8% of this enduring feature type. This land would potentially be available for protection.
- Rare Occurrence, Alluvial Deposits / Organic Mesisol (mesic woody forest), enduring feature was intersected by the ROW for approximately 16 ha, or 0.6% of the total 2,485 ha area within the Tom Lamb WMA, Tom Lamb Addition and proposed Summerberry WMA between the Saskatchewan River and Kelsey Lake southeast of The Pas. Stantec identified a similar enduring feature occupying 288 ha immediately northwest of the feature which was not affected by the ROW and extended within and beyond the ASI. It is estimated that the representation of the Alluvial Deposits / Organic Mesisol (mesic woody forest) feature not affected by the project footprint within and outside the ASI is 2,757 ha (2,469+288) or 99.4% of the enduring feature type. This approximate area would be potentially available for protection.

The Bipole III planning corridor is adjacent to and may indirectly affect five other WMAs; Steeprock, Weiden, Westlake, Langruth and four parcels of the Whitemud Watershed WMA. For Steeprock WMA the planning corridor will be within close proximity for approximately 6 km and follows existing infrastructure in the area. At Weiden WMA the planning corridor skirts the eastern edge of the WMA for about 2 km's and at Westlake the planning corridor is in close proximity to the northern and eastern edge for approximately 10 km. At Langruth WMA the planning corridor is adjacent to the eastern edge for about 6 km and for the Whitemud Watershed WMAs the planning corridor is adjacent to the eastern edge of one parcel, close to the southwest corner of a second and in close proximity to two other small parcels for about 1 km. Although wildlife habitat may be affected by construction and presence of the line in close proximity to these five WMAs, the ROW is not anticipated to result in any long term permanent effect. It is recognized that the transmission line ROW will have a physical presence and an aesthetic affect for some visitors to the WMAs.

Provincial Forests:

In addition to the WMAs, the preferred route also crosses through the edge of the southwest corner of the Swan-Pelican Provincial Forest Reserve east of Lenswood and south of Swan Lake for approximately 15 km. It is anticipated that although there may be some disturbance during construction that there will not be any long term or residual effect on this area as a result of operations and maintenance through the life of the transmission line. This is an area that provides for other industrial activities such as resource extraction (i.e., timber harvesting).

Crown Lands and Community Pastures:

On the west side of lakes Winnipegosis and Manitoba, the proposed preferred route crosses a number of Crown land parcels and is adjacent to the boundaries of three Community Pastures. The ROW is adjacent to the west edge of the Lenswood Community Pasture for approximately 7.5 km, the east edge of the Alonsa Community Pasture for about 4.0 km and the east edge of the Lakeview Community Pasture for approximately 5.0 km. The PAI has interest in both the Crown lands and community pastures in this area for future protection, as they represent some of the only available lands which represent the original prairie ecosystem of the area.

Aboriginal Lands

There are seven First Nation communities that have been identified as having potential interaction with the final preferred route. These are as follows:

- Fox Lake First Nation – preferred route ROW, Keewatinoow and electrode site within Community Interest Zone, TLE selection at Keewatinoow site July 2011

- York Factory First Nation – planning corridor within close proximity to the northern edge of the Community Interest Zone
- Tataskweyak Cree Nation – planning corridor transects northeastern edge of the Reserve, ROW within CIZ and close to Fee Simple site at northwest end Stephens Lake
- Opaskwayak Cree Nation – planning corridor is close to south edge of OCN 21A but no direct interaction with ROW, TLE selection along preferred route May 2011
- Sapotaweyak Cree Nation – ROW follows existing infrastructure within the Community Interest Zone and planning corridor is in close proximity to several TLE parcels
- Wuskwi Sipihk Cree Nation – planning corridor and the ROW are located on the edge of several TLE parcels on the west side of Swan Lake
- Long Plain First Nation – planning corridor in close proximity to the western edge of TLE purchased lands, no interaction with ROW

The Aboriginal communities may have issues arise as a result of increased access to traditional use lands by off-road vehicles during and following construction which may result in disturbance of spiritual or gathering sites. In addition, issues resulting from perceived aesthetics effects may occur from individuals within the various communities.

Special consideration will be required at all of these sites including: appropriate signage; education of construction and maintenance workers; construction during frozen ground conditions, and avoidance of critical times for birds and wildlife. Anticipated effects are considered negative, of medium impact, localized, and short-term in duration during the clearing and construction phase. Wherever possible and practical in the area of these sites the proposed line should follow existing linear infrastructure.

4.4.1.2 Operation and Maintenance

The anticipated effects from the operation and maintenance phases of the project from the perspective of protected areas and lands acquired from TLE are considered to be less than those of the construction phase. They are considered medium term in duration, and either negligible or small, limited to the cleared right-of-way. Access is one of the most important issues and a well planned and executed access management plan will be required to minimize potential effects.

4.4.2 Keewatinoow Converter Station, Ground Electrode and Connecting Lines

The station will be located about 4.8 km southwest of the Conawapa generating station site on the Nelson River (Map 3). The location is physically separated from existing Bipole I and II converter facilities at Radisson and Henday. It is accessible via the existing Conawapa access road. The converter station site is estimated to require a roughly rectangular site area of approximately 640 x 640 m in dimension for a total area of 640 ha. The station will be fenced for approximately 31 ha. The Keewatinoow and the electrode site are located within the Churchill WMA, however this is an established area of hydro development and no issues are anticipated from a protected areas perspective. In July 2011, Fox Lake Cree Nation identified the Keewatinoow Converter Station site as a TLE selection and this issue will be subject to ongoing discussion between Manitoba Hydro and FLCN.

The ground electrode required for the converter station will be located approximately 10 km south of the converter station site on the west side of the Conawapa access road at Lower Limestone Rapids (Map 3). On the assumption of a shallow land ring electrode (similar to the electrodes used at the existing Henday and Radisson converter stations), the electrode will be a buried iron ring approximately 500 m in diameter. It requires a site area in the order of approximately 2,000 m x 2,000 m or 4,000,000 m2 (400 ha), only a portion of which will be cleared and affected by the electrode installation. This includes allowances for items such as access road and electrode line approaches. There will also be a low voltage (12 kV) overhead distribution line connection between the ground electrode site and the converter station. The low voltage line will be supported on guyed single wood poles and routed along an existing right-of-way.

The proposed connections to Keewatinoow include one 230 kV transmission line about 55 km in length, from the existing 230 kV switchyard at Long Spruce Generating Station to a new 230 kV switchyard to be developed at the site of the new Keewatinoow converter station. In addition, four 230 kV transmission lines, each about 27 km in length, will be constructed from the existing 230 kV switchyard at Henday Converter Station to the new 230 kV switchyard at the new Keewatinoow converter station. The lines will share a common right-of-way, 310 m in width. Guyed lattice steel towers will be used for the collector lines. The converter station as well as the proposed ground electrode site and connecting lines are all within the Hudson Bay Lowland Eco-Region.

4.4.2.1 Clearing and Construction

Construction activities for the converter station development, connections, construction power, work camp and lagoon will typically involve site preparation (e.g., removal of existing vegetation and organic topsoil from the site; addition and compaction of inorganic fill material, installation of station surface material) and initial infrastructure development (e.g., installation of station access roads and associated drainage, followed by installation of perimeter fencing and gates). Once general site improvements have been completed, other necessary civil works and systems will be installed (e.g., foundations for building and equipment, grounding arrangements, water supply, oil spill containment, site services and buildings). Station apparatus and equipment installation will follow, including filling of equipment with insulating oil, construction clean-up and commissioning.

4.4.2.2 Operation and Maintenance

Environmental effects will be similar to that of the HVdc transmission line but scaled down in proportion to the smaller footprint of the site.

4.4.3 Riel Converter Station, Ground Electrode and Connecting lines

The site of preferred Riel Converter Station is located on land already owned by Manitoba Hydro west of PR 207 and north of the City of Winnipeg's Deacon Reservoir. The existing Riel station site occupies approximately 110 ha. The station fenced area is nominally 640 m x 1278 m in dimension, occupying approximately 82 ha. The ground electrode will likely be a shallow ring electrode, estimated to be approximately 400 m in diameter, and situated centrally within the site. The surface of the central area of the site (an area of approximately 500 m x 500 m above the ground electrode itself) will be maintained as a grassed area by Manitoba Hydro. The new southern Riel converter station will include the HVdc switchyard facilities necessary to terminate the new Bipole III transmission line, together with the converters and the ancillary facilities required to convert the dc power from the Bipole III transmission line to ac power at the 230 kV level necessary for injection into the southern receiving system.

The ground electrode required for Riel converter station will be located approximately 20 km from the station site in the R.M. of Springfield. The electrode will require a site area of some 260 ha, together with an access road for construction and ongoing maintenance. There will also be a low voltage line connection between the ground electrode site and the converter station. The line will be an overhead line supported by single wooden poles routed on a right-of-way on Manitoba Hydro property or within existing road allowances. There are no issues of concern with the Riel Converter Station or its ground electrode site from the perspective of protected areas or land acquired from TLE.

4.4.3.1 Clearing and Construction

Environmental effects will be similar to that of the HVdc transmission line but scaled down in proportion to the 110 ha footprint of the converter site and the 260 ha of the ground electrode site. Access restrictions and control of deleterious substances are the main mitigation measures (see Section 4.6).

4.4.3.2 Operation and Maintenance

Same as with construction, the environmental effects will be similar to that of the HVdc transmission line but scaled down in proportion to the 110 ha footprint of the site and the 260 ha of the ground electrode site. Access restrictions and control of deleterious substances are the main mitigation measures (see Section 4.6).

4.4.4. Construction Camps

A temporary construction work camp will be established at the future Conawapa Generating Station site for the Keewatinoow converter station and associated ground electrode. Construction power for the construction camp, converter station and electrode site will be provided by extending an existing 138 kV transmission line that runs from Kelsey Generating Station to the Limestone construction power substation about 31 km to a new construction power substation located near the Keewatinoow converter station site. A licensed treatment lagoon will be required for the construction camp.. The construction site is located within the Churchill WMA in an established area of hydro development and no issues are anticipated from a protected areas or TLE perspective.

There will also be Mobile or Roving work camps operating in remote areas during construction of the HVdc transmission line. Temporary access roads, base sites for set-up, wastewater and waste management control will be required to ensure minimum disturbance to the environment. It is not anticipated that these sites will occur on protected areas or TLE lands.

4.4.4.1 Clearing and Construction

Construction activities for the camps will involve necessary clearing and preparation of sites, civil works and installation of systems (e.g., foundations for building and equipment, grounding arrangements, water supply, oil spill containment, site services and buildings).

4.4.4.2 Operation and Maintenance

The operation and maintenance activities at these sites should follow the same protocol and requirements as with the transmission lines. Access to the camps and storage and handling of fuel and other liquids are the main areas of concern.

4.4.4.3 Decommissioning

The environmental effects of decommissioning of the campsites will be similar to that of their commissioning, apart from land clearing. Access roads may remain and invite use by off-road vehicles.

4.5 Summary of Mitigation measures

Work permit requirements and Manitoba Hydro's Environmental Protection Plan (EnvPP) will be followed, as well as appropriate guidelines or best practices.

For both construction and decommissioning these may include:

- Access roads to be short and narrow and existing access roads, trails or cut lines used as much as possible.
- Public use of access roads and trails during construction controlled through an Access Management Plan.
- Access roads and trails not permitted within:
    - established buffer zones and sensitive sites;
    - critical caribou and other large mammal habitats; and
    - established buffer zones of bird nesting and rearing sites.
- Access roads and trails, sensitive sites and buffer areas clearly marked prior to clearing.
- Vehicle, machinery and pedestrian traffic restricted as necessary.
- Culverts installed and maintained in accordance with Manitoba Stream Crossing Guidelines and DFO Operation Statement on Culvert Maintenance.
- Access roads and trails no longer required decommissioned and rehabilitated.
- Roads and trails required for future access maintained properly.
- Erosion protection and sediment control measures along shoulders, ditches and at stream crossings.
- Surface water runoff directed away from sensitive areas but not directly into waterbodies.
- Construction vehicles wide-tracked or equipped with low-pressure tires to minimize rutting and limit damage and compaction to surface soils.
- Inspection and follow up on rehabilitated areas.

- Reclamation Plan to assess re-vegetation and additional rehabilitation is required.
- Grades for access roads and trails following natural terrain contours.
- Approach grades to waterbodies minimized to limit disturbance to riparian areas.
- Only water and approved dust suppression products (no oil) used to control dust on access roads.
- Clean abrasives instead of chemical melting agents for ice control.

In general, the effects of construction can be minimized through project scheduling and planning. Manitoba Hydro is committed to environmentally sound planning and initially has taken opportunity to maximize the portion of the Bipole III route that follows existing linear facilities such as roads, railways and transmission lines. In areas of interest to the PAI, Manitoba Hydro will be taking mitigative measures which include the following:

- Ongoing discussions with Manitoba Conservation PAI representatives to provide Manitoba Hydro with the permanent right to access, use and maintain the right-of-way for the Bipole III line and to ensure current as well as new issues are addressed.
- Subject to detailed engineering analysis, tower location (tower "spotting") has been identified as a potential measure to reduce adverse effects. Manitoba Conservation PAI representatives may identify preferred locations and detailed pre-construction evaluation of the ROW can take place, then engineering analysis to evaluate the technical and economic feasibility of incorporating spotting into the structure placement decision. (To date, this request has been made for a potential issue related to a salt water spring in the vicinity of Lake Winnipegosis Salt Flats Ecological Reserve and similar discussions are anticipated respecting ASI Stephens Lake.)
- Construction in the vicinity of enduring features will be conducted in the winter, under frozen conditions, to protect site-specific features, such as organic deposits;
- Where unique terrain or soil features are crossed, no off-right-of-way activities, including construction of access trails or establishment of new borrow sources will occur;
- Off-right-of-way activities, will maintain a 100 metre buffer distance from unique terrain or soil features;
- Excavated soils will be stored at designated work spoil areas and will be fully replaced on the footprint of the excavation in the reverse order they were excavated;
- Movement of equipment within unique terrain and soil features will be minimized to ensure minimum disturbance; and

- Existing access routes should be utilized and machinery not operated outside of the project areas within unique terrain and soil features.

During construction EnvPPs for the Project will be used to manage work in protected areas and lands under consideration for PAI that have be identified.

Mobile construction camps will be required during construction of the Bipole Ill line. These camps will not be located in any designated protected areas or areas under review or futureconsideration by the PAI. Designated protected areas and areas under consideration by the PAl will be identified in the construction EnvPP.

In terms of areas for consideration under PAI, Manitoba Hydro has maximized the portion of the preferred route that follows existing linear infrastructure. Construction effects on these lands are anticipated to be negative, medium, local and short-term in duration.

This report focuses on protected areas and lands acquired by TLE. The physical environmental effects noted above are dealt with in technical reports from the respective discipline specialist.

4.6 Residual Effects

A residual environmental effect is a change in the environment after the application of a mitigation measure. It is difficult to accurately assess the definitive impact of a residual effect as it can be influenced by natural events such as unforeseen severe weather conditions, forest fires, floods and tornadoes, or by environmental accidents. The residual effects are long term and are predicted on assumptions. The direction of a residual effect is considered to be *positive* when it is a beneficial or desirable change to the environment, *negative* when it is an adverse or undesirable change in the environment and *negligible* when it is a non-detectable change.

The Ecological Importance, which includes rarity and uniqueness, fragility, importance within ecosystems and importance to scientific studies, and the change in environment is ranked as follows: *high* for a unique or protected species, habitats or ecosystem, with important ecological function and scientific investigation; *m*oderate for a seasonally fragile environment or moderately rare or fragile ecosystem that is of some importance to ecosystem function or scientific study; and *low* where there are no impacts to sensitive components of the ecosystem, the environment is resilient, of minor ecosystem importance or of limited scientific importance.

Additional categories for evaluating residual effects include societal importance, magnitude, geographic extent, duration, frequency, and reversibility.

A summary of the eight evaluation factors for assessing the residual environmental effects follows:

- **Direction** - difference in trend compared to existing condition measured by positive, negligible or negative change in the environment.
- **Ecological Importance** - importance of the ecosystem component in terms of rarity and uniqueness, fragility, importance to scientific studies, ranked high, moderate, low.
- **Societal Importance** - the value that individuals/communities place on components of the affected socio-economic and/or biophysical environments that are necessary for economic, social and cultural well-being, ranked as high, moderate, or low value.
- **Magnitude** - degree of disturbance the effect has on a component of the biophysical or socio-economic environment, ranked as large, medium or small.
- **Geographic Extent** - the spatial boundaries where the effect would occur: *Project Study Area* (indirect and cumulative effects in regional study area); *Local Study Area* (direct and indirect effects within 5.0 km wide corridor 2.5 km either side of ROW); *Project Site/Footprint* (direct effects for all components, e.g. transmission line, converter station, collector lines).
- **Duration** – how long the effect lasts ranked as: *Long-term* (effect greater 50 years); *Medium term* (extends through construction into operation up to 50 years); *Short-term* (effect occurs during construction phase of project up to 5 years).
- **Frequency** – how often would the effect occur ranked as: *Regular/continuous* (continuously or periodically through the life of the project); *Sporadic/intermittent* (without any predictable pattern during life of project); *Once* (occurs once in project life).
- **Reversibility** – what is the potential for recovery from an adverse effect: *Irreversible /Permanent* (remains indefinite even after decommissioning); *Reversible* (effect is reversible during the life of the project or upon project decommissioning).

The residual effects for PAI and TLE are listed in Table 13. In the ASI Stephens Lake the residual environmental effects are identified in three categories; access to unique ecological areas; disturbance and ultimate alteration; and loss of unique ecological habitat. The potential for disturbance of visitors to the roadside park at Red Deer River and to WMAs on the west side of Lake Manitoba is recognized (Elliott, pers. comm., 2010). The potential for bird mortality due to tower and conductor interactions is also increased close to parks or WMAs on both the west side of the province and the southern preferred route in the vicinity of Whitemud Watershed WMA, (Suggett, pers. comm., 2010), as well as in known riparian areas on the north side of the Assiniboine River (Beaubien, pers. comm.,2010). Although some variability is expected from

potential bird-wire collisions, overall, bird mortality resulting from these collisions with transmission lines associated with the project is considered small, long-term, infrequent and local (WRCS, 2011). In consideration of reduced numbers or species of birds due to construction or maintenance operations, this would be associated with habitat disturbed in the process. For example if mature forest is disturbed through clearing, then a reduction is anticipated in numbers of mature forest bird species.

Any physical effects on VEC enduring features through disturbance during construction or ongoing operations are likely to persist, especially in the more northern areas where vegetation cycles are limited by climatic factors. In addition, individuals or communities living in close proximity to the transmission line may feel that their enjoyment of the surrounding landscape is lessened by the presence or aesthetics of the transmission line. This potential impairment is difficult to address as is a perceived effect. The same applies to perceived effects of the electric and magnetic fields (EMF) from the new line. Societal importance includes the value that individuals or communities place on components of the affected socio-economic or bio-physical environments that are necessary for economic, social and cultural well-being. Any new development has an environmental effect and the magnitude of that intrusion is perceived differently by each individual.

As previously stated, this report focuses on protected areas and lands acquired by TLE. The bio-physical environmental effects noted above are dealt with in technical reports from the respective discipline specialist. Detailed information on bird species including environmentally sensitive areas and mitigation are found in Bipole III Birds: Technical Report by WRCS,2011. For detailed information on mammals see Bipole III Mammals: Technical Report by Joro and WRCS, 2011. For detailed information on cultural and heritage sites see Bipole III Aboriginal Traditional Knowledge (Petch, 2011).

Table 13: Residual Environmental Effect Assessment Summary Table – PAI & TLE

Residual Environmental Effect	Direction	Ecological Importance	Societal Importance	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Comments
Access to unique ecological areas due to line clearing & maintenance	Negative	High to moderate	High to Moderate	Large to Medium	Project Study Area to Local Study Area	Long to Medium	Regular /continuous	Reversible	ASI Stephens L., Ecological Reserves, WMAs
Disturbance/Loss to single and rare enduring features due to line clearing & maintenance	Negative	High	High	Large	Project study Areal to Local Study Area	Long term	Regular /continuous	Irreversible	Loss of single or rare enduring features – ASI Stephens L., Tom Lamb & Summerberry WMAs
Alteration/Loss of unique ecological habitat due to line clearing & maintenance	Negative	High to Moderate	High to Moderate	Large to Medium	Project Study Area to Local Study Area	Long term	Regular /continuous	Irreversible	ASI Stephens L., Tom Lamb & Summerberry WMAs, saltwater spring at L. Winnipegosis Salt Flats
Disturbance to visitors of areas protected as Park or WMA due to line clearing & maintenance	Negli-gible	Moderate	Moderate	Small	Local Study Area	Medium term	Sporadic/ Intermittent	Reversible	Red Deer River Park, WMAs on west side L. Manitoba and north side Assiniboine R.
Aboriginal lands from TLE - access & aesthetics from line clearing, line maintenance and presence - towers & conductors.	Negli-gible	Low	Moderate to Low	Small	Local Study Area	Medium term	Regular /continuous	Reversible	Fox Lake C.N., York Factory F.N., Tataskweyak C.N., Opaskwayak C.N., Sapotaweyak C.N., Wuskwi Sipihk C.N. Long Plain F.N.

4.7 Follow-up Monitoring

The requirements for follow-up monitoring of environmental or socio-economic issues identified to have potential environmental effects will be a component of the EIS and incorporated into construction, operation and ongoing maintenance activities. This should include evaluation of the unique bio-physical characteristics of enduring features of ASI Stephens Lake, Tom Lamb and Summerberry WMAs and selected protected areas such as Clearwater Lake Provincial Park and Red Deer Lake Provincial Park, Swan-Pelican Provincial Forest Reserves, existing and new WMAs and Community Pastures. Follow-up monitoring is recommended for unique physical features that may indirectly affect the ecological characteristics of special areas such as the salt water springs that feed the Lake Winnipegosis Salt Flats Ecological Reserve.

In response to aesthetic issues raised from individuals and communities, monitoring may be required to address perceived issues with EMF or access to aboriginal traditional-use areas. It is anticipated that this will be addressed on a case by case basis and may include interaction with community interest groups to ensure a successful program.

Follow-up monitoring and regular communication is required with individuals and communities that express concern over perceived impairment of aesthetics in close proximity to their home. This may include effects of both the construction and operation of the transmission line. In addition to the loss of natural sight line and general aesthetics, peoples' concerns are likely to include potential effects of electric and magnetic fields. Both issues may cause a negative health response from an individual's perceived loss of well-being or loss of property values from the presence of the line.

Follow-up monitoring for the determination of concerns for the effects from increased access should also be conducted. Manitoba Hydro has considerable experience from other projects and has developed a comprehensive Environmental Protection Plan which includes the control of access during construction (Manitoba Hydro 2011), however there should be continued monitoring for a reasonable time frame following completion of the line. Where there are affected community and/or stakeholder groups there should be the opportunity to work together with Manitoba Hydro to determine the protocol, procedures, timeframe and reporting schedule for the various monitoring programs.

A summary of proposed monitoring activities follows:

4.7.1 Project Footprint

- Monitor clearing and construction to ensure buffer zones, and permit requirements are met with regard to handling and storage of deleterious substances.

- Monitor best management practices, storage and use of deleterious substances such as fuels, herbicides and pesticides.
- Monitor control and treatment of wastewater and waste management at converter stations, construction camps and roving mobile work camps.

4.7.2 Right-of-Way Maintenance

- Monitor access roads during use and following decommissioning for disturbance to designated protected areas or ASIs and aboriginal traditional-use areas.
- Monitor best management practices, storage and use of deleterious substances such as fuels, herbicides and pesticides.

4.7.3 Protected Areas

- Assess any impact on the unique bio-physical characteristics of enduring features of ASI Stephens Lake and selected protected areas such as Clearwater Lake Provincial Park and Red Deer Lake Provincial Park, Lake Winnipegosis Salt Flats Ecological Reserve, Swan-Pelican Provincial Forest Reserve, existing and new WMAs and Community Pastures.
- Undertake population surveys of selected wildlife and bird species and assessment of wildlife and bird habitat and mortality over time at selected WMAs where the line interacts with a site and in keeping with recommendations of discipline specialists.

4.7.4 Aboriginal Lands from TLE

- Monitoring of access roads during use and following decommissioning for disturbance to aboriginal traditional-use areas.
- Maintain regular communication with individuals and communities that express concern over perceived impairment of aesthetics in close proximity to their homes. This may include effects of both the construction and operation of the transmission line.
- Follow-up with individuals who have concern for potential effects of electric and magnetic fields. Both issues may cause a negative health response from an individual's perceived loss of well-being or loss of property values from the presence of the line.

5 SUMMARY

This report provides the technical review and evaluation of the three alternative routes and the final preferred route from the perspective of Protected Areas and Aboriginal lands derived from the Treaty Land Entitlement (TLE) process. The valued environmental components (VECs) are identified and an assessment provided for incorporation into the preparation of the project Environmental Impact Statement (EIS) as presented in Manitoba Hydro's June 2010 Environmental Assessment Scoping Document (Manitoba Hydro, 2010 b).

The evaluation of VECs for protected areas and TLE lands was based on interaction with the 66 metre ROW or the 4.8 km planning corridor. A value of high was assigned for a direct interaction with the ROW, a medium for interaction with the 4.8 km corridor and a low for no interaction. A medium was also assigned for TLE lands that were in close proximity, 1.6 km, of the 4.8 km corridor. For alternative routes, there was no one route that was markedly advantaged over the two others as all three had interactions on a similar level.

For the three alternative routes there were four principal areas of concern with high and medium VEC ranking: ASI 114, Stephens Lake; ASI 112, Amisk South; ASI 107, Burntwood River; and ASI 86, Red Deer Lake. In addition, interactions involved Provincial Forest Reserves, Wildlife Management Areas and Community Pastures. Aboriginal lands and lands acquired from the TLE process were found to have high interactions at 8 sites for alternative route A, 10 sites for route B and 9 sites for route C. Each of the alternative options had a relatively equal number of interactions while each alternative also provided its own unique positive attributes.

The final preferred route through the SSEA process was successful in having the 66 metre ROW avoid Aboriginal lands to the extent possible. The final preferred route planning corridor was found to be within 1.6 km of 12 sites of which 3 were ranked as high and 9 were ranked as medium. The three areas which were ranked high were all from segment 7 in areas where there were significant limitations for route options due to the physical terrain characteristics, existing infrastructure, and existing aboriginal lands. It is anticipated that in the final planning process Manitoba Hydro will be able to work though the identified areas to minimize interactions.

PAI and TLE interactions are identified and assessed for the construction, operations and maintenance phases of the project development. Mitigation measures are also identified to avoid or minimize adverse effects. The potential residual environmental effects after mitigation are identified as well as options for follow-up monitoring of environmental effects.

6 CONCLUSIONS

The results of this study indicate that the final preferred route minimizes the interaction with VECs of the Protected Areas Initiative and Aboriginal lands acquired from TLE when compared to the initial three alternative routes presented by Manitoba Hydro in 2009.

There were 14 VEC and 27 TLE high ranking interactions in total among the three original route alternatives. The final preferred route avoids all but one of these high ranked interactions. Only the ASI Stephens Lake remains, where a feasible alternative option could not be identified for protected areas. In the assessment of Aboriginal lands acquired from TLE, only 3 high rankings were found within the planning corridor and the ROW does not directly interact at these locations. These 3 are located at highly constricted areas of the route, with limited options due to terrain characteristics and existing encumbrances. In consideration of the total length of the final preferred route, the potential for adverse effects on aboriginal lands during construction are anticipated to be negative, small, local, and short-term in duration.

The most common effect of transmission lines on protected areas such as ASIs, Parks, Ecological Reserves, Forest Reserves, WMAs, and Community Pastures is disturbance during construction for the short term and during maintenance over the long term. This includes physical damage or loss of unique ecological features, either permanent or short term, and increased access resulting in disturbance of natural features and potential disturbance of wildlife habitat.

Manitoba Hydro through the site selection process sought to avoid or minimize the interaction with Aboriginal lands and was successful in that objective. Where Aboriginal lands or communities are in close proximity to the proposed preferred route, the issues of concern will include: visual impairment of natural landscapes from an aesthetic perspective; noise and traffic during construction; increased access potentially affecting wildlife, including bird populations during times of nesting, rearing and migration; and disturbance of community gathering or cultural sites.

Transmission lines are generally considered as low impact developments as far as the natural environment is concerned, because following construction there is little activity associated with the line or the ROW. It is anticipated that for Bipole III there will be minimal clearing requirements in the northern sections where cover types do not support tree or tall-growth vegetation. There are also large areas such as fens and bogs or areas that have been recently burned. In the northern climate, vegetation management cycles are long due to reduced growth rates in this more severe environment and not as frequent or intense as found in southern areas of the province.

Manitoba Hydro has considerable experience in similar developments of this magnitude and is committed through its Environmental Management Policy to protecting the environment by integrating environmentally responsible practices into its business (Manitoba Hydro 2008c and 2010). Manitoba Hydro's Environmental Management Protection Program (Manitoba Hydro 2011) is based on corporate commitments and policies, regulatory requirements, best practices guidance, and stakeholder input. This program will provide the framework for the implementation, management, monitoring and evaluation of mitigation measures and environmental protection activities in keeping with the environmental effects identified in the assessment of this project. The proposed mitigation measures for the Protected Areas and TLE interactions identified in this report should assist in minimizing the potential for environmental effects from the project.

Many physical and most of the perceived effects of a transmission line on the environment cannot be eliminated by mitigation. Easement agreements with provisions to compensate landowners for the physical impacts associated with a transmission line are a common practice in the agricultural sector. Manitoba Hydro compensates landowners by purchasing an easement for the right-of-way and by payment for structure placement on agricultural land. Consideration should also be given to compensation options for unavoidable effects on natural habitat or special areas within the final preferred route.

7 REFERENCES

Daniels,T., Lafreniere, G., Smith, O, Yellowquill, M., Daniels, A. 2011. Long Plain First Nation Traditional Knowledge Report for Manitoba Hydro Bipole III Project. 40p.

Joro Consultants Inc. 2011. Bipole III Mammals: Technical Report. Prepared for MMM Group and Manitoba Hydro. Winnipeg, Manitoba.

Joro Consultants Inc., and Wildlife Resource Consulting Services Inc. 2011. Bipole III Woodland Caribou: Technical Report. Prepared for MMM Group and Manitoba Hydro. Winnipeg, Manitoba.

Manitoba Hydro. 2011. Environmental Protection Program, Licensing and Environmental Assessment, Manitoba Hydro.

Manitoba Hydro. 2010. Bipole III Transmission Line Project: Preferred Route Selection Process prepared M. Falk June 2010.

Manitoba Hydro. 2010. Sustainable Development Report 2009/10. 152p.

Manitoba Hydro. 2010b. Bipole III Transmission Project Scoping Document. Licensing and Environmental Assessment, Manitoba Hydro.

Manitoba Hydro. (2008-2010). Bipole III Newsletters #1 - 4.

Manitoba Hydro. 2008c. Environmental Management Policy. Manitoba Hydro. 1p.

Manitoba Hydro. 2007. Transmission Line and Transmission Station Vegetation Management Strategies. 152p.

Manitoba Hydro. 2001. Shorelines, Shorelands and Wetlands: A Guide to Riparian Ecosystem Protection at Manitoba Hydro Facilities. (Third Edition). Prepared for Manitoba Hydro by Training Unlimited Inc. 104p.

Manitoba Hydro. 1995. Fur, Feathers and Transmission Lines: How Rights of Way Affect Wildlife (Second Edition). Prepared by Robert Berger. 62p.

Manitoba Hydro and Nisichawayasihk Cree Nation. 2003. Wuskwatim Transmission Project: Environmental Impact Statement. Appendices A to H.

Manitoba Natural Resources. 1998. A System Plan for Manitoba's Provincial Parks. Parks and Natural Areas Branch. Winnipeg, Manitoba.

Minnesota Department of Commerce. 2006. Big Stone Transmission Line Project, Environmental Impact Statement.

MMM and NLHS. 2011. Aboriginal Traditional Knowledge, Bipole III Reliability Improvement Project, Manitoba Hydro, Winnipeg, Manitoba. 308p.

Opaskwayak Cree Nation. 2011. Aboriginal Ecological Knowledge Project Report on Proposed Bipole III Transmission Line – Manitoba Hydro, Natural resource Council. 24p.

Petch, V. 1990. Salt-Making in Manitoba, *Manitoba History*, Number 51. Winnipeg Manitoba.

Petch, V. 2003. Aboriginal People and Birds: A Brief Cultural History of Manitoba's First People. In The Birds of Manitoba. Taylor, P. Editor-in-Chief, R. Koes, Illustrator. Friesen Printers, Altona, MB. pg. 56-63.

Scott, D. 2011. TKP Report, Swan Lake First Nation, Preliminary Report on the Findings and Concerns Identified by Traditional Knowledge Project. 76p.

Smith, R.E., H. Veldhuis, G.F. Mills, R.G. Eilers, W.R. Fraser, and G.W. Lelyk. 1998. Terrestrial Ecozones, Ecoregions, and Ecodistricts, An Ecological Stratification of Manitoba Natural Landscapes. Technical Bulletin 98-9E. Land Resource Unit, Brandon Research Centre, Research Branch, Agriculture and Agri-Food Canada, Winnipeg, Manitoba. Report and map at 1:1 500,000 scale.

Stantec. 2011. Bipole III Transmission Line Project: Technical Report on Terrain and Soils Draft. Prepared for: MMM Group and Manitoba Hydro, Winnipeg, Manitoba.

TLECMI. (1997). Framework Agreement Treaty Land Entitlement. Treaty Land Entitlement Committee of Manitoba Inc. and Her Majesty the Queen in the Right of Canada and Her Majesty the Queen in the Right of Manitoba.

Tataskweyak Cree Nation. 2011. Tataskweyak Cree Nation Report on Bipole III and Expected Impacts. 45p.

Wildlife Resource Consulting Services Inc. (WRCS). 2011. Bipole III Birds: Technical Report. Prepared for MMM Group and Manitoba Hydro. Winnipeg, Manitoba. 357p.

Wotton, D. (2010). Bipole III: Technical Report. Evaluation of Alternative Routes for Areas of Special Interest to the *Manitoba Protected Areas Initiative and Aboriginal Lands from Treaty Land Entitlement.* Prepared for MMM Group and Manitoba Hydro. Winnipeg, Manitoba. 45p.

PERSONAL COMMUNICATION

Beaubien, Y. (2009, 2010, 2011). Manager Protected Areas Initiative, Manitoba Conservation, Sustainable Resource and Policy Management Branch. Winnipeg, Manitoba.

Elliott, Jessica. (2010, 2011). Ecological Reserves and Protected Areas Specialist, Manitoba Conservation, Parks and Natural Areas Branch, Winnipeg, Manitoba.

Roberge, Elvira. (20O9, 2010). Protected Areas Resource Planner, Protected Areas Program, Manitoba Conservation, Sustainable Resource and Policy Management Branch. Winnipeg, Manitoba.

Stevenson, Lori. (2009, 2010, 2011). Manager Crown Land and Treaty Land Entitlement Programs, Manitoba Conservation, Lands and Geomatics, Neepawa, Manitoba.

Suggett, Glenn. 2010. Manitoba Conservation, Wildlife Management Areas, Wildlife and Ecosystem Protection Branch, Winnipeg, Manitoba.

WEBSITES

Canadian Environmental Asessment Agency CEAA. website (n.d.). Retrieved 2009,2010,2011, from http://www.ceaa.gc.ca

B.C. Hydro Website (2011).Northwest Transmission Line Project Cedar-Kiteen Wildlife Connectivity Corridor - Mitigation Measures for the Proposed NTL (FINAL) Jan 5, 2011

Indian and Northern Affairs Canada website (2010), First Nations and Treaty Areas in Manitoba. Online document accessed 2010, 2011.
http://ainc-inac.gc.ca/ai/scr/mb/rm/mps/mpfnta-eng.asp#dsc

Newfoundland Labrador website (2011) Environmental Impact Statement Draft Guidelines and Scoping Document Labrador-Island Transmission Link Nalcor Energy, issued by Government of Newfoundland and Labrador and the Government of Canada. January 2011.

Manitoba Conservation website. (n.d.). Retrieved 2009, 2010, 2011 from
http://www.gov.mb.ca/conservation/protected areas.html
http://www.gov.mb.ca/conservation/wildlife/habscons/wmas.html
http://www.gov.mb.ca/conservation/cdc/ecoregions.html
http://www.manitoba.ca/conservation/forestry/brochures/provincial_forests.pdf
http://www.gov.mb.ca/conservation/parks/pdf.html

Manitoba Hydro website. (n.d.). Retrieved 2010, from
http://www.hydro.mb.ca/projects/bipoleIII/description.shtml
http://www.mb.hydro.ca/projects/riel/station.shtml
http://www.hydro.mb.ca/projects/wuskwatim/environmental.html

Prairie Farm Rehabilitation Administration (PFRA) website. (n.d.). Retrieved 2010, from
http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1183493052855&lang=eng

Wisconsin Public Service Commission, Retrieved 2011
http://psc.wi.gov/thelibrary/publications/electric/electric10.pdf

FIRST NATIONS 2011
http://www.foxlakecreenation.com/about/
http://york_factory_fn_304.tripod.com/comminfo.html
http://www.opaskwayak.ca/history.php
http://www.ainc-inac.gc.ca/ap/index-eng.asp
http://fnpim-cippn.inac.gc.ca/index-eng.asp
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=288&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=324&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=314&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=315&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=306&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=304&lang=eng
http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=305&lang=eng

APPENDIX 1

Evaluation and Ranking of Alternative Routes

Table 14: Evaluation and Ranking of Alternative Routes A, B, and C by Segment and Node

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
	A1	B1	C1		ASI # 187 Churchill WMA	M		
1				A1_A2_B1C1_B2C2_AB		L		
	A2	B2	C2			M		
2				A2_A3_B2C2_B3C3_AB		H		
	A3	B3	C3			H	Site 6 (187) Little Limestone Lake, York Factory FN	H
3		BA1		B3C3_B4C4_BA1_B	ASI 114, Stephens Lake	H		
		B4	C4		Enduring Features of 4 Natural Regions (1a,3,4a,4b)	M		
4		BA2		B4C4_B5C5_BA2_B		M	Stephens Lake Fee Simple Site, Tataskweyak CN	H
5				A3_A4_BA1_BA2_A	4 Features are Rare and 1 is Single Occurrence	L		
		B5	C5			H		
	A4					M		
6				B5C5_B6C6_BB1_B		M		
		B6	C6			M		
		BB1				L		
7				B6C6_B7C7_BA3_BB1_B		L		
		B7	C7			L		H
		BA3				L		
8				A4_A5_BA3_A		L		

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
	A5					L		
9		AB1		A5_A6_AB1_A		L		
	A6					L		
10				A6_A7_AA1_A		L		
	A7				ASI# 112 Amisk South, transects enduring features	H		
	AA1				Cuts SE corner ASI 112 & transects Waterfowl Hotspot at base of SW corner of ASI	M	Site #7.01(911) Harding Lake & #14.01 (913) Pakwaw Lake, Nisichawayasihk CN	H
11				B7C7_B8C8_AB1_B		L		L
		B8	C8			L		L
12				B8C8_B9_C9_BC		L		L
		B9				L		L
			C9		Transects Waterfowl hotspot, NE of Wuskwatim Lake	M	Site1101 (916) Moak L.. Site 2-2000 (671) Birch Tree Brook, Site 3-2000 (688) Birch Tree Brook Addition, Site1-06(1332) Wuskwatim Rd. Mile17B, Nisichawayasihk CN	H
13				A7_A8_AA1_A		L		L
	A8					L		L
14				A8_A9_AC1_A		L		L

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
	A9				ASI 107, Burntwood R. transects middle of ASI, across 2 Enduring Features	H	Site 6-2000(790) Notigi, Site 4.1 Notigi Service Centre Fee Simple Site, Nishawayasihk CN	H
	AC1					L	Site#13-01 (933) Osik L., #3-01 (932) Chipewyan Bay, #8-01 (929) Leaf Rapids to Gate Falls, Nishawayasihk CN	H
15				B9_B10_BB2_B		L		L
		B10				L		L
		BB2				L		L
16				C9_C10_AC1_C		L		L
			C10			L		L
17				A9_A10_AA2_A		L		L
	A10					L		L
	AA2				Grass River Provincial Park, western edge	H		L
18				A10_A11C11_C10_AC		L		L
	A11		C11			L		L
19				A11C11_A12_C12_AC		L		L
	A12				Cormorant Forest Reserve, ROW on northern edge	M	Site # 1-05(1275) Egg Lake, Opaskwayak CN	H
			C12			L		L

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
20				B10_B10G_BB2_B		L		L
		B10G				L		L
21				B10G_B11C13G_C12_BC		L		L
		B11	C13G		ASI 91, Tom Lamb WMA, follows northwest edge of WMA, majority on Railway Clearwater Lake Provincial Park Cormorant Forest Reserve	M M M		L
22				A12_A13_AA2_A		L		L
	A13				ASI 92, Saskeram WMA; traverses western edge Community Pasture, (Kelsey)	M M	Site #8 (557) Barrier Settlement, Opaskwayak CN	H
23				B11C13G_B13C15_CA1_B		L	Site # 6-2000 (712) Cemetery Rd., Opaskwayak CN	H
		B13	C15			L	Site #2-06(1412), 21A South, Opaskwayak CN	H
			CA1		ASI 86, Red Deer Lake, north edge along Railway	L	Site #2-06 (1412), 21 A South, Opaskwayak CN	H
24				A13_A14_CA1_A	ASI 86, Red Deer Lake, northwest on Railway track	L		L
	A14				ASI 86, Red Deer Lake; transects salt flats and old river delta, priority areas	H		L

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
25				B13C15_B14_C16_BC		L		L
		B14			East ASI 86, existing infrastructure HWY #10 and MB Hydro ROW	L	Site #2-02 (972) Overflowing River, Sapotaweyak CN	H
			C16		ASI 86, Red Deer Lake, around Plummers Marsh	H	Site # 3-02 (973) PTH 10 Sapotaweyak CN	H
26				B14_C16_B15C17_BC		L		L
		B15	C17			L	Site # 3-99 (583), The Bluff (revised), Sapotaweyak CN	H
27				A14_A15_A C2_A		L		L
	A15				Porcupine Forest Reserve Duck Mountain Forest Reserve Duck Mountain Provincial Park, ROW on western edge	M M H	Site # 1-01(900), #2-01(901), #3-01 (902), #4-01 (903), #5-01 (904), #6-01 (905), #7-01 (906), #8-01 (934), #9-01 (935), #12-01 (938), # 13-01 (939), #14-01 (940), # 15-01 (941), #16-01 (942); Private Purchase lands, Rolling River FN	H
	AC2					L	Site 5-02 (970), Pelican Rapid Access Road Phase-3, #1-02 (971) Red Deer Lake (amended), Sapotaweyak CN, #7-02 (997) Red Deer River South, Wuskwi Sipihk CN	H

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
28				B15C17_B16_B		L	Site # 3-99(583), The Bluff (revised), Sapotaweyak CN, Site #5-01 (806) Red Deer River North, #7-02 (997) Red Deer River South, Wuskwi Sipihk CN	H
		B16	C18			L	Site #5-01 (806) Red Deer River North, #7-02 (997) Red Deer River South, Wuskwi Sipihk CN, Site 5-02 (970), Pelican Rapid Access Road. Phase-3, #4-02 (974) Pelican Rapids Rd. Access Phase-1, # 1-03 (1101) Pelican Rapids Access Rd.-Phase-2, Sapotaweyak CN	H
29				B16_B18_C19_AC2_BC	Steeprock WMA , ROW on western edge	M	Site 5-02 (970), Pelican Rapid Access Rd. Phase- 3, Sapotaweyak CN	H

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
		B18			Steeprock WMA ROW on western edge	M	Site # 6-99(518) Various Crown/Crown lease Ag. Lands, Site #3 (805) All 30-41-24 WPM (3) Palmondon, Site #6-99 (1672), Various Crown Land /Crown Lease Ag.Lands, Wuskwi Sipihk CN, Site#5-02 (970), Pelican Rapid Access Rd. Phase- 3, Sapotaweyak CN	H
			C19		Community Pasture (Lenswood)	M	Site#5-02 (970), Pelican Rapid Access Rd. Phase- 3, Sapotaweyak CN	H
30				B18_B19C20_C19_BC		M		L
		B19	C20		Cowan Ecological Reserve Swan-Pelican Forest Reserve	H M		L
31				B19C20_B21_C21_BB3_BC		L		L
		B21				L		L
			C21		Community Pasture (Ethelbert)	M		L
		BB3				L		L
32				B21_B22_BB3_BC3_B		L		L
		B22			Weiden WMA Westlake WMA	M M		L
		BC3				L		L

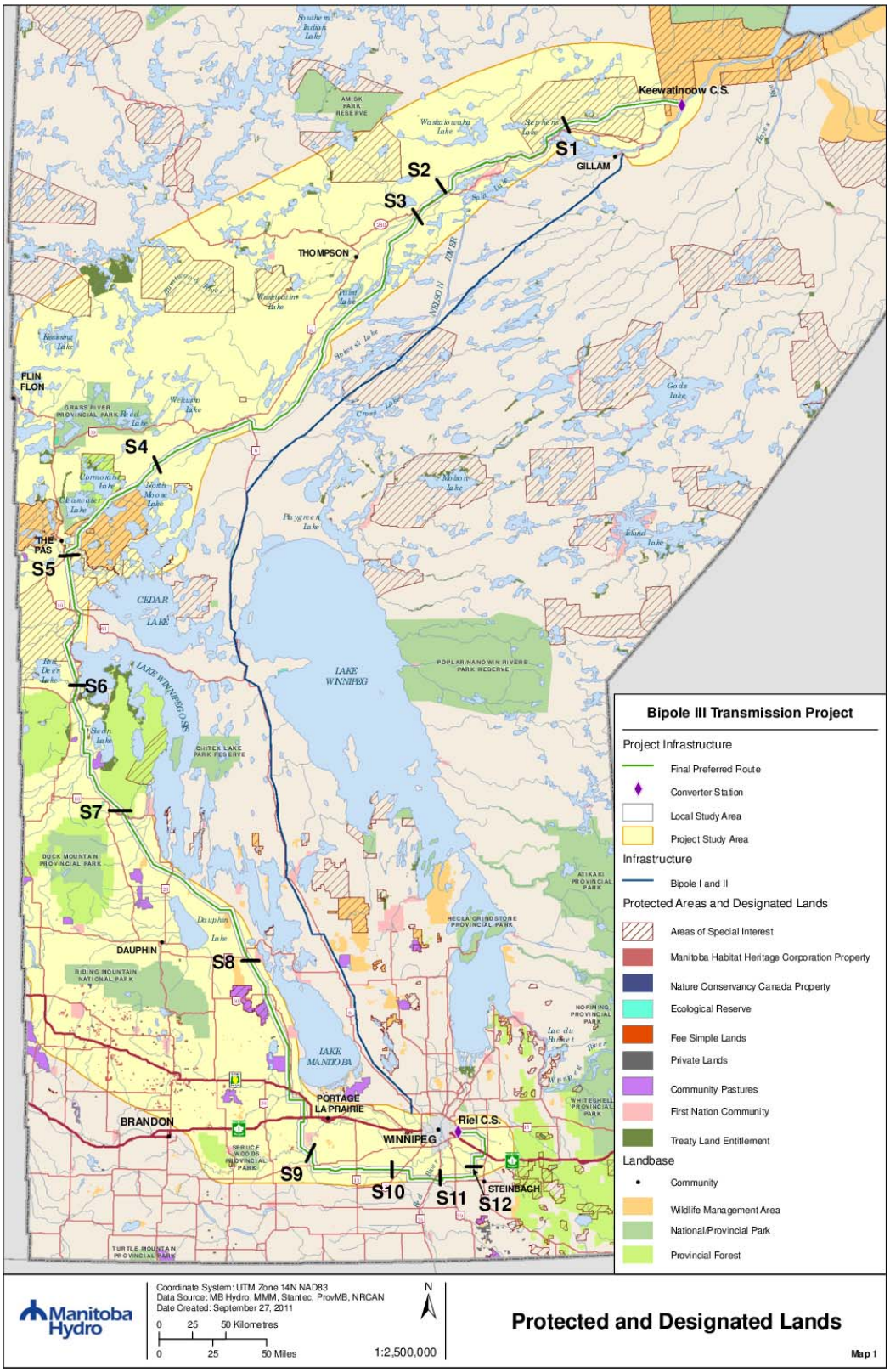
Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
33				B22_B23_BA4_B		L		L
		B23			Alonsa Community Pasture Langruth WMA Lakeview Community Pasture	M M M		L
		BA4			Community Pasture	M		L
34				C21_C22_BC3_C		L		L
			C22			L		L
35				A15_C22_A17C24_BA4_AC		L		L
	A17		C24		Mb Wildlife Federation site Whitemud Watershed WMA	M M		L
36				B23_B24_BB6_B		L	Site #4 (665) Purchased Land, Long Plain FN.	H
		B24				L	Site #4 (665), #5 (666), #13 (1281), #14 (1282), #15 (1283), #16 (1284), #17 (1285), #18 (1286), #19 (1287), #1-06 (1352) 1-06 (1352), #4 (1772), #4 (1772). Purchased Lands, Long Plain FN.	H

Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
		BB6				L	Site # 7 (1162), #8 (1163),#9 (1164), #11 (1166), #12 (1167), # 19 (1287), # 2-07 (1492), # 3-07 (1493), #4-07 (1494), #5-07 (1495), # 6-07 (1572), #7-07 (1573). Purchased Lands, Long Plain FN.	H
37				A17C24_A18C25_B24_B25_AB		L		L
	A18	B25	C25			L		L
38				A18C25_A19_C26_AC		L		L
	A19		C26			L		L
39				B25_B26_BB6_BC4_B		L		L
		B26				L		L
40				C26_C27_BC4_C		L		L
			C27			L		L
			CA2			L		L
41				C27_C28_CA2_C		L		L
			C28			L		L
42				A19_A20_CA2_A		L		L
	A20					L		L
43				A20_A21_A C3_A		L		L
	A21					L		L

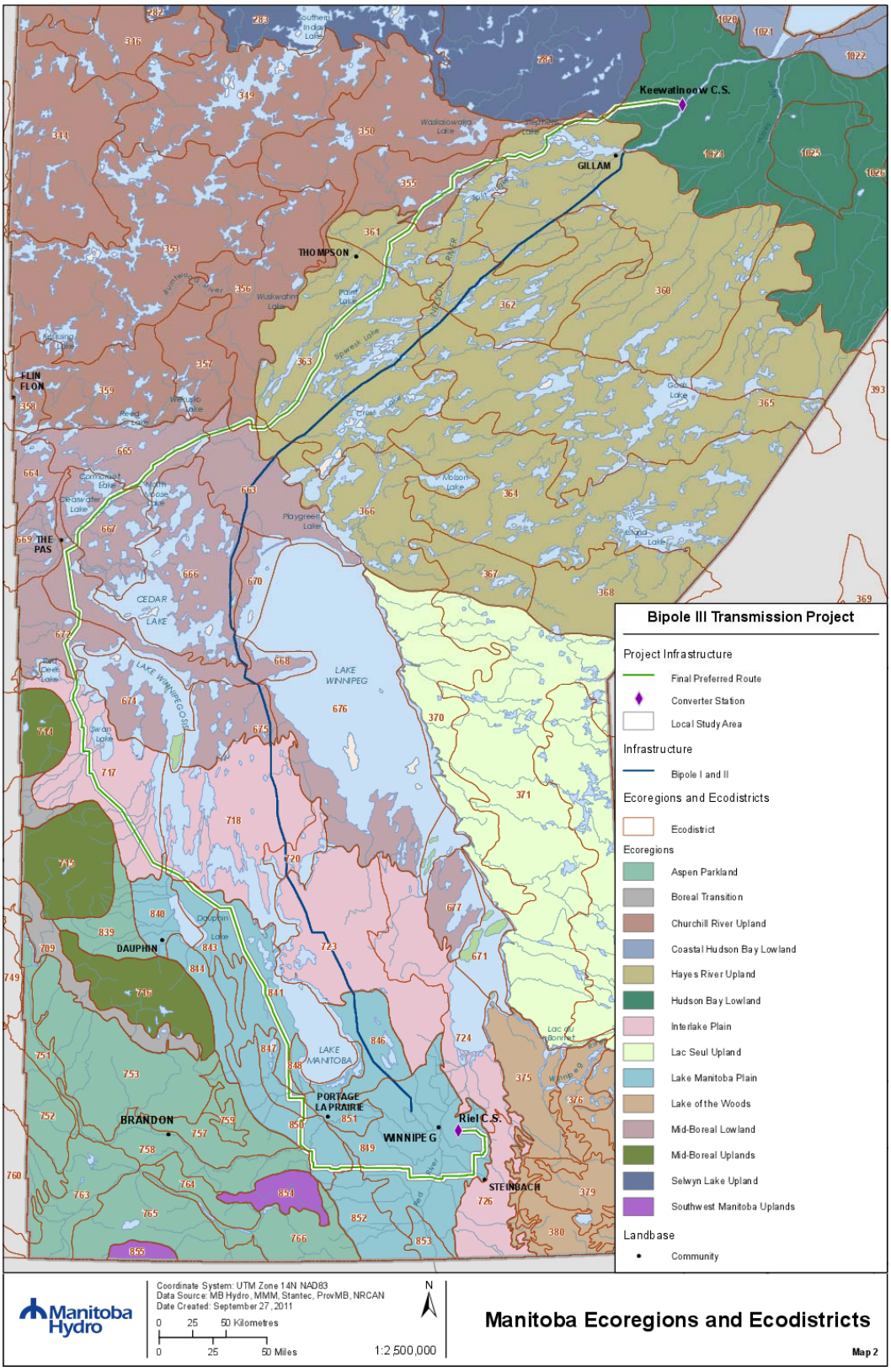
Node	A	B	C	Node Designation	VEC	PAI Rank	TLE	TLE Rank
	AC3					L		L
44				B26_B28_C28_C30_AC3_BC		L		L
		B28	C30			L	Peguis FN. Notice Area	M
			CA3			L		L
45				A21_A22_A C4_A		L		L
	A22					L		L
46				C30_C31_AC4_CA3_C		L		L
			C31			L	Peguis FN. Notice Area	M
47				A22_A23_CA3_A		L		L
	A23					L	Peguis FN. Notice Area	L
48				A23_AC5_A		L	Peguis FN. Notice Area	M
		B29				L	Peguis FN. Notice Area	M
49				C31_AC5_CB1_C		L	Peguis FN. Notice Area	M
50				B28_B29_CB1_B		L	Peguis FN. Notice Area	M

APPENDIX 2
MAPS

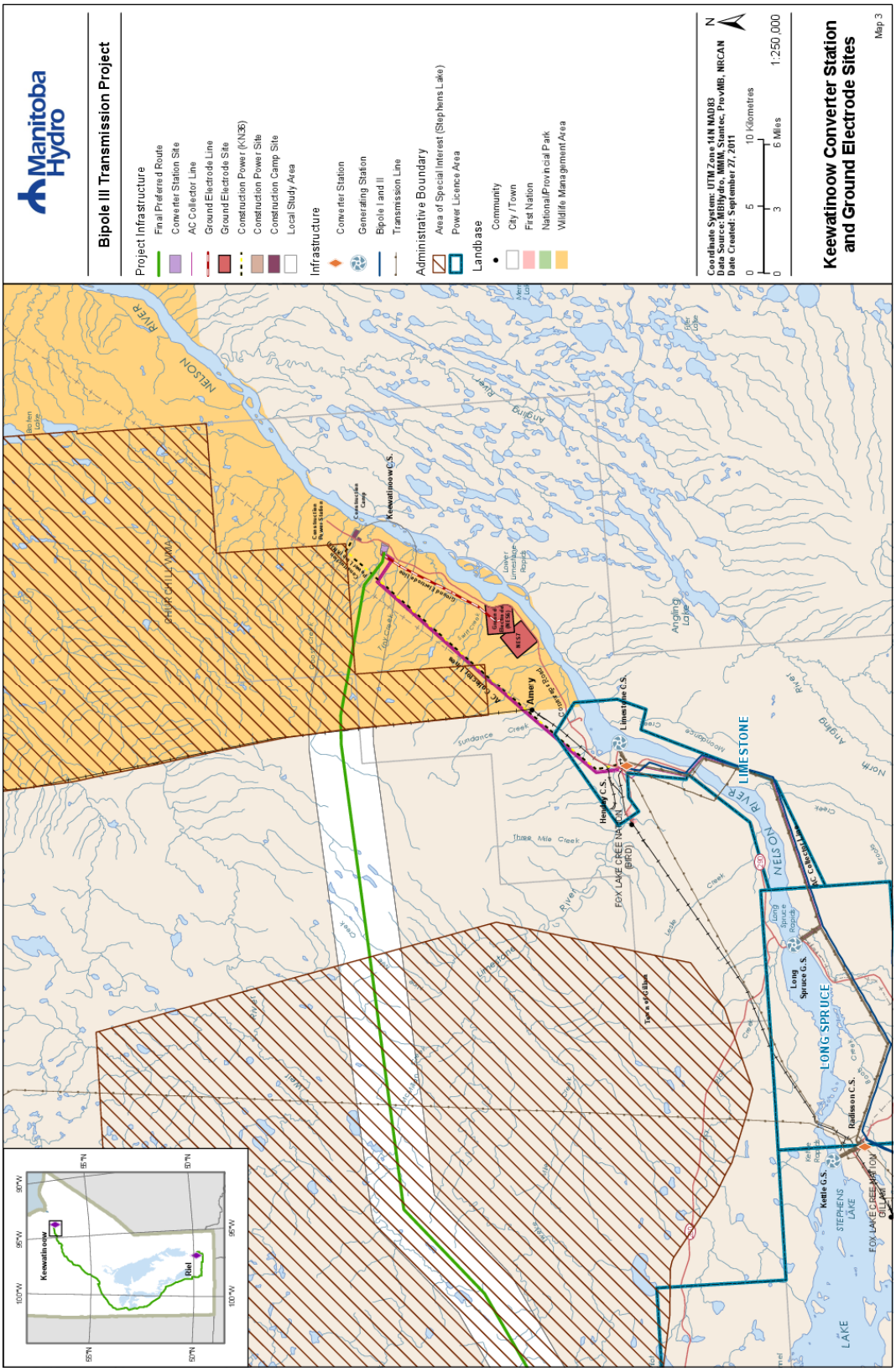
The 11x17“ versions of maps shown in the following pages are also enclosed as separate sheets.



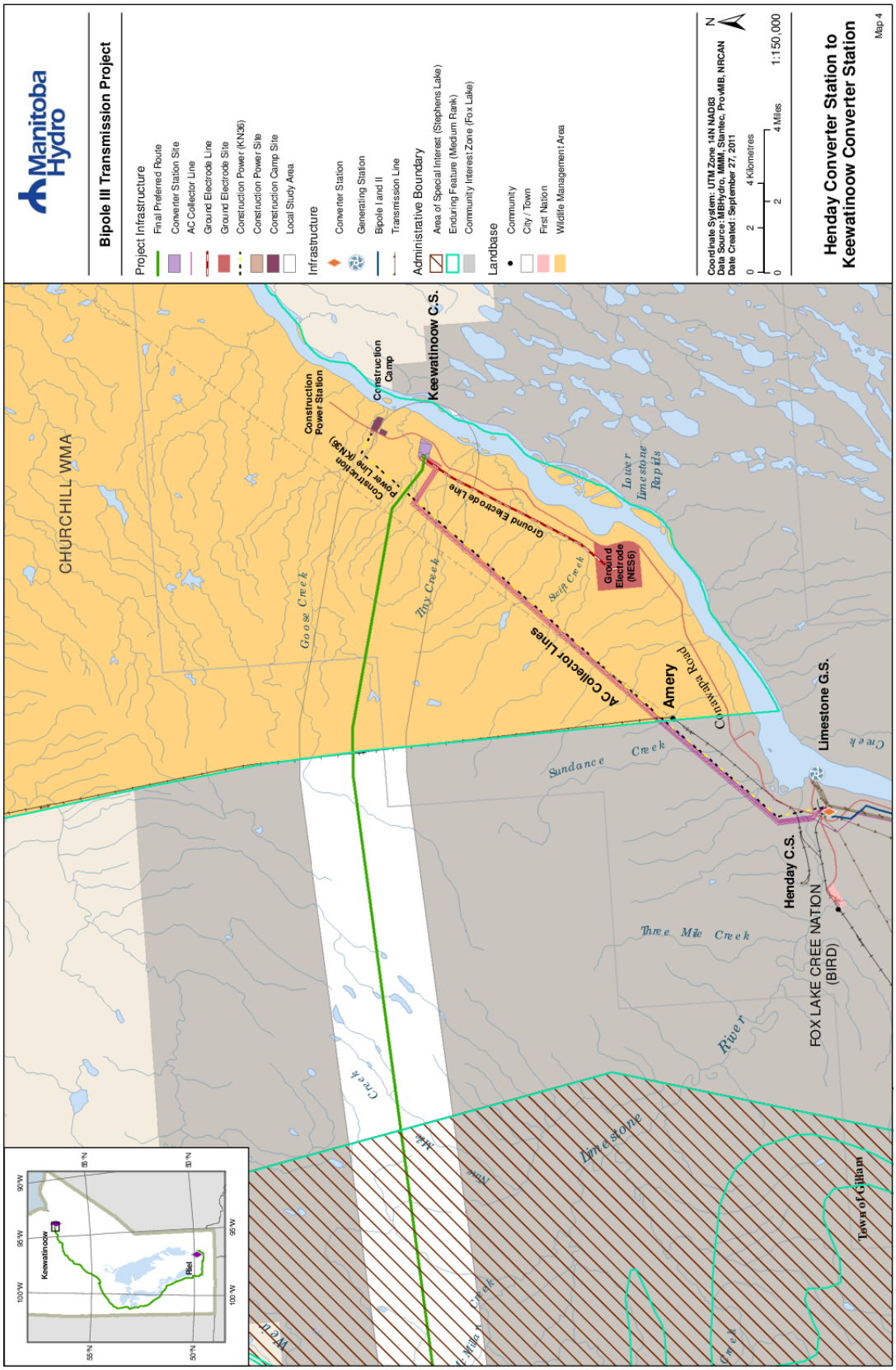
Map 1 : Protected and Designated Lands in Manitoba with Bipole III Segments



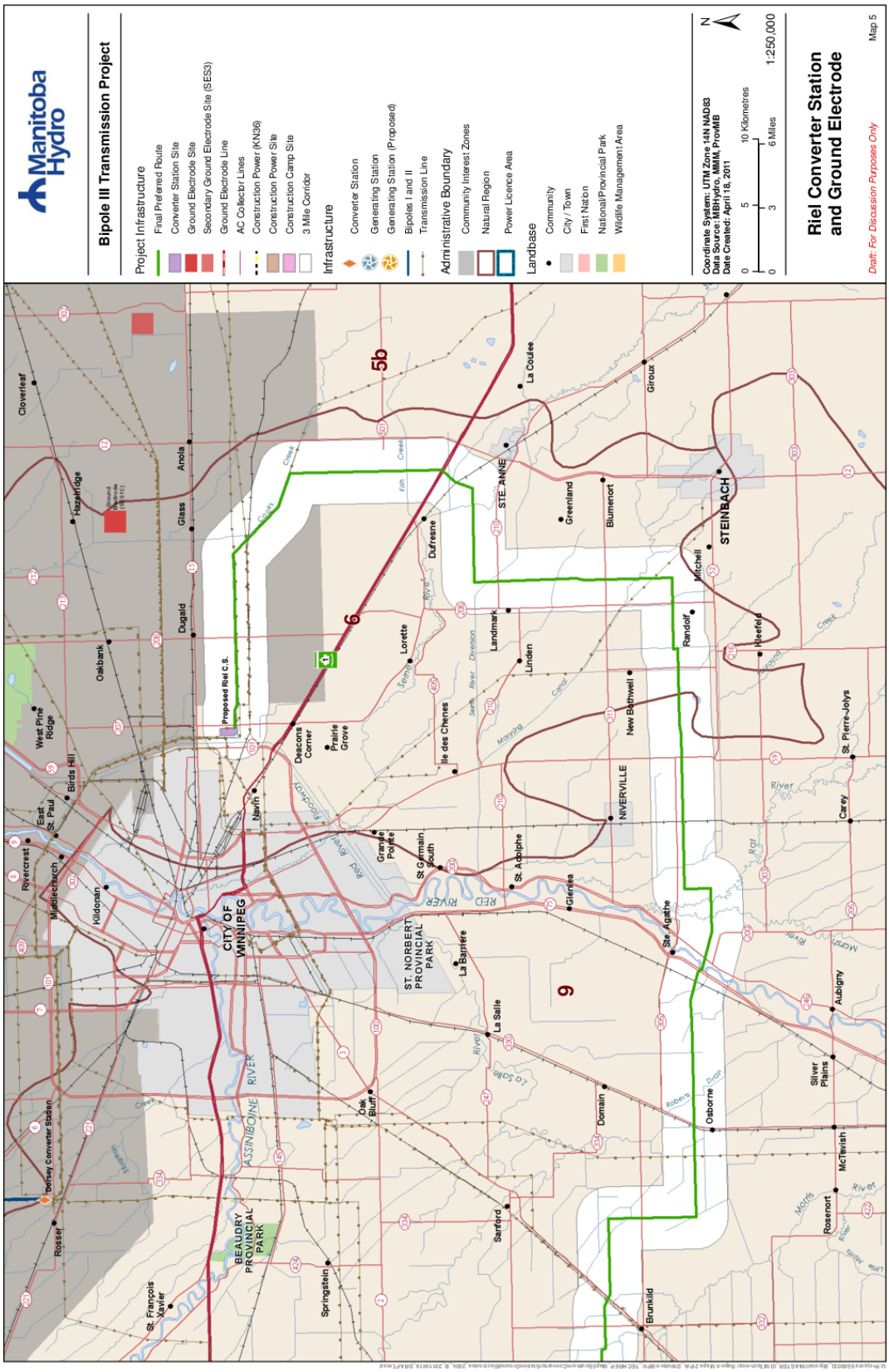
Map 2: Manitoba Ecoregions and Ecodistricts



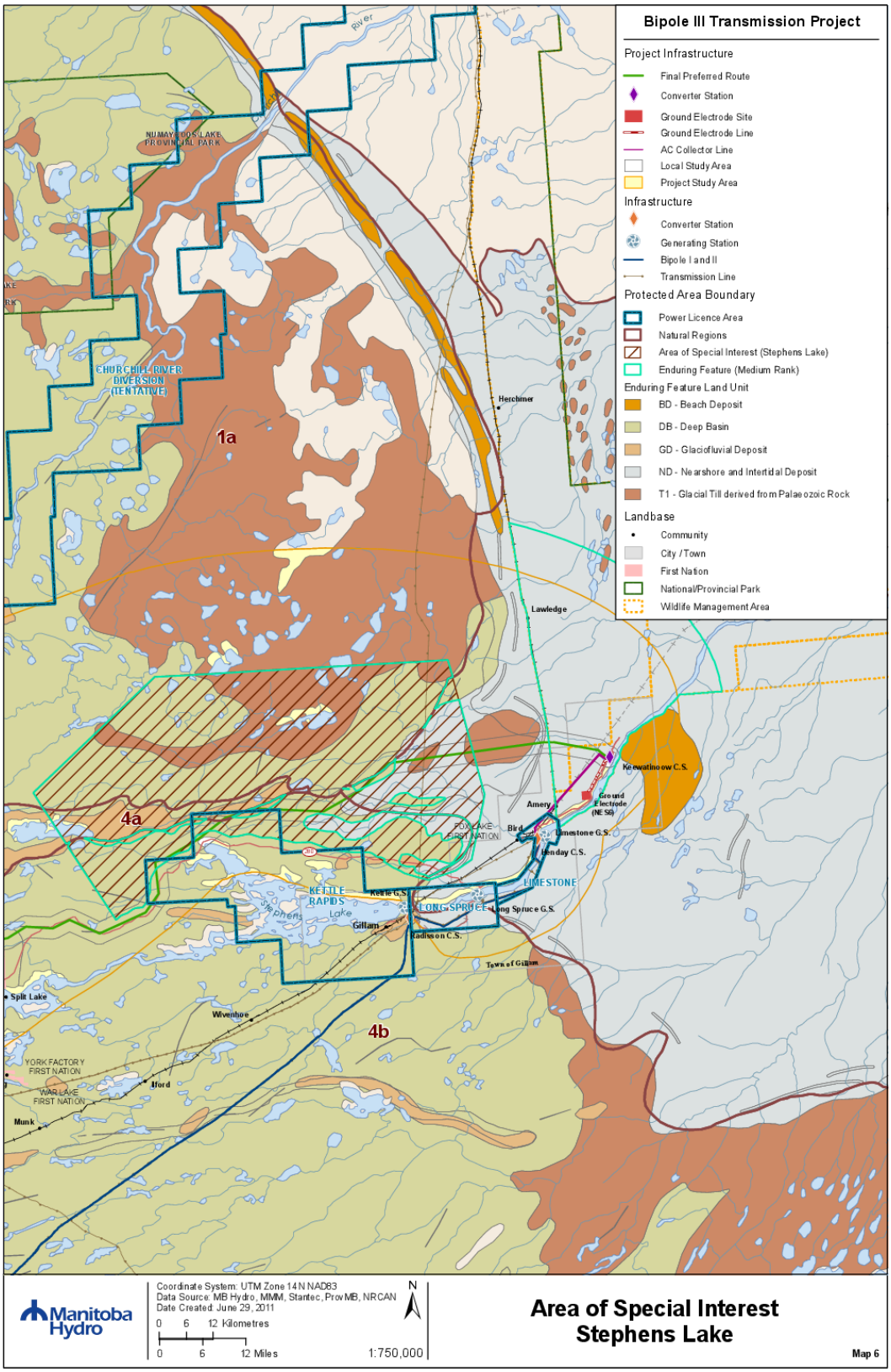
Map 3: Keewatinoow Converter Station and Electrode Sites



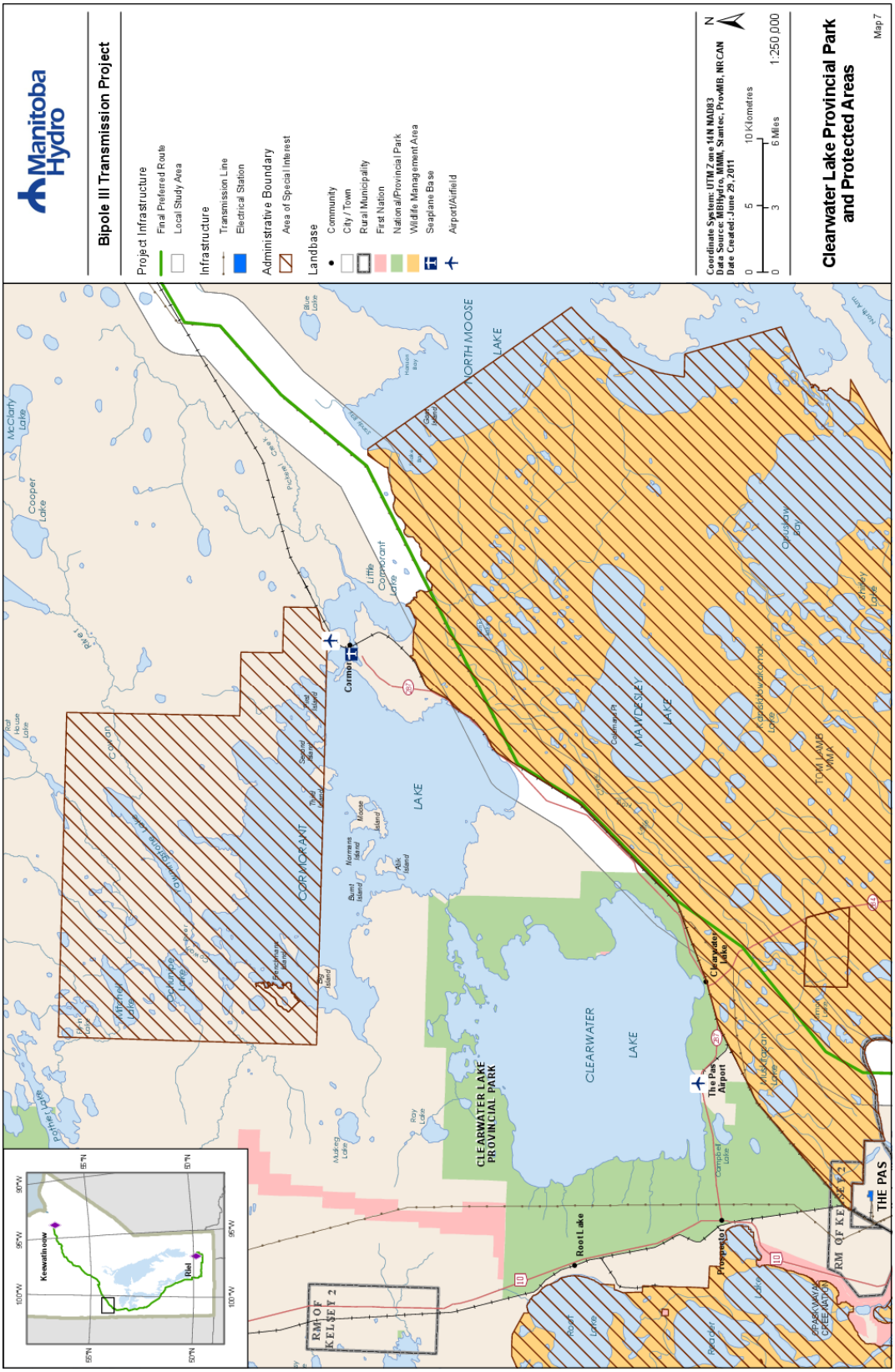
Map 4: Henday Generating Station to Keewatinoow Converter Station



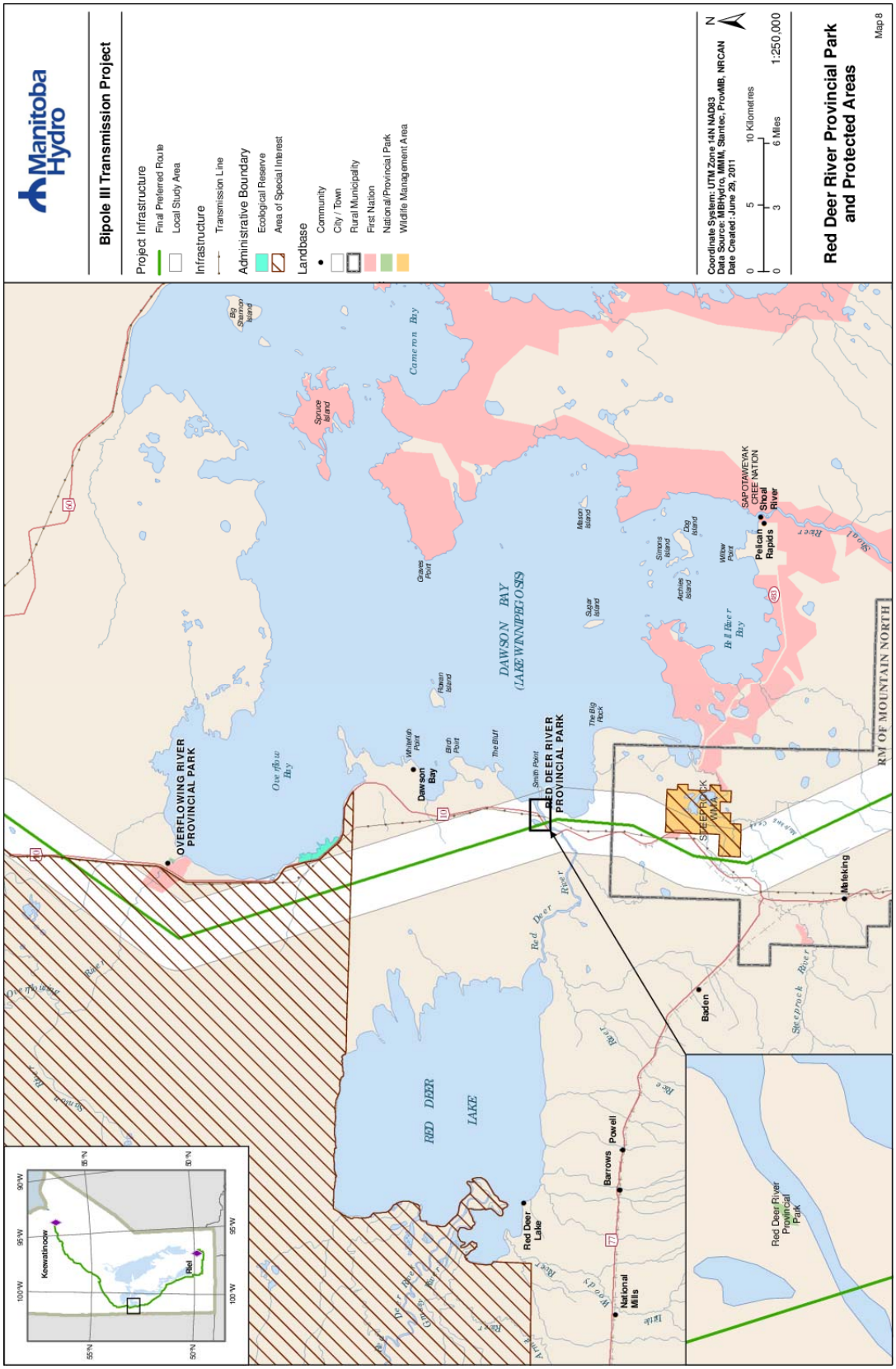
Map 5: Riel Converter Station and Ground Electrode Sites



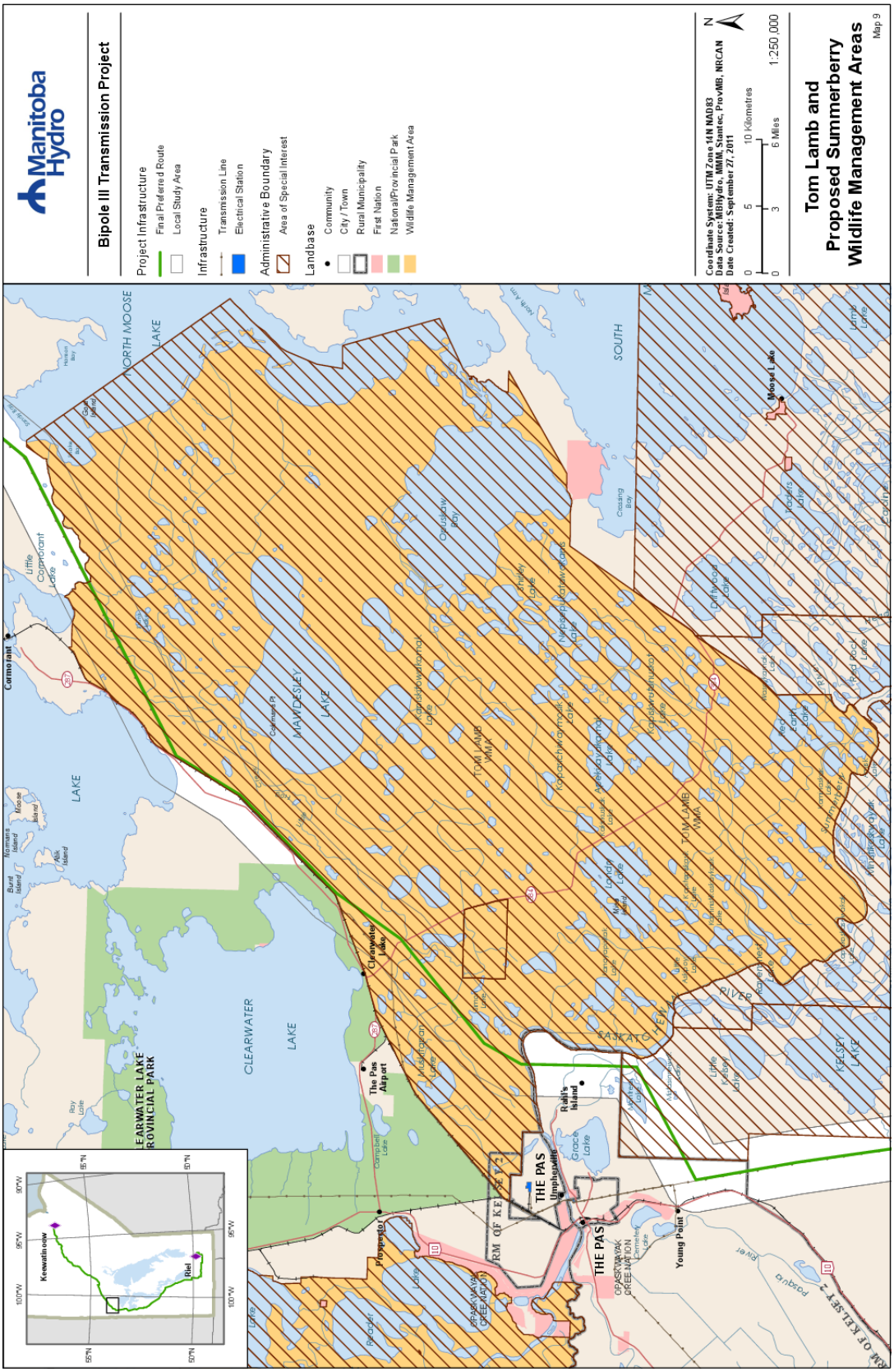
Map 6: ASI Stephens Lake Enduring Features



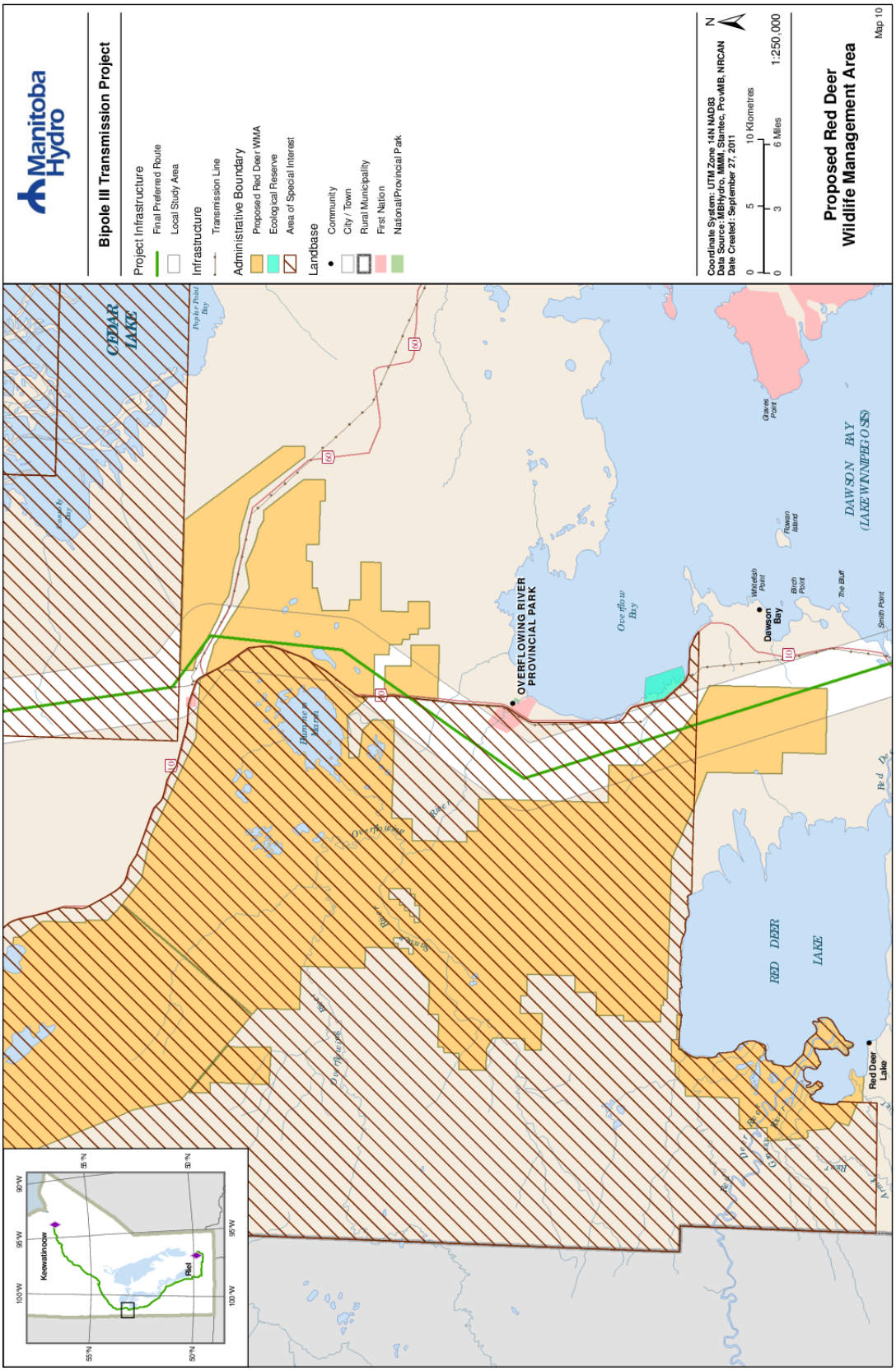
Map 7: Clearwater Lake Provincial Park



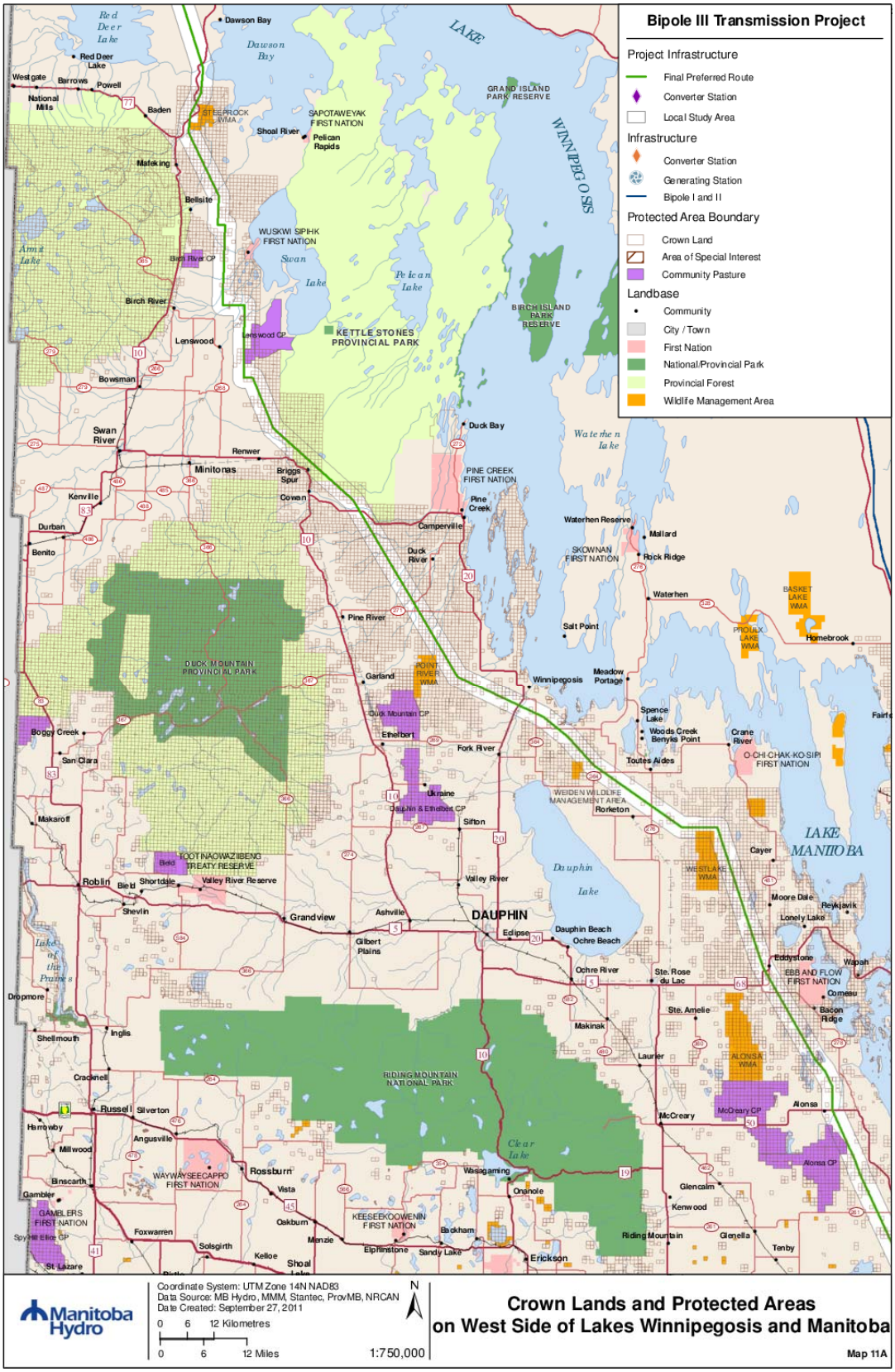
Map 8: Red Deer River Provincial Park



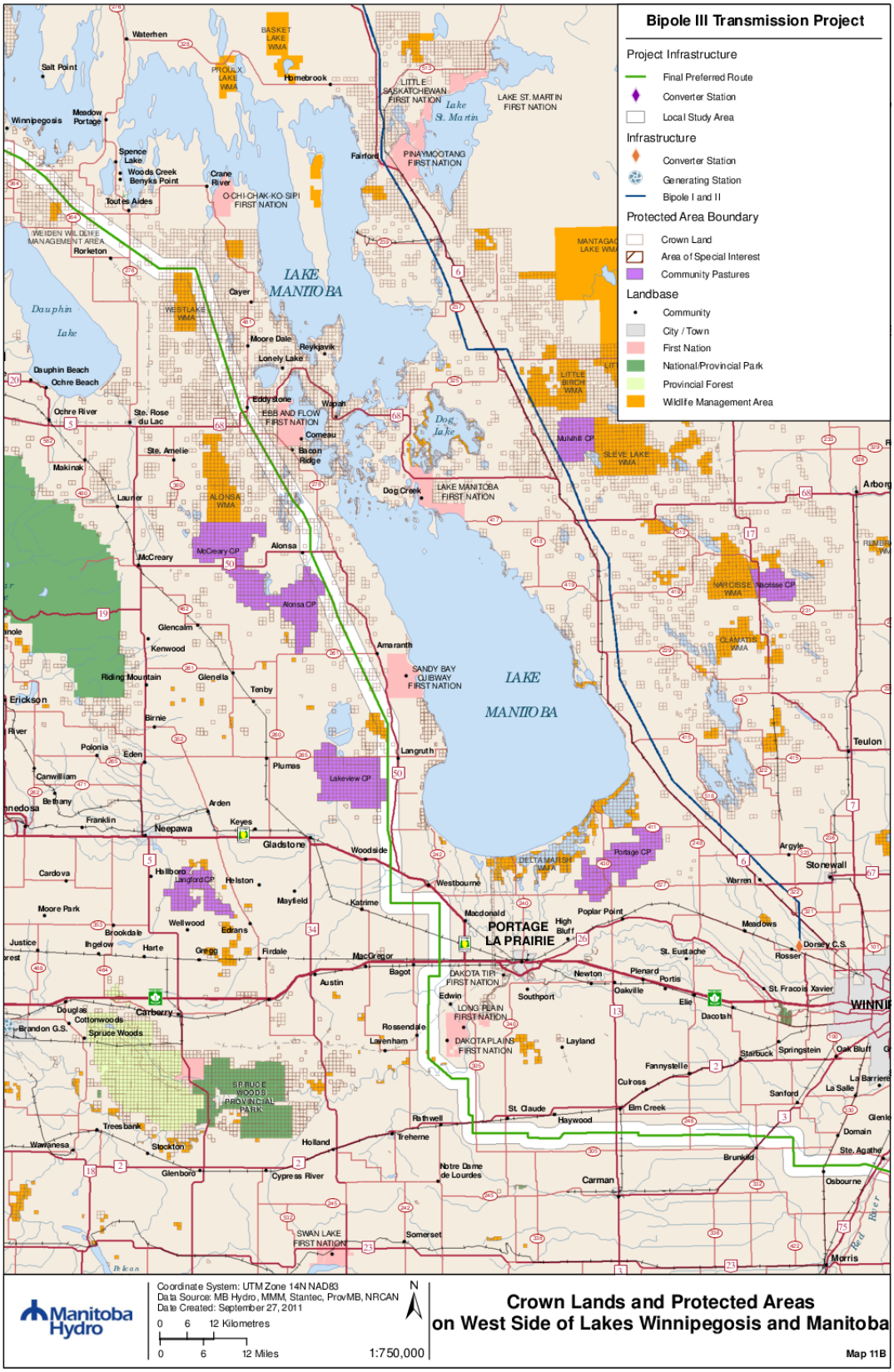
Map 9: Tom Lamb WMA Addition and Proposed Summerberry WMA



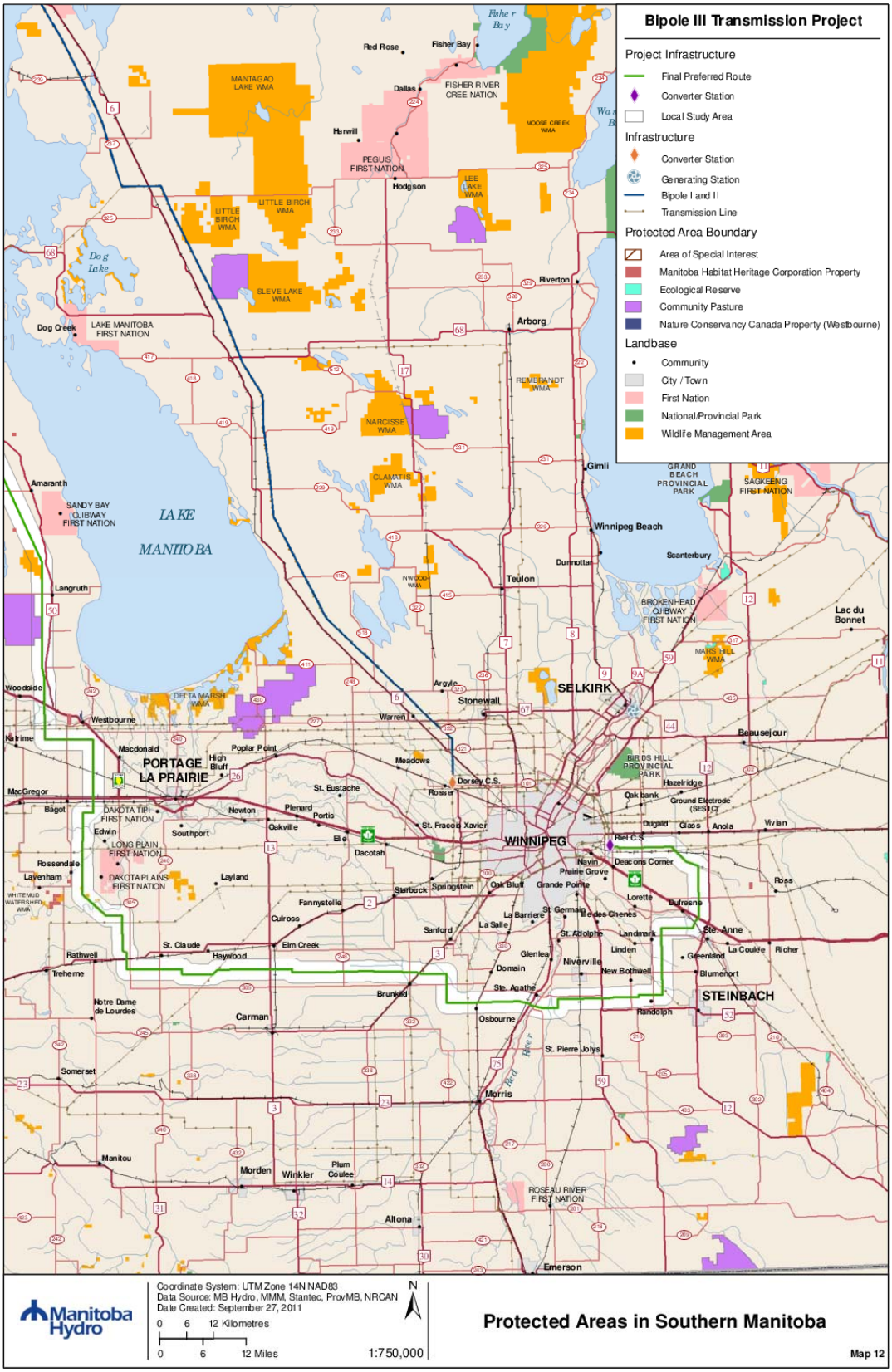
Map 10: Proposed Red Deer River WMA



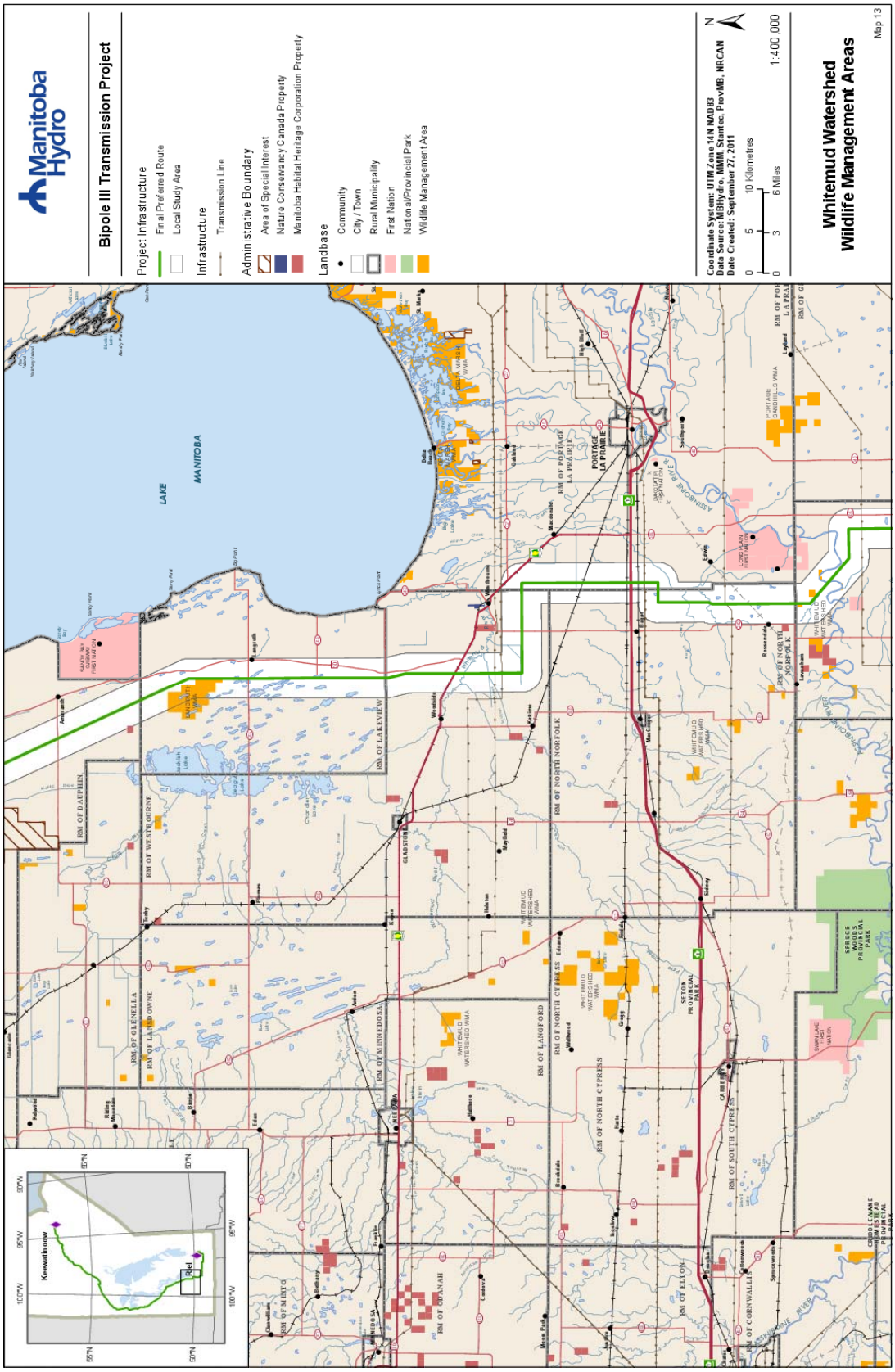
Map 11a: Protected Areas on West Side of lakes Winnipegosis and Manitoba



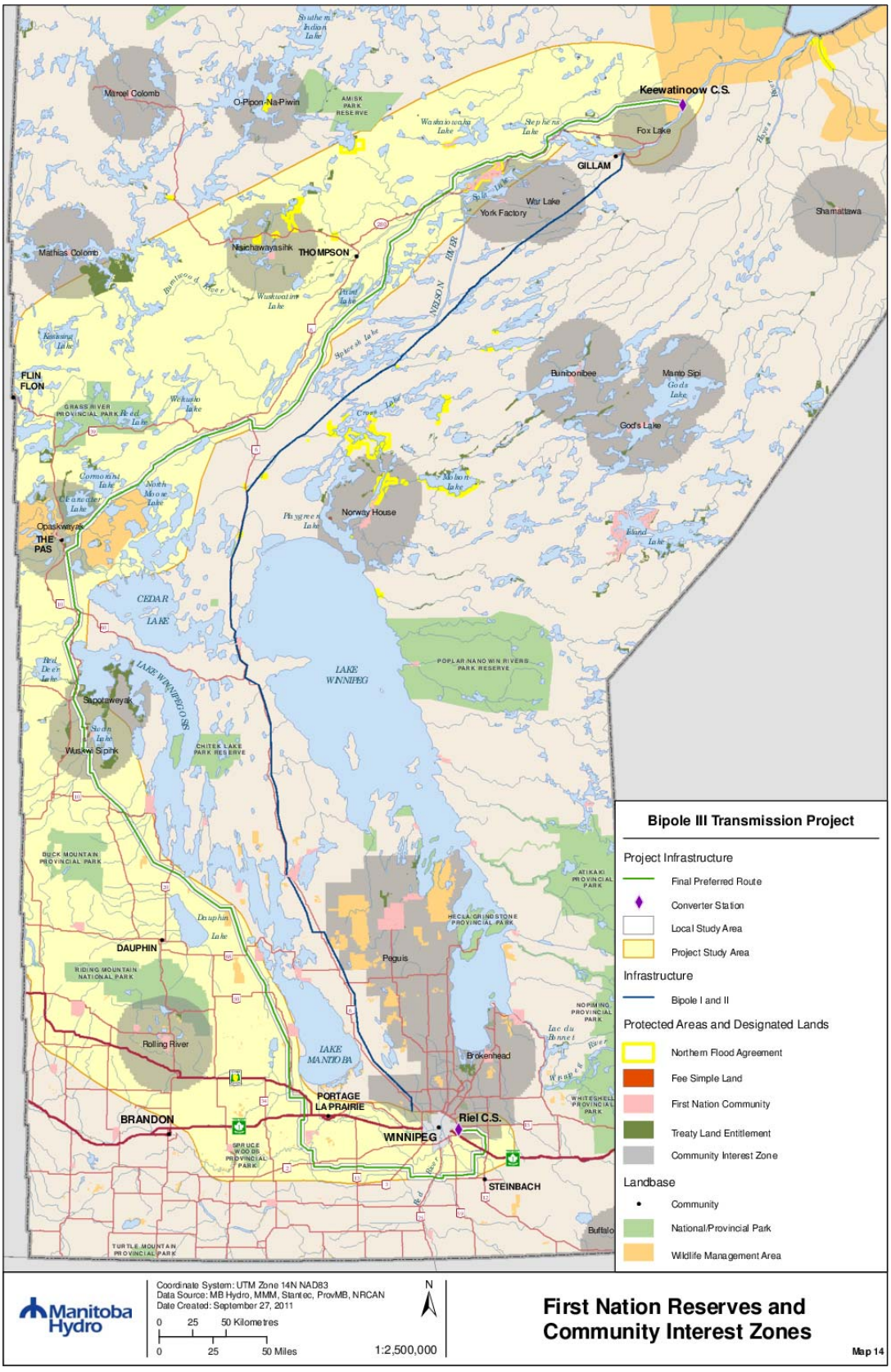
Map11b: Protected Areas on West Side of lakes Winnipegosis and Manitoba



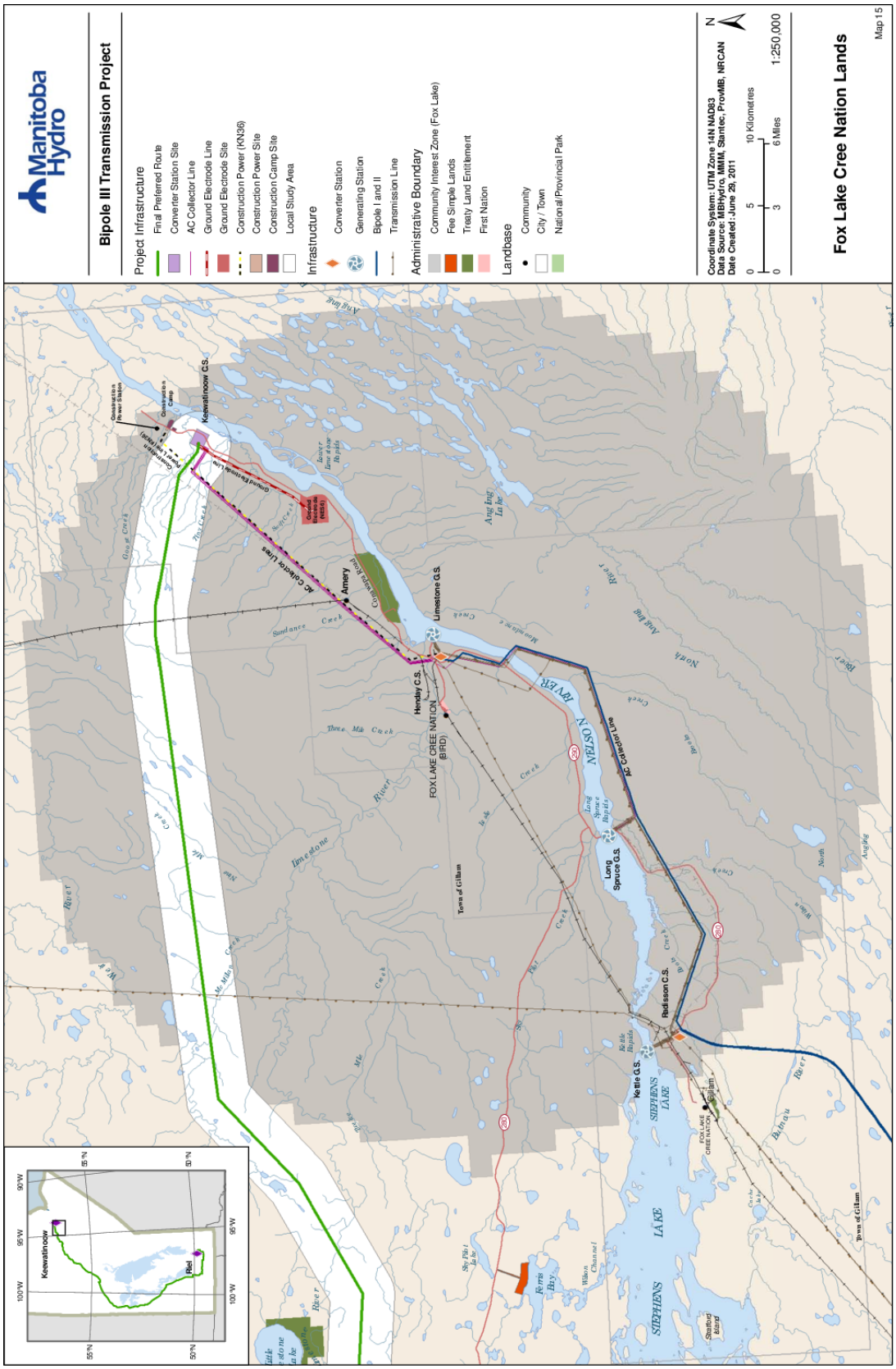
Map 12: Protected Areas in Southern Manitoba



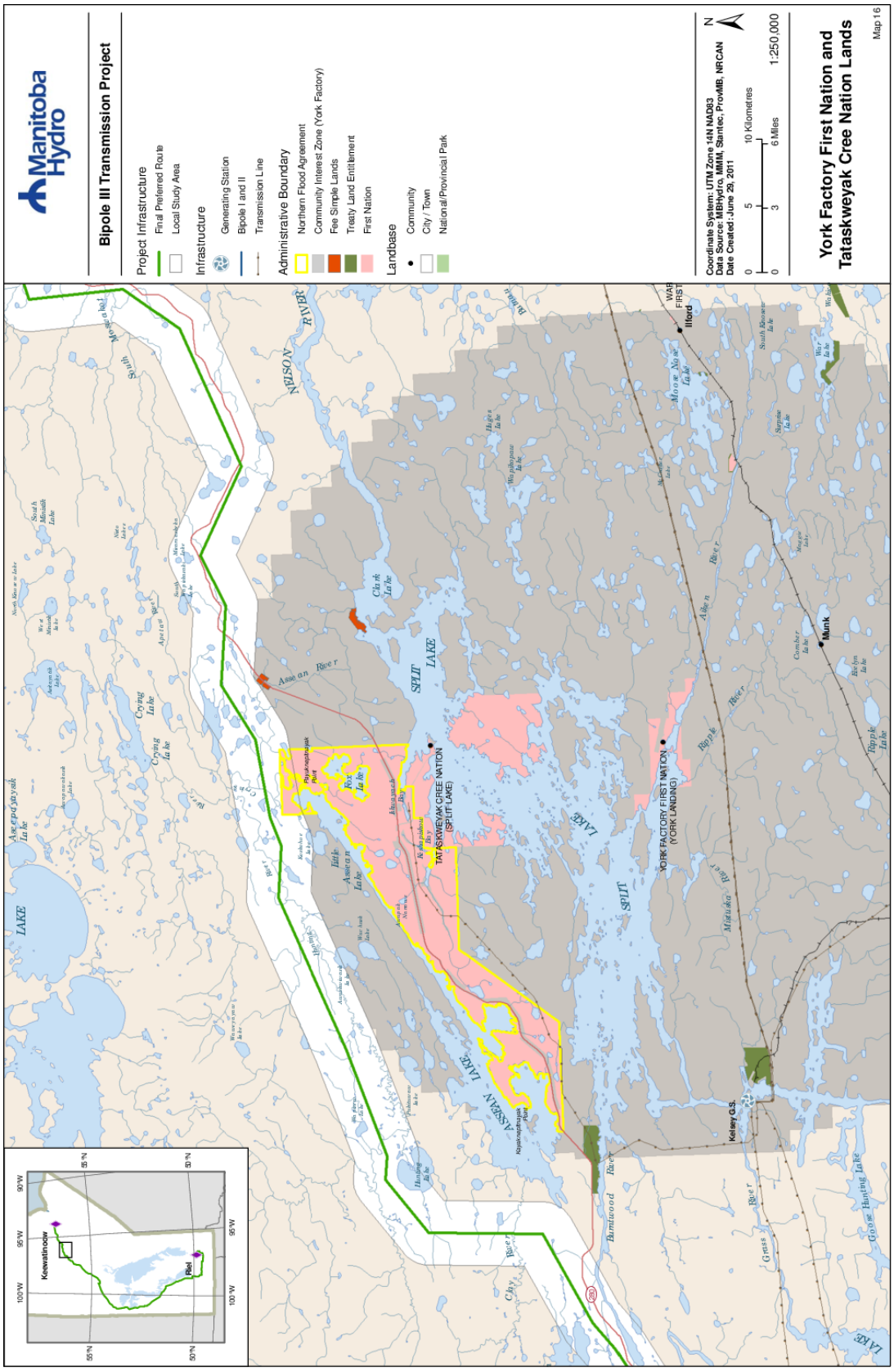
Map 13: Whitemud Watershed Wildlife Management Areas



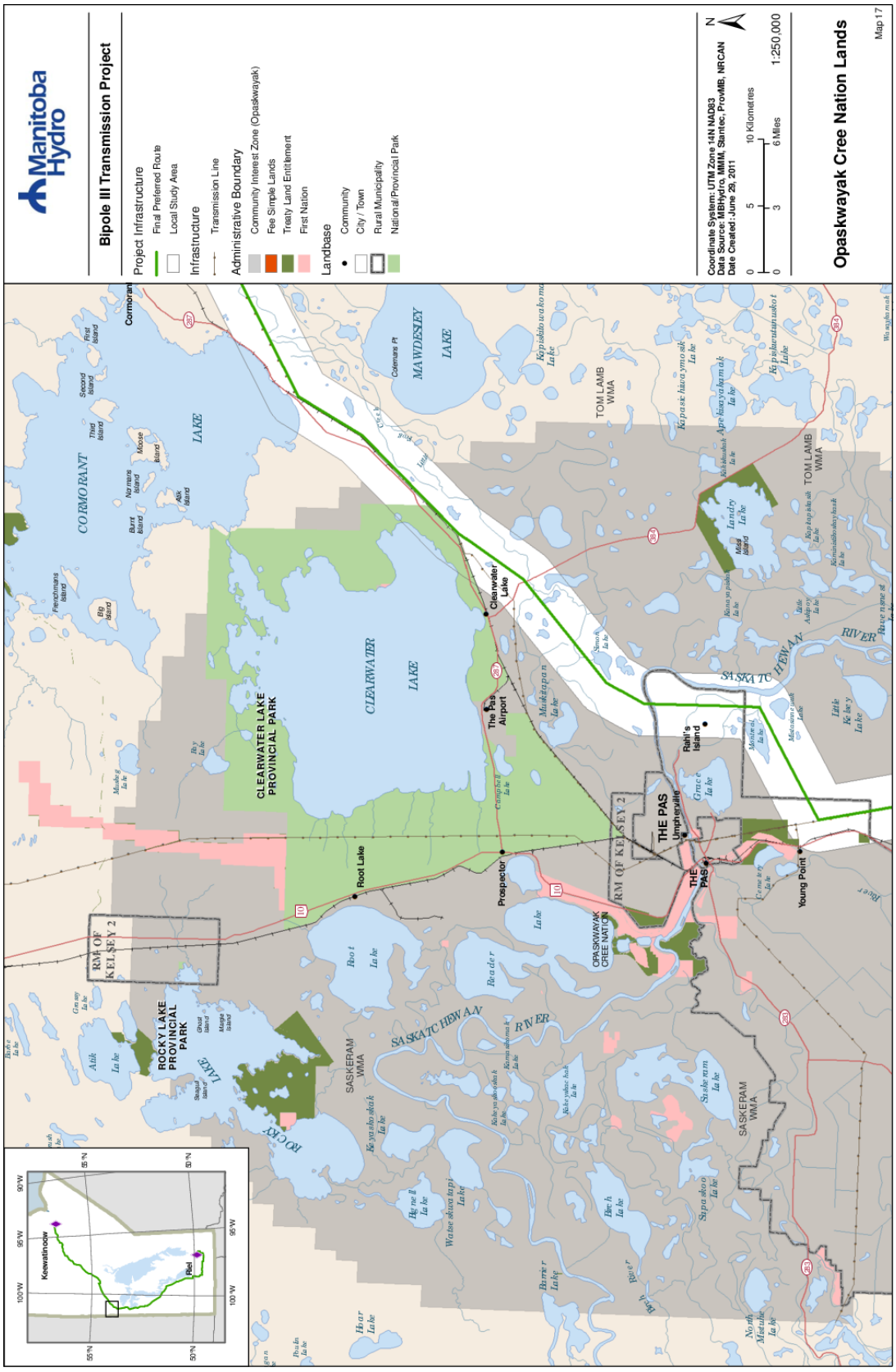
Map 14: First Nation Reserves and Community Interest Zones



Map 15: Fox Lake Cree Nation Land

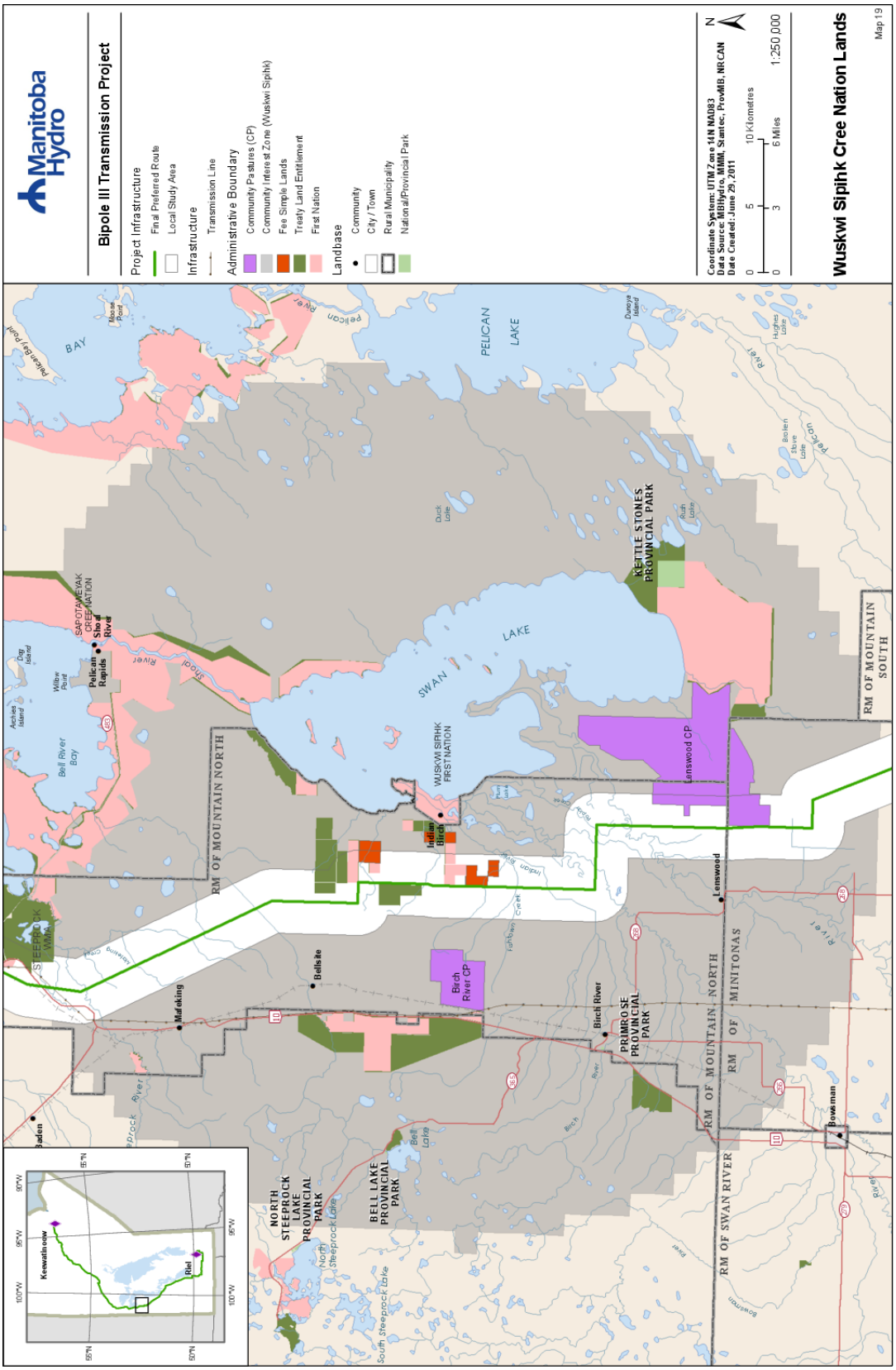


Map 16: York Factory First Nation and Tataskweyak Cree Nation Lands

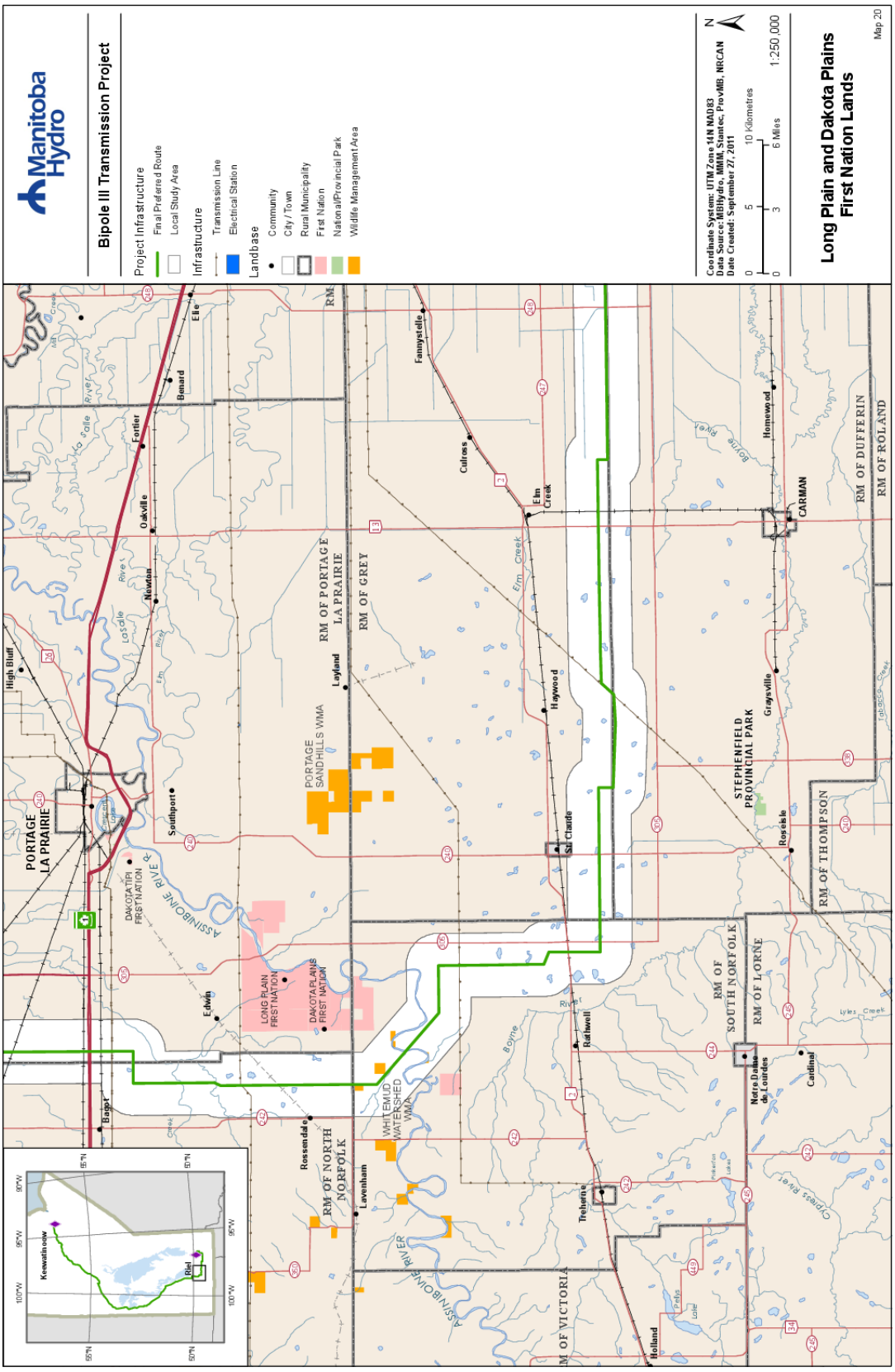


Map 17: Opaskwayak Cree Nation Lands

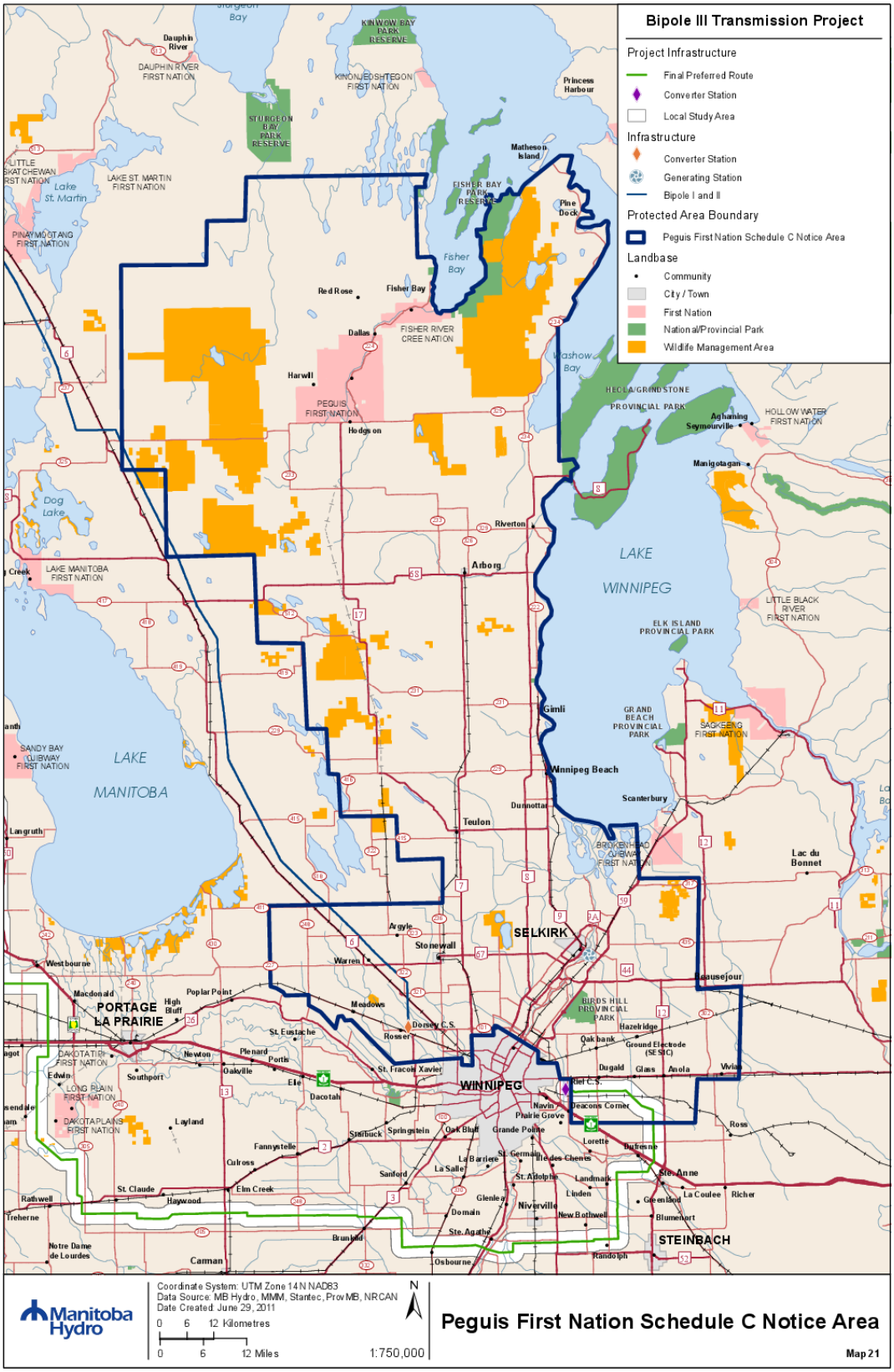
Map 18: Sapotaweyak Cree Nation Lands



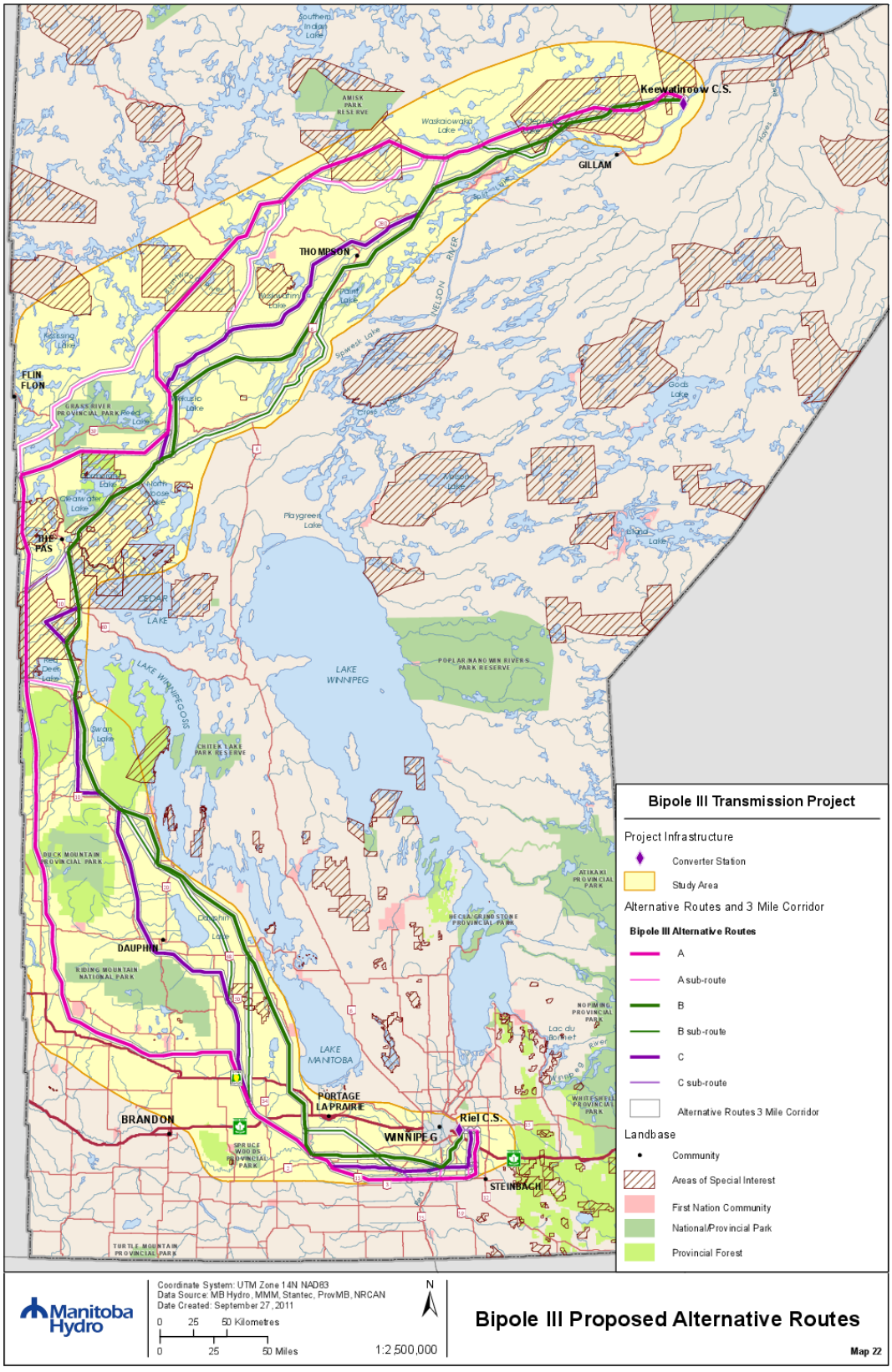
Map 19: Wuskwi Sipihk Cree Nation Lands



Map 20: Long Plain and Dakota Plains First Nation Lands



Map 21: Peguis First Nation Schedule C Notice Area



Map 22: Bipole III Proposed Alternative Routes