BP6/BP7 Transmission Project

Environmental Assessment Report

Prepared by Manitoba Hydro

Asset Planning and Delivery

Licensing & Environmental Assessment

April 2021

Prepared for:

Environmental Approvals Branch

Manitoba Hydro

Manitoba Hydro

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April 22, 2021

Shannon Kohler
Director
Environmental Approvals
Manitoba Conservation and Climate
1007 Century Street, Winnipeg, MB R3H 0W4

Dear Shannon Kohler:

RE: BP6/BP7 Transmission Project Environmental Assessment Report

Enclosed is Manitoba Hydro's application (2 paper copies and one electronic copy) to Manitoba Conservation and Climate for approval to construct and operate the BP6/BP7 Transmission Project, an 8.3 km double circuit 115 kV transmission line. The enclosed environmental assessment report provides the information requested in the Environment Act Proposal Form and documents the environmental assessment activities, including engagement, leading up to this application.
In closing, should you have any questions or require further information, please do not hesitate to contact me at 204-360-3119.

Regards,

Original signed by James Matthewson

James Matthewson
Licensing and Environmental Assessment Department
Manitoba Hydro
360 Portage Ave (5)
Winnipeg, Manitoba, R3C 0G8

Executive summary

This environmental assessment report for the proposed BP6/BP7 is in support of an application to obtain a license for a Class 2 development under *The Environment Act* (Manitoba). The project involves construction, operation and maintenance of a new double circuit 115 kV AC transmission line to replace the portion damaged during the 2019 snowstorm. The in-service date is March 2023.

In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area, including a section of a double circuit line between Brandon and Portage la Prairie referred to as BP6/BP7. As a result, the lines need to be repaired, rebuilt and modernized with a permanent replacement that meets safety requirements for rights-of-way.

This project will establish a new route for the line, construct the new portion of the line, and salvage any unused original sections that were not re-used.

Manitoba Hydro used a routing process that included engagement with Indigenous communities, landowners, interested parties, the public, and identified areas of concern. The route location and the structure type were modified based on input and environmental conditions.

The environmental assessment includes an evaluation of potential cumulative effects and effects of the environment on the project, as well as an analysis of potential accidents and malfunctions. It includes a description of the environmental protection program, including the various roles, communication protocols, and commitments to monitor project activities and manage potential effects.

Potential effects were mitigated through the routing process. Mitigation measures were developed to address effects not avoided by routing.

Effects to the natural environment are limited as the area is generally developed. There are few areas of natural habitat crossed by the project. Natural terrestrial habitat is limited to the riparian area along the Assiniboine River.

There are several wildlife species of conservation concern that may occur in the area, but few natural areas near the transmission line where they could occur. The presence of the transmission line may result in bird-wire collisions, but not at levels that would have measurable effects to regional populations.

The project is expected to result in positive economic benefits to the region, through the presence of the workforce. There will be a slight increase in traffic associated with the workforce, but the volume will be low.

Known heritage sites were avoided during the routing process, with measures developed to manage previously undiscovered cultural or heritage sites / objects.

The proposed route avoids private residences. There is some recreational and Indigenous traditional use in the region that may be affected by the project.

The proposed route travels across some specialty agricultural land and an associate proposed residential development, there will be effects associated with the inconvenience, nuisance and increased production costs associated with operating farming equipment, crop production and aesthetic values.

Based on the routing process, and the measures developed to mitigate and manage any potential adverse effects, the conclusion of environmental assessment was, the residual effects were predicted to be not significant.

GLOSSARY

Term	Definition
Adaptive management	The process of updating management practices in response to ongoing observations
Adverse effects	Negative effects on the environment and people that may result from a proposed project.
Agricultural biosecurity	The protection of crops and livestock systems against the threats to production from disease, pests and invasive species.
Annual average daily traffic (AADT)	Is defined by Manitoba Infrastructure and Transportation (MIT) as the number of vehicles passing a count station on an average day of the year.
Areas of least preference	Features to avoid when siting a transmission line due to physical constraints (extreme slopes, long water crossings), regulations limiting development (protected areas), or areas that require extensive mitigation or compensation to minimize impacts
Built environment	An area of existing or proposed development found within the landscape, typically dominated by commercial, industrial, residential, and cultural structures.
Cumulative effect	The effect on the environment, which results when the effects of a project combine with those of the past, existing, and future projects and activities (CEAA 2018). OR the incremental effects of an action on the environment when the effects are combined with those from other past, existing and future actions (Cumulative Effects Assessment)

Decommissioning	Planned shut-down, dismantling and removal of a building, equipment, plant and/or other facilities from operation or usage and may include site clean-up and restoration.
Developed	Land that has been altered for residential, commercial or industrial use. Includes buildings, regularly managed green space and associated roads, parking lots, and trails.
Direct effect	• An environmental effect that is: A change that a project may cause in the environment; or • Change that the environment may cause to a project. It is a consequence of a cause-effect relationship between a project and a specific environmental component.
Ecological reserve	Lands established to preserve unique or rare natural (biological and geological) features of the province.
Ecoregion	Characterized by distinctive regional ecological factors, including climate, physiography, vegetation, soil, water, and fauna
Ecozone	An area of the earth's surface representative of large and very generalized ecological units characterized by interactive and adjusting abiotic and biotic factors
Environmental Management System	Part of an organization's overall management practices related to environmental affairs. It includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an environmental policy. This approach is often formally carried out to meet the requirements of the International Organization for Standardization (ISO) 14000 series.

Environmental Protection Plan	Within the framework of an environmental protection program, an environmental protection plan prescribes measures and practices to avoid and minimize potential environmental effects of a proposed project.
Exurban	The transitional area outside of the traditional urban/suburban belts of development but not quite rural.
Heritage sites / objects	Any site, object, work, or assembly of works of nature or human endeavor that is of value for its archaeological, paleontological, pre-historic, historic, cultural, natural, scientific, or aesthetic features.
Interested party	An interested party is someone or a group that would potentially have feedback to provide, may be affected by the decisions made regarding route selection, have a specific interest or mandate in the area, data to share, ability to disseminate information to membership or a general interest in the Project's route selection area.
Linear infrastructure	An existing network or system composed of transportation or utility-based facilities (e.g. roads, highways, railways, pipelines, and transmission lines).
Marshalling yard	An open area used to stockpile, store and assemble construction materials.
Mitigation	Means measures to eliminate, reduce, control or offset the adverse effects of a project, and includes restitution for any damage caused by those effects through replacement, restoration, compensation or any other means (Impact Assessment Act, 2019).
Natural environment	Naturally occurring physical features of the landscape. These features are represented by the hydrography, flora, fauna, and topography of a given area.

Public engagement process	The process of identifying interested individuals, including interested parties and the public, sharing information about the Project and providing opportunities for them to design how they want to participate and share their feedback and experiences.
Species of Conservation Concern	Species that are rare, disjunct, or at risk throughout their range or in Manitoba and in need of further research. The term also encompasses species that are listed under (Manitoba) *The Endangered Species and Ecosystems Act of Manitoba*, (federal) *Species at Risk Act*, or that have a special designation by the Committee on the Status of Endangered Wildlife In Canada.
Species at Risk (SAR)	Is an extirpated, endangered or threatened species or a species of special concern, as defined by the Species at Risk Act.
Wildlife management area	Lands that exist for the benefit of wildlife and for the enjoyment of people including biodiversity conservation, wildlife-related forms of recreation, hunting and trapping.

TABLE OF CONTENTS

List of tables

List of figures

List of maps

List of appendices

1.0 Introduction

1.1 Background

In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area, including a section of a double circuit line between Brandon and Portage la Prairie referred to as BP6/BP7. As a result, the lines need to be repaired, rebuilt and modernized with a permanent replacement that meets safety requirements for rights-of-way.

Over 50 structures on BP6/BP7 were damaged during the October storm (Map 1-1). A temporary wood pole transmission line along the Trans-Canada Highway was installed to maintain reliability; however, a permanent replacement for the damaged sections of the two lines is required.

This project will establish a new route for a portion of the line, construct the new portion of the line, and salvage any unused original sections that will not be re-used.

1.2 Regulatory framework

The proposed BP6/BP7 lines will be 115 kV, which will require a provincial license for a Class II development (i.e., transmission lines of 115 kV and over but not exceeding 230 kV) under the *Environment Act* (Manitoba).

Federally, the project is not considered a physical activity under the Physical Activities Regulations SOR/2019-285 and therefore does not trigger an environmental assessment under the Impact Assessment Act.

The environmental assessment is conducted in accordance with Manitoba Hydro's corporate and environmental policies and satisfies Manitoba's environmental assessment legislation. It is also consistent with Canadian and international environmental assessment best practices and guidance. This environmental assessment report is submitted as part of the Environment Act License Proposal for the BP6/BP7 transmission project.

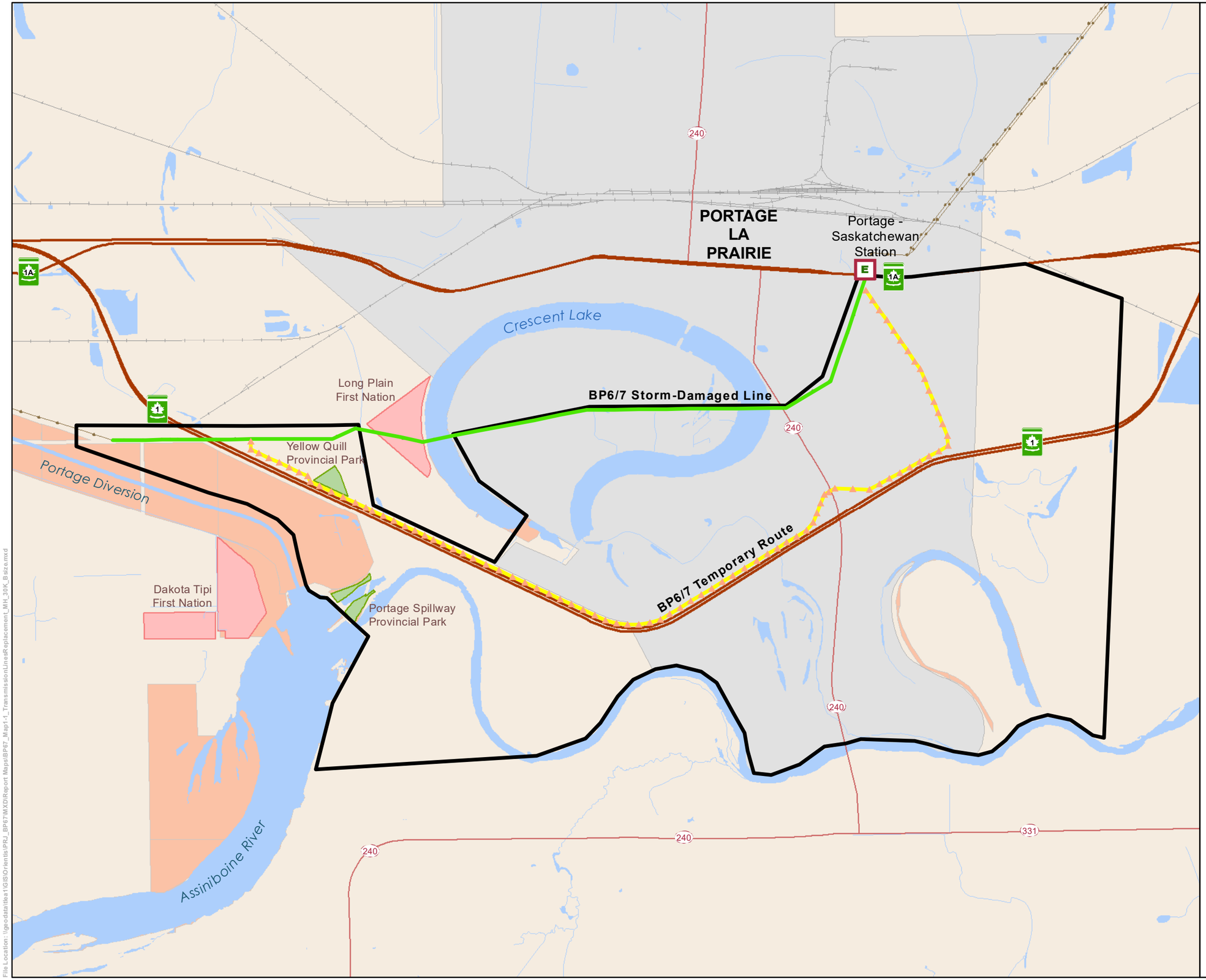
1.3 Community involvement in the project.

Manitoba Hydro's Corporate Vision is to "be recognized as a leading utility in North America with respect to safety, reliability, rates, customer satisfaction and environmental leadership." As such, Manitoba Hydro sets a high bar for engagement, assessment and protection of the environment. Manitoba Hydro conducted a public engagement process and an Indigenous engagement process for the project to engage those potentially affected by or interested in the project. Manitoba Hydro sought to continue its efforts to improve project engagement

through direct involvement from community representatives on the project team. The level of involvement from community representatives in key routing and assessment decisions is unprecedented for transmission projects of this scale in Manitoba. Further detail on both public and Indigenous engagement can be found in chapters 4.0 and 5.0.

1.4 Purpose of the document

This environmental assessment report for the proposed BP6/BP7 transmission project is in support of an application to obtain a license for a Class 2 development under *The Environment Act* (Manitoba). For Class 2 developments, proponents are required to submit an Environment Act proposal form and environmental assessment report to Manitoba Conservation and Climate's Environmental Approvals Branch. This provides the public, Indigenous communities, and government agencies with an opportunity to examine the details of the project, its anticipated impact on biophysical and socio-economic aspects of the environment and measures that Manitoba Hydro intends to use to mitigate potential adverse effects. The purpose of this report is to identify, assess and mitigate any adverse environmental effects associated with the proposed project and forms part of *The Environment Act* proposal.



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- Temporary Wood Pole Structure
- BP6 / BP 7 Temporary Route
- BP6 / BP 7 Storm Damaged

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: March 30, 2021

N

0 0.5 1 Kilometre
0 0.25 0.5 Mile

1:30,000

BP6 / BP7 Transmission Project

Map 1-1

File Location: \\geodata\tea1\GIS\Orients\PRJ_BP67\MXD\Report Maps\BP67_Map1-1_TransmissionLinesReplacement_MH_30K_Bsize.mxd

2.0 Project description

2.1 Scope

The scope of the proposed BP6/BP7 transmission project includes the construction, operation, maintenance, and eventual decommissioning of an 8.5 km double circuit 115 kV transmission line and the salvage of 20 towers from the damaged portion (Map 2-1). The transmission line starts at Portage-Saskatchewan Station, located on the north side of the Trans-Canada highway between Stephens Avenue and 14th Street NE. This project ends west of the Portage Bypass, on the north side of the Portage Diversion where the new line will reconnect with BP6/BP7.

The first 3 km (approximate) of this project follow the existing route and will not require new right-of-way or the construction of new towers as they have already been repaired.

2.2 Project components

2.2.1 Design considerations

The transmission line design and construction will meet or exceed the design standards as set out by the Canadian Standards Association (CSA 2020) as well as the planning, performance, and reliability standards of the North American Electric Reliability Corporation.

2.2.2 Transmission line routing

The final preferred route for BP6/BP7 is shown on Map 2-1. The routing methodology used for this project is based on the EPRI-GTC Overhead Electric Transmission Line Siting Methodology (EPRI-GTC 2006). Details of the routing process are provided in Chapter 3.0.

2.2.3 Transmission structures

A combination of steel lattice transmission structures will be used including; suspension, angle and dead-end towers. The height of the structures will be 29 to 38 m. The structure footprint will range from 5.4 to 7.6m in width (Figure 2-1). The typical spans between the structures will be 300-345.

Heavy angle and dead-end structures will be required at specific locations to accommodate line redirection and to terminate the transmission line into the station. Typical dead end and heavy angle structures will be a double circuit self-supporting steel lattice tower design. The heavy angle structure heights

will be between 30 m and 36 m and the bases will be approximately 10 x 10 m. This structure type is illustrated in Figure 2-2.

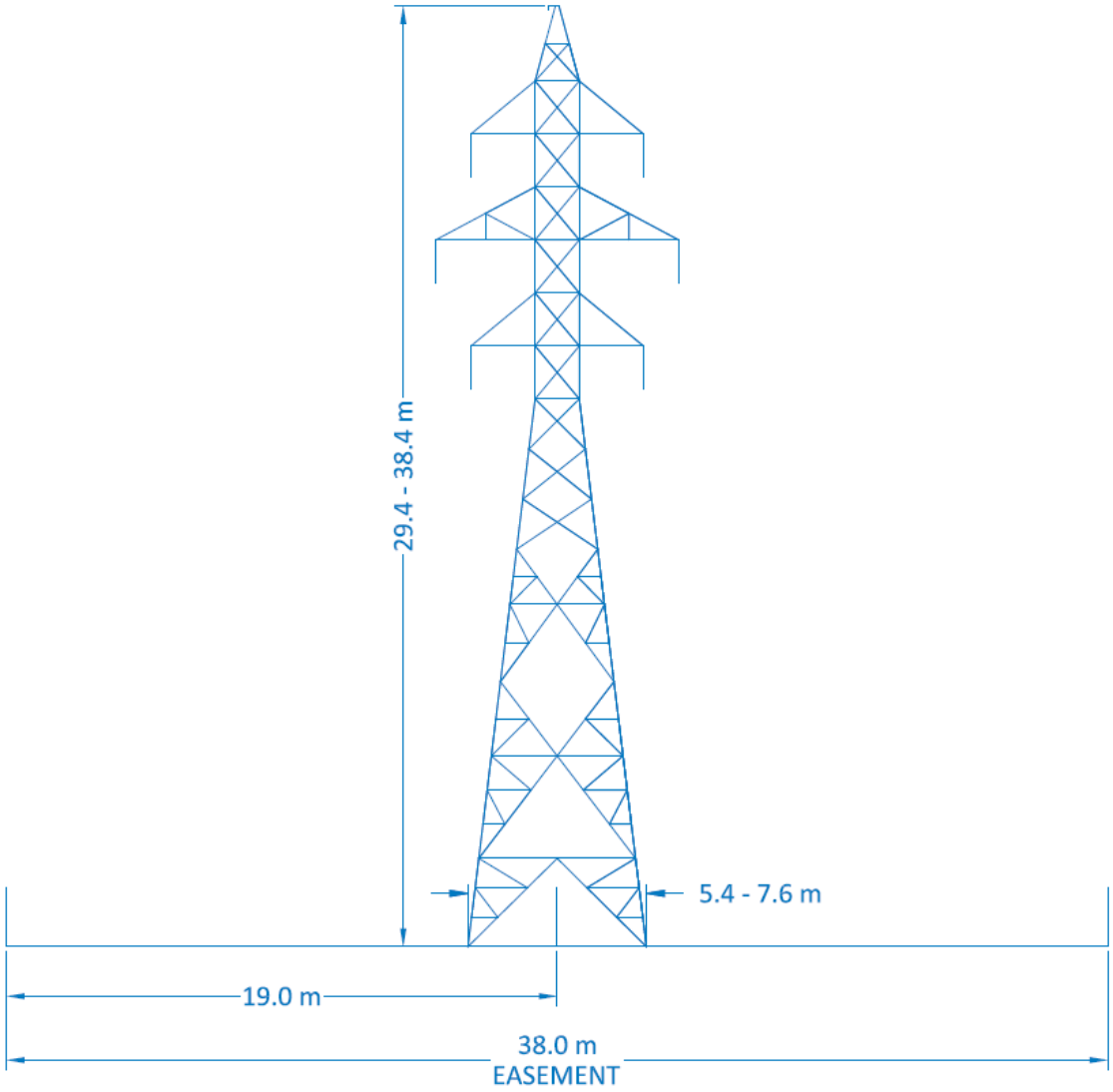


Figure 2-1: Typical self-supporting steel lattice suspension tower with required easement

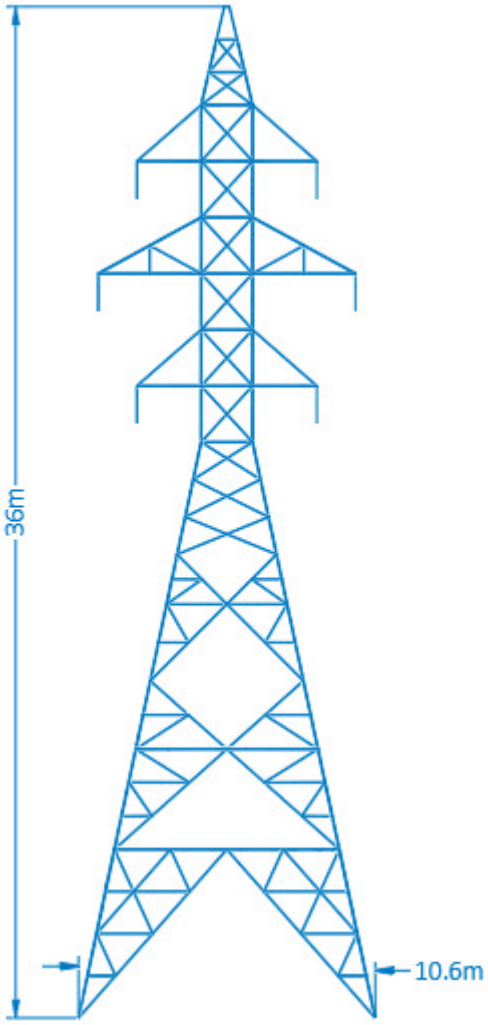


Figure 2-2: Typical steel lattice angle towers

2.2.4 Conductors and insulators

Lines BP6/BP7 are each a single-circuit line configuration consisting of three 336.4 kcmil 30/7 Strands ORIOLE ACSR (Aluminum Conductors, Steel Reinforced) conductors. Each conductor consists of aluminum strands wrapped around a center core of steel strands and will be suspended from each structure by insulator strings. The ground clearance will meet or exceed the requirements of Overhead Systems, C22.3 Standard No. 1-10 (CSA 2020).

2.2.5 Ground wire

One ground wire (skywire) will be strung parallel to the transmission line and along the tower apices to provide grounding and lightning protection. The ground wire will be constructed of galvanized steel strands and have an outside diameter of approximately 9 mm.

2.2.6 Transmission line right-of-way

The right-of-way widths are determined to allow safe conductor swing or blow-out. The right-of-way width also provides adequate lateral distance under wind conditions to limit flashovers onto objects located near the edge of the right-of-way. The typical easement requirements for a 115 kV self supporting lattice steel structure are 38 m when adjacent to ¼ section lines and 30 m when adjacent to road allowance.

2.2.7 Easement procurement and compensation

Once the final preferred route is selected, Manitoba Hydro will begin the process of acquiring easements from the landowners.

The conventional terms of the right-of-way easement agreement provide that:

Manitoba Hydro obtains the legal right to construct, operate, maintain, repair and replace their transmission lines within a right-of-way. This right is generally obtained through easement of privately owned lands, or initially by a Crown land reservation, pending easement, for right of use on provincial Crown land.

The landowner can continue to use the land within the right of way (i.e., for farming, grazing, recreation or other compatible uses) if the activity will not compromise safety requirements or hamper line operation. Landowners cannot plant trees, construct buildings, or place other structures within the easement area without prior approval from Manitoba Hydro.

Manitoba Hydro personnel are permitted to enter and use the right-of-way for construction, inspection, maintenance, repair or replacement of the transmission line facilities.

Land compensation is a one-time payment to landowners for granting of an easement for a transmission line right-of-way.

Construction damage compensation is provided to landowners who experience damage to their property due to the construction, operations and maintenance of the transmission line. A one-time payment for construction damage is negotiated on a case-by-case basis. Manitoba Hydro will:

- Compensate or be responsible for repairing, to the reasonable satisfaction of the landowner, any damage to a landowner's property
- Compensate a landowner for damages such as the reapplication or rejuvenation of compacted topsoil where the remedial work requires farm machinery and the expertise of the landowner

In the instance of damage to cultivated agricultural lands, compensation is provided to a landowner for loss due to damage if crops were in place prior to the construction of the transmission line.

Structure impact compensation is a one-time payment to landowners for each transmission tower placed on land classed as agricultural. Structure impact compensation covers:

- Crop losses on lands permanently removed from production
- Reduced productivity and over-input in an area of overlap around each tower structure
- Additional time required to manoeuvre farm machinery around each structure

Structure impact compensation takes into consideration:

- The agricultural use of the land (crop rotation, forage, etc.)
- The location of the tower structure in relation to property lines
- The ground dimensions of tower structure placed on the land

Manitoba Hydro prepares a compensation schedule for a project based on the above factors.

Ancillary damage compensation is a one-time payment (for each occurrence) when Manitoba Hydro's use of the right-of-way directly or indirectly affects the use of the property in a unique manner. Ancillary damage compensation is negotiated directly with the landowner. Landowners may be compensated for affects to irrigation and drainage, limiting options for chemical application, access restrictions, and limiting options for crop selection.

2.3 Project activities

2.3.1 Construction

2.3.1.1 Schedule

Table 2-1 shows the planned construction schedule. Based on the submission of this environmental assessment report, should the project be approved, the

receipt of a provincial licence under *The Environment Act* is anticipated in winter 2022/23.

The fall/winter of 2022 will be used for property appraisal/acquisition, completion of detailed engineering design and procurement of construction materials and contractor(s). Construction is anticipated to commence in winter 2022. Construction will take approximately four months.

Construction will take place in four phases: clearing, foundations, tower assembly/tower erection and conductor stringing. The in-service date for the project is planned for Spring 2023.

Table 2-1**:** Construction schedule

Construction phase	2022/23 schedule			
	December	January	February	March
Mobilization				
Right-of-way Clearing				
Vehicle / equipment use				
Marshalling yards				
Tower construction				
Helicopter use				
Implodes				
Construction wrap up				

2.3.1.2 Mobilization

The first step in project construction is mobilizing a workforce to an area. Mobilization includes the movement of Manitoba Hydro and contractor staff, vehicles and equipment to the job site. It also includes the presence of the workforce at accommodations in the local community and their commute to and from the work site. No construction work camps are planned for the project.

Generally, mobilization is ongoing throughout the construction phase as different types of equipment are required for specific activities such as clearing, tower assembly / erection construction and conductor stringing.

2.3.1.3 Right-of-way clearing

Since most of the route is on developed lands only minor clearing activities will be required in a few locations. Clearing and disposal of trees on the proposed right-of-way will be undertaken in advance to facilitate construction activities. Right-of-way clearing will be subject to standard environmental protection measures, which have been established in association with Manitoba Hydro transmission line construction practices, as well as the environmental protection plan (Chapter 9.0). Final clearing methods will be determined based on detailed surveys of the transmission line routes, and site-specific identification of environmentally sensitive features.

2.3.1.4 Vehicle and equipment use

Clearing and construction equipment can include the following:

- Materials delivery trucks and trailers
- Mulchers and feller bunchers for tree clearing
- Drill rigs and concrete trucks for cast-in-place piles
- Excavators with attachments for mat foundations
- Cranes for installing re-bar cages for piles and erecting towers
- Excavators with specialized heads for installing screw piles
- Welding trucks and equipment
- Loaders and cranes for assembling and erecting towers
- Stringing equipment such as tensioners, pullers, and boom trucks
- Other smaller equipment for transportation and other minor tasks as required

Access for construction (and subsequent line maintenance activities) will generally occur along the right-of-way using existing public access roads

wherever possible. Permission will be requested from landowners for use of roads or trails on private property, if these are required. If required, provincial permits will be secured for access to the right-of-way from provincial Crown lands.

2.3.1.5 Marshalling / fly yards

Marshalling yard(s) or fly yards may be established near the transmission line route for the storage and assembly of construction materials and equipment for eventual deployment to the construction site. Fly yards are used to assemble towers that are flown to site using a helicopter. The location of the marshalling / fly yard(s) will be determined while developing detailed construction specifications and contract arrangement. The intent will be to place the marshalling / fly yards as close to the right-of-way as possible to minimize additional noise and traffic.

2.3.1.6 Transmission tower construction

Foundation installation

Self-supporting lattice steel structures will be supported by either mat, cast-in-place or helical pile foundations. Helical pile foundations will involve individual piles or pile groups, for each leg of the structure. Granular backfill materials required for construction will be purchased from local suppliers and it is not anticipated that any new borrow areas would need to be developed.

Structure and conductor installation

Tower structure assembly may be at each tower site and then erected by crane or assembly at a central marshalling yard and then trucked to the site and erected by crane. A helicopter may be used as an alternative to a truck and crane for transporting and erecting towers, but it is more likely that the truck and crane option will be used.

Once the towers are erected, insulator strings will be attached to the structure cross-arms. The insulators will separate the conductors from the structures. Conductor will be transported to the site in reels, then suspended from the insulator strings and tensioned by machine to provide the ground to conductor design clearances specified at the mid-span points of maximum sag.

2.3.1.7 Construction wrap up

The final step in construction is demobilizing the workforce from an area. Demobilization includes the movement of Manitoba Hydro and contract staff, vehicles and equipment from the job site, as well as the clean-up (and if required rehabilitation) of the right-of-way, marshalling / fly yards, and access routes.

Once the transmission line is constructed, all excess materials and equipment including debris, and unused supplies will be dismantled, if required, removed from the site and disposed according to provincial and municipal regulations. Rehabilitation of any disturbed sites will be undertaken as required. All cleanup and rehabilitation activity will be subject to the requirements of the environmental protection program, described in Chapter 9.0.

Generally, demobilization is ongoing throughout the clearing and construction phase as different types of equipment are required for specific activities such as clearing, tower construction and conductor stringing. Construction cleanup will occur throughout clearing and construction.

2.3.2 Operation and maintenance

2.3.2.1 Transmission line operation

The transmission line will be designed to operate continuously, though the actual flow of electricity will vary with electrical load requirements. To maintain the line in a safe and reliable operating condition, regular inspection and maintenance must occur.

2.3.2.2 Inspection patrols

Manitoba Hydro conducts periodic inspections of all its transmission lines and rights-of-way. Maintenance procedures are well established and are the subject of continuously updated corporate guidelines for maintenance and construction activities. The patrols typically include visual inspections of vegetation management status, structures, foundations and insulators, as well as the removal of any ice build up.

2.3.2.3 Maintenance

Maintenance activities include instances where crews are required to obtain access to specific areas to repair deficiencies on the transmission system. Non-scheduled patrols may be conducted if the Manitoba Hydro System Control Center identifies a fault on the line that requires visual inspection. Crews also

triage infrastructure during emergencies to address line outages and tower damage.

Maintenance repairs are typically done during winter, after frost has entered the ground, using heavier soft track equipment to gain access. When summer access is required in agricultural areas, related maintenance activities are planned, wherever possible, to avoid conflict with farm activity.

The annual patrol is conducted either by ground or by air depending on access, geographic conditions and time of year. Patrols are normally undertaken by snow machine, all-terrain vehicles, light trucks or helicopter, depending on the geographical location and ease of access.

Workforce requirements associated with the operations and maintenance of a transmission line generally involve deployment of established regional operations and maintenance personnel, and contractor staff as required. Maintenance would include repairs as required. The workforce for regular maintenance activities could be between three and five workers. During emergencies, the size of the workforce is largely dictated by the work required.

2.3.2.4 Vegetation management

Vegetation management within the right-of-way is required for public and employee safety, as well as the reliable operation of the line. The right-of-way will be maintained on an ongoing basis throughout the life cycle of operation. Regular vegetation management is required to make sure that re-growth in the cleared rights-of-way does not interfere with transmission line operations. Related management procedures extend to periodic review and removal of danger trees in the immediate vicinity of the right-of-way.

The method and timing of vegetation maintenance depends on several factors such as the species present, growing conditions and density of the non-compatible species. It may also depend on the existing plant community, terrain, economic feasibility, environmental sensitivity and the ownership for the right-of-way and adjacent property. The vegetation maintenance brushing cycle for transmission line rights-of-way typically ranges between 8 and 10 years.

This type of integrated vegetation management approach is used to maintain a safe, reliable and uninterrupted transmission of electric energy. The focus of vegetation management is on the tall growing tree species that have the potential to grow or fall into, or within, the arcing distance of the transmission lines and or facilities and cause an outage. The management practices that

may be used to control vegetation incorporate mechanical, chemical, biological or cultural options depending upon several factors including site conditions and the sensitivity of surrounding areas.

Herbicide treatments are formulated to target undesirable tall growing trees but are also effective on broadleaf weeds, leaving grasses unaffected. Foliar applications of herbicides are applied during the warmer months while dormant stem applications are typically applied in the fall and winter. Permits for pesticide use are obtained as required. The process involves public notification as part of the formal permit application to Manitoba Conservation and Climate's Pesticide Approvals Branch.

All herbicide applications are completed and supervised by licensed applicators and in accordance with conditions specified in the Pesticide Use Permit. Manitoba Hydro's Chief Forester establishes herbicide application rates in accordance with product label instructions. Manitoba Hydro only uses herbicides that have been listed in the Pesticide Use Permit.

Manitoba Hydro is responsible for obtaining the necessary pesticide use permits and submitting post seasonal control reports per Manitoba Regulation 94-88R under *The Environment Act*.

Manitoba Hydro has developed a pesticide applicator requirements document for their employees to:

- Provide regulatory and applicator licensing information
- Technical guidance
- Safety requirements and checklists for line managers responsible for pesticide application for ensuring compliance with legal requirements

In addition, it provides information so that consistent pesticide management is conducted at all Manitoba Hydro facilities; thereby ensuring pesticide management is conducted in such a way that the resulting environmental effect is minimal.

In addition to tree control, weed control on the rights-of-way may be required under *The Noxious Weeds Act* (C.C.S.M. c. N 110). In agricultural areas, continued cultivation will reduce the need for weed control. Alternative techniques for the uncultivated portions of the right-of-way include mowing and herbicide spraying. Spraying equipment includes backpack sprayers, truck-mounted power sprayers equipped with a broadcast applicator system, hose and handgun, and all-terrain vehicle mounted power sprayers.

Prior to any vegetation management work on private land under easement agreement with Manitoba Hydro, the landowner will be notified.

2.3.3 Decommissioning and restoration

When the facility has reached end of life or is no longer required, it will be decommissioned. The following sections describe the decommissioning process.

2.3.3.1 Preparation activities

The transmission line will be disconnected from the grid to allow for the safe dismantling of the project. To disconnect, Manitoba Hydro will:

- Trip the breaker(s) at Portage – Saskatchewan Avenue and Brandon stations
- Open the 115 kV disconnects
- Disconnect the conductors at the substations

2.3.3.2 Removal of facilities

The disassembly and removal of the equipment will be the same as the installation described in Section 2.3.1.6, but in reverse order.

Salvage will involve removing and salvaging the conductor onto spools under tension to be removed from site. The towers will be disassembled and lowered using a crane onto flat bed trucks for transport.

Soil will be excavated surrounding the tower foundations allowing them to be cut off 1.5 meters below grade, in consultation with the landowner and in accordance with the land agreements. Surrounding soil will be used to backfill the excavation and graded to allow for re-vegetation.

2.3.3.3 Salvage and disposal

After dismantling the project, high value components will be removed for re-use or recycling. The remaining materials will be reduced to transportable size and removed from the site for disposal. Waste handling and disposal will be subject to conventional Manitoba Hydro codes of practice and relevant provincial and federal legislation.

2.3.3.4 Restoration

Following removal of the line, the right-of-way will be restored to the surrounding land use. Disturbed areas will be graded to original contours and the soils will be restored to a condition consistent with intended land use.

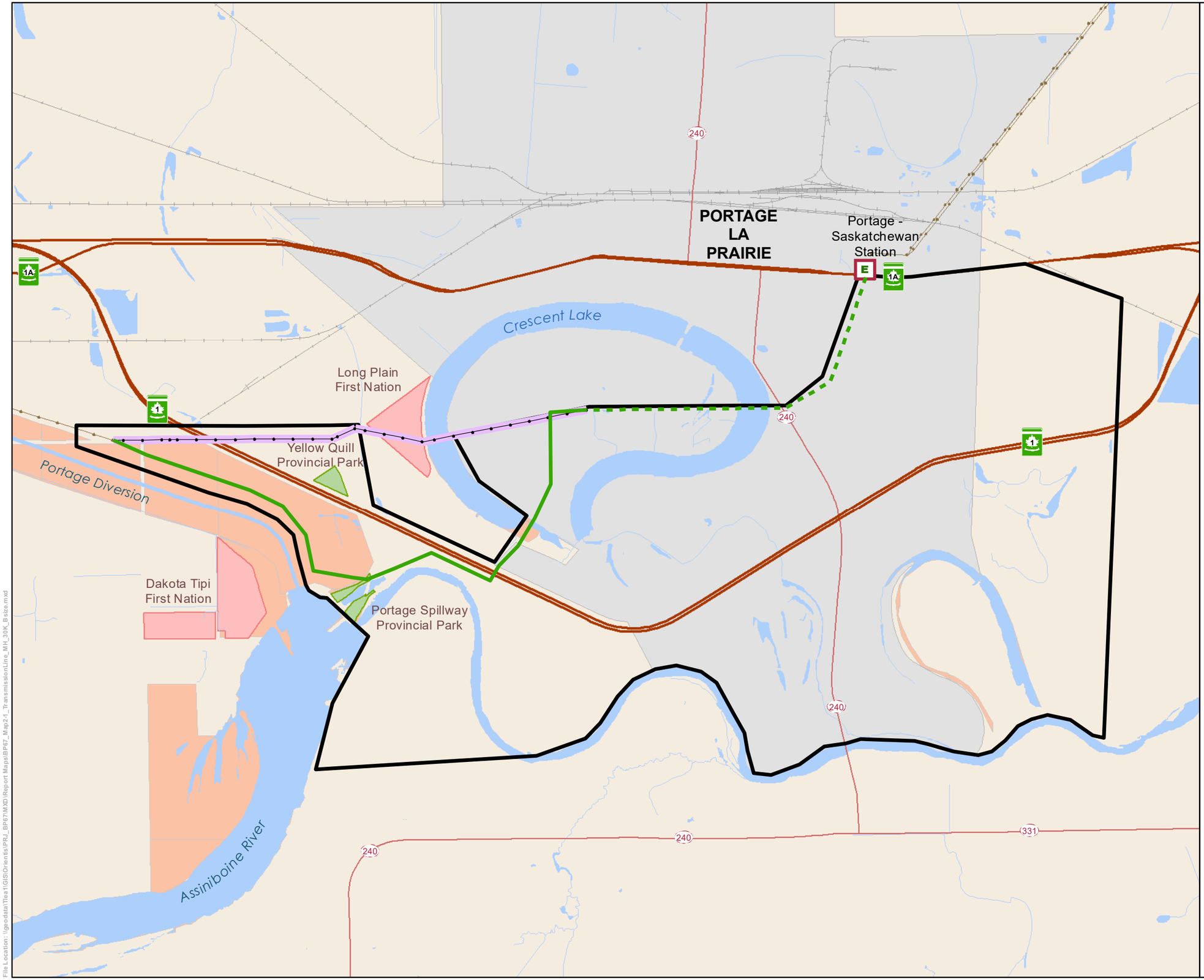
Disturbed areas will be rehabilitated consistent with the rehabilitation and invasive species management plan developed for the project. This will include the restoration of any access areas along the right-of-way.

If seed is applied, any erosion and sediment control measures required on-site would be left in place until seed is fully established, as determined by an environmental officer.

If project components are sited on industrial properties or those that are no longer under agricultural production or in a natural state, different methods would be used.

2.4 Funding

Manitoba Hydro is assuming full responsibility for the design, construction and commissioning of the project.



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Salvage
- New section
- Existing section

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 0.5 1 Kilometre
0 0.25 0.5 Mile

1:30,000

BP6/BP7 Transmission Line

Map 2-1

File Location: \\gisdata\Tlea11GIS\Orientis\PRJ_BP67MXD\Report Maps\BP67_Map21_TransmissionLine_MH_30K_BSize.mxd

3.0 Route selection

3.1 Overview

The routing methods used for this project are based on those developed by the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC) for overhead electric transmission line siting (EPRI-GTC 2006). Manitoba Hydro selected the EPRI-GTC methodology because it has been successfully applied to more than 200 linear projects across North America, and because the tools provide a structured and transparent way to represent the trade-offs between competing interests and land uses, along with the decisions made in a transmission line routing process.

The routing process involved a multi-phase decision-making approach that incorporates feedback from internal discipline experts and external (public, Indigenous and regulatory) parties at key milestones.

This project involved external parties directly in the routing and assessment process. Manitoba Hydro welcomed participants from the community to form a 'Community' team that shared perspectives and concerns about key route segments. This level of direct involvement from external participants worked to build knowledge about the values considered during Manitoba Hydro's routing process and concerns that other participants may have about preferred segments / routes and rank routes.

For this project, a series of workshops were held with external parties in which the participants themselves discussed the pros and cons of each route and determined their rank collectively.

Route selection incorporates consideration of the environment, opportunities and constraints for transmission line development, and the interests and concerns that influence the use of the land or could be affected by the route. The primary goal is to limit the overall effect of the transmission line by considering and balancing the effect across the following perspectives:

Built environment perspective - concerned with limiting the effect on the socio-economic environment and includes features such as proximity to buildings, building density, soil capability/agricultural use (e.g., livestock, crops), and proximity to heritage sites.

Natural environment perspective - concerned with limiting the effect on the biophysical environment such as wooded areas and wildlife habitat.

Engineering environment perspective - concerned with aspects such as cost, system reliability, constructability and other technical constraints.

These three perspectives generally reflect the three pillars of sustainable development: social/people (Built), environment (Natural) and economy (Engineering).

The routing process involves the use of GIS-based mapping and models to evaluate the suitability of an area for locating new transmission lines. The models and sequential steps in the process provide a structured and transparent way to represent the trade-offs between competing interests and land uses. The process includes steps to provide opportunities for Indigenous, landowner, interested party and public feedback. Feedback is used in a process with associated decision-making tools that produces decisions that balance perspectives among competing land use values, while respecting the various physical, technical and regulatory constraints on the landscape.

The routing process involved the following general steps:

- characterize the region
- develop the route planning area
- develop and analyze alternate routes within the alternate corridors
- select and finalize the preferred route

Each step involves a process of narrowing and refining the geographic area under consideration to get to a preferred route. The steps are described briefly in the following sections.

3.2 Characterizing the project region

The October 2019 storm and subsequent rebuild and salvage created the start (Portage-Saskatchewan Station) and potential end points of the project (Map 3-1).

The initial planning step was to characterize the suitability of the region for transmission lines. This involved compiling and sourcing existing desktop data such as satellite imagery, land use/ownership, buildings and protected areas, and existing infrastructure. It also involved reconnaissance field trips, as well as initial public and Indigenous engagement planning; including the identification of potential interested parties and Indigenous communities in the area and preliminary contact to gather initial information about the area.

It also included a windshield survey to ground-verify types of buildings and land use.

3.3 Areas of least preference

Areas of least preference (Appendix A; Table A-1) are features to avoid when routing a transmission line due to physical constraints (extreme slopes, long water crossings),

regulations limiting development (protected areas), or areas that would require extensive mitigation or compensation (residential areas).

During the route planning process, attempts are made to avoid areas of least preference, but in some cases, due to other constraints, and in consideration of the specific details of the feature, routing across an area of least preference may be required.

3.4 Route planning area

The route planning area (Map 3-1) is the area used to gather data and develop route segments, which lead to alternate routes. The route planning area was developed based on experience working in the area and using the areas of least preference to understand potential constraints.

The route planning area was developed based on various constraints on the landscape and general routing principles. The eastern boundary was limited by distance (to limit line length). The southern boundary was constrained by the Assiniboine River (to avoid crossing over twice). The western boundary was constrained by the Assiniboine River and Portage Spillway (to avoid crossing over twice). The northern boundary was constrained by residential development in Portage la Prairie.

Prior to the October 2019 storm the project was located directly on Long Plain First Nation lands, west of Crescent Lake. At the onset of the project, Long Plain First Nation met with Manitoba Hydro and indicated a conflict with width of the easement and land use on the property at the Keeshkeemaquah location. Manitoba Hydro considered this concern when developing the route planning area as well as when reviewing mitigative segments.

3.5 Alternate routes

Having completed the preliminary planning, Manitoba Hydro moved into the next stage, which was the development, presentation, and evaluation of alternate routes. The objective of this stage was to determine a preferred route. This was achieved by:

- Developing alternate routes within the route planning area
- Assessing the feasibility of the alternate routes
- Evaluating the alternate routes using the alternate route evaluation and preference determination models
- Selecting a preferred route
- Presenting the preferred route for feedback through public and Indigenous engagement
- Developing the final preferred route using feedback received

These steps are described in more detail in the following sections.

3.5.1 Developing alternate routes

The routing team identified alternate routes within the route planning area. The routing team is made up of senior transmission technical specialists in engineering, design, and environmental assessment.

The alternate routes are potential, preliminary centerline routes for the proposed transmission line. The routes are composed of individually numbered route segments that connect to form contiguous routes from the start to end point (Map 3-1).

The routing team draws route segments initially on large format electronic maps that contain aerial imagery, areas of least preference and corresponding geospatial imagery to understand connectivity and logical flow between the start and end points.

Once a first cut has been completed, the routes are digitized into a Geographic Information System where they are further refined and assessed with the full power of information that the hundreds of geospatial data layers provide.

3.5.2 Round one engagement

Once the various segments for alternate routes were developed sufficiently, a map of the output was posted to the project website and was used during round one of public and Indigenous engagement (described in chapters 4.0 and 5.0).

Input was collected on route/segment preferences including any potential new segments proposed.

Based on feedback from engagement and discipline specialists, two additional segments (Segments M1 + M2; Map 3-2) were created. These new segments were evaluated with the same rigour and consideration as the original segments.

Mitigative segment M1 (Map 3-2) ran west from the island crossing over Crescent Lake. It was rejected as it crossed over an area of least preference and did not decrease potential effects.

Mitigative segment M2 followed similar segments created during initial route development (Map 3-2). This segment was reviewed by the project team. It was determined to remove it after the review as it was over 150% longer than the shortest route and therefore was the worst scoring route based on the route statistics.

3.5.3 Alternate route evaluation

After the first round of engagement and review of proposed mitigative segments, there were 18 segments still under consideration (Map 3-2).

The alternate route evaluation model (Appendix A: Table A-2) was used to develop segment/route statistics to assist in making decisions. Multiple alternate routes were compared to one another using the route statistics. The routes were ranked based on the criteria in the alternate route evaluation model to determine the top routes based on the statistical data.

3.5.3.1 Route selection meetings / workshops

The alternate routes were evaluated at several meetings and workshops. Participants in the workshops included members of the project team representing the various perspectives (built, engineering, natural). Team members responsible for engineering, technical design, construction and maintenance represented the engineering perspective. Team members responsible for public and Indigenous engagement represented feedback received from participants. Socio-economic discipline specialists represented the built perspective. Discipline specialists responsible for assessing the potential effect on the biophysical environment represented the natural environment.

During the first workshop, the number of alternate routes was reduced to a set of finalists. This process was facilitated through discussion and examination of the route statistics and review and discussion of the route segments.

It was decided that the second end point (Figure 3-1) on the north side of the highway would not be considered further as it would require an additional two crossings of the Trans-Canada Highway. Therefore, segments 13 and 16 were not considered further. In addition, it was decided that segment 12 was not preferred from any perspective. It adds length and affects more residential housing than the other options.

It was suggested to extend segment 14 along the highway to the point where it connects to the existing BP6/BP7 line (Segment 19 was created; Figure 3-2).

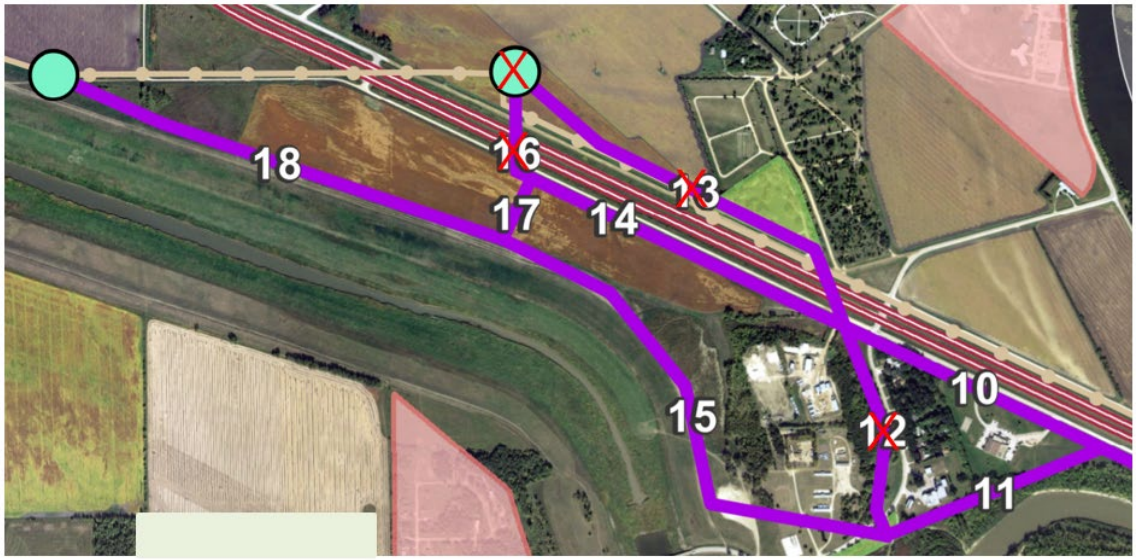


Figure 3-1: Removal of segments 12, 13, and 16

Figure 3-2: Addition of segment 19

After review of the top routes, a set of finalists were carried forward for further evaluation in the preference determination phase. Four routes were selected for preference determination; Routes A – D (Map 3-3). These routes are the possible combinations of routes after segments 12, 13, and 16 were removed from further consideration.

3.5.4 Preference determination

In the preference determination step, the preference determination model (Appendix A; Table A-4) was used to select the preferred route from the route finalists identified from the alternate route evaluation process.

The finalists from the alternate route evaluation step were considered in a comparative fashion. Each route receives a value between 1 and 3, for each of the criteria in the model, with lower values indicating higher suitability.

Each criterion is represented by a subset of project team members that develop the scores for each route within the preference determination framework.

3.5.4.1 Cost and system reliability

The cost criteria scoring (value between 1 and 3) and system reliability scoring were determined by technical staff and engineers from System Planning, Project Management, Transmission Line Design, and Civil Design and Construction. Meetings and discussions were held with the engineering team to determine how to score each route for cost and system reliability. An additional cost item was considered at this step. Segment 11 (Map 3-2) runs parallel to the Assiniboine River for several hundred meters. If the segment is selected, then some of the riparian vegetation will be removed during clearing activities. There is concern that this could cause additional slope instability and may require bank stabilization. An estimated cost of this was added to routes C+D, which use segment 11.

The scores for cost (Table 3-1) and system reliability (Table 3-2), determined during the engineering team review of the route finalists, were brought to the final workshop.

Table 3-1: Cost scores and rationale

Route	Cost score	Rationale
A	1	Cost scores were based on the costs of construction, materials, property acquisition and bank stabilization (potential risk for routes paralleling the Assiniboine River). The lowest overall cost route (A) received a 1. The other scores were scaled between 1 and 2 based on the overall costs.
B	2	
C	1.6	
D	1.8	

Table 3-2: System reliability scores and rationale

Route	System reliability score	Rationale
A	1	Generally, length is the main driver due to the risk of damage to the line from adverse weather (longer = more towers and more exposure to extreme events (wind/ice/tornados, etc.)). The four routes were similar enough in length to not increase these risks. This is assuming no risk from bank failure due to bank stabilization methods.
B	1	
C	1	
D	1	

3.5.4.2 Community

The engagement team developed the community criterion rankings. The scores were determined by community representatives at a community ranking meeting.

The community scores (Table 3-3) were brought to the final workshop.

Table 3-3: Community scores and rationale

Route	Score	Rationale
A	2.6	Route A affects the most homes and parallels the highway the longest, which affects underground infrastructure (existing and future); future development potential; and the Yellow quill trail intersection.
B	2.4	Route B affects the most homes but avoids some highway issues (underground infrastructure – existing and future; future development potential; Yellow Quill intersection) and is closer to the diversion (good - already disturbed).
C	1.5	Route C avoids homes, but is along the highway partially, which affects underground infrastructure (existing and future); future development potential; Yellow Quill intersection.
D	1	Route D avoids homes, the highway (underground infrastructure – existing and future; future development potential; Yellow Quill

		intersection), is closer to the diversion (good - already disturbed) and opens areas for fishing access.

3.5.4.3 Natural environment

The natural criteria scoring was determined by the discipline specialist on the project team that conducted the assessment on the biophysical and physical components of the project. A meeting was held to discuss the routes and develop scores based on potential effects to the natural environment. The scores (Table 3-4) were brought to the final workshop.

Table 3-4: Natural scores and rationale

Route	score	Rationale
A	1	Routes A and B do not parallel the Assiniboine River. They will therefore not require clearing of riparian vegetation.
B	1	
C	3	Routes C and D parallel the Assiniboine River, which will require clearing of riparian vegetation. The area is old growth cottonwood forest, which would provide excellent habitat for wildlife. It also provides protection to the banks of the river and limits erosion and sedimentation. There are no other areas of natural habitat along the proposed routes.
D	3	

3.5.4.4 Built environment

The built criteria scoring was determined by the discipline specialists on the project team that conducted the assessment on the socioeconomic components of the project. A meeting was held to discuss the routes and develop scores based on potential effects to the built environment. The scores (Table 3-5) were brought to the final workshop.

Table 3-5: Built scores and rationale

Route	Score	Rationale
A	3	Route A affects several homes (directly and indirectly) and would require the purchase of some homes. It is closer to proposed developments and could affect underground

		infrastructure along the Trans-Canada Highway. It will also have an aesthetic impact being close highway.
B	2.75	Route B affects several homes (directly and indirectly) and would require the purchase of some homes. It will not affect the proposed developments, underground infrastructure along the Trans-Canada Highway or have the same aesthetic impacts.
C	1.25	Route C does not traverse homes or traverse hotel frontage or a proposed service station frontage. It may interfere with underground infrastructure along the highway.
D	1	Route D does not traverse homes or proposed developments, interfere with underground infrastructure along the highway or traverse hotel frontage or a proposed service station frontage.

3.5.4.5 Risk to schedule

The risk to schedule criterion scoring was developed through consideration by the entire project team at the final workshop, as elements of each consideration (built, natural, engineering) can contribute to schedule risks. The risk to schedule scores (Table 3-6) were decided at the final workshop.

Table 3-6: Risk to schedule scores and rationale

Route	Score	Rationale
A	3	Routes A and B will require the purchase of one or more homes. This was considered the main risk to schedule as negotiations and potential expropriation can take time.
B	2.75	
C	1.25	Routes C and D do not require the purchase of homes and therefore were scored 1.
D	1	

3.5.4.6 Final workshop

A final workshop was held to discuss the scores for the preference determination model and determine a preferred route.

Each team presented their scores and the other teams were asked to challenge the scores if the rationale was questioned.

The risk to schedule scores (Table 3-6) were discussed at this workshop then added to the preference determination table.

The scores given to each route were entered into the preference determination model presented in Table 3-7.

Table 3-7: Preference determination results

Criteria	Percent	Routes			
		A	B	C	D
Cost	40%	1	2	1.6	1.8
Community	30%	2.6	2.4	1.5	1
Risks to schedule	10%	3	3	1	1
System reliability	5%	1	1	1	1
Natural environment	8%	1	1	3	3
Built environment	8%	3	2.75	1.25	1
Total score		1.83	2.15	1.56	1.47
Rank		**3**	**4**	**2**	**1**

When the scores and weights for each criterion were considered, a rank order of the remaining routes was established. Route D received the lowest total score. This was discussed as part of the workshop to determine if each group had any major concerns presenting Route D as the preferred route. As there were no concerns, Route D became the preferred route.

3.5.5 Round 2 engagement

The preferred route (Map 3-4) was presented during the 2nd round of engagement. Feedback was sought regarding on the ground land uses in proximity to the preferred route, future land use or development plans, and other specific concerns.

A small section, crossing a single landowner was not finalized at this time. Manitoba Hydro was working with the landowner to determine the preferred route through this parcel.

Recommendations were received through the engagement process regarding segment adjustments to mitigate concerns or land uses that are affected by the route.

3.6 Final preferred route

Map 3-5 shows the final preferred route proposed for the project. The assessment of potential effects was based on this route. Table 3-8 presents the statistics for the final preferred route using the criteria from the alternate route evaluation model.

Table 3-8: Final preferred route statistics

Feature[1]	Value
Built	
Relocated residences (count)	2
Potential relocated residences (count)	15
Proximity to residences (count)	54
Proposed developments (count)	16
Current agricultural land use (calculated value)	22.01
Land capability for agriculture (calculated value)	50.46
Diagonal crossing of agriculture crop land (acres)	1.03
Proximity to buildings and structures (calculated value)	30
Special features (count)	39
Historic/cultural resources (count)	8
Natural	
Crown land natural (acres)	26.24
Wetlands - ROW (acres)	2.48
Natural forests - ROW (acres)	8.05
Stream / river crossings - centerline (count)	1
Engineering	
Length (km)	8.52
Construction/design costs ($)	$6,008,952
Seasonal construction + maintenance restrictions (calculated value)	10.80
Accessibility (calculated value)	762,434
Proximity to infrastructure (calculated value)	460,789

[1]Definitions for each feature can be found in Appendix A; Table A-3

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- End Point
- Alternative Segment

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 15, 2021

N

0 0.5 1 Kilometre
0 0.25 0.5 Mile

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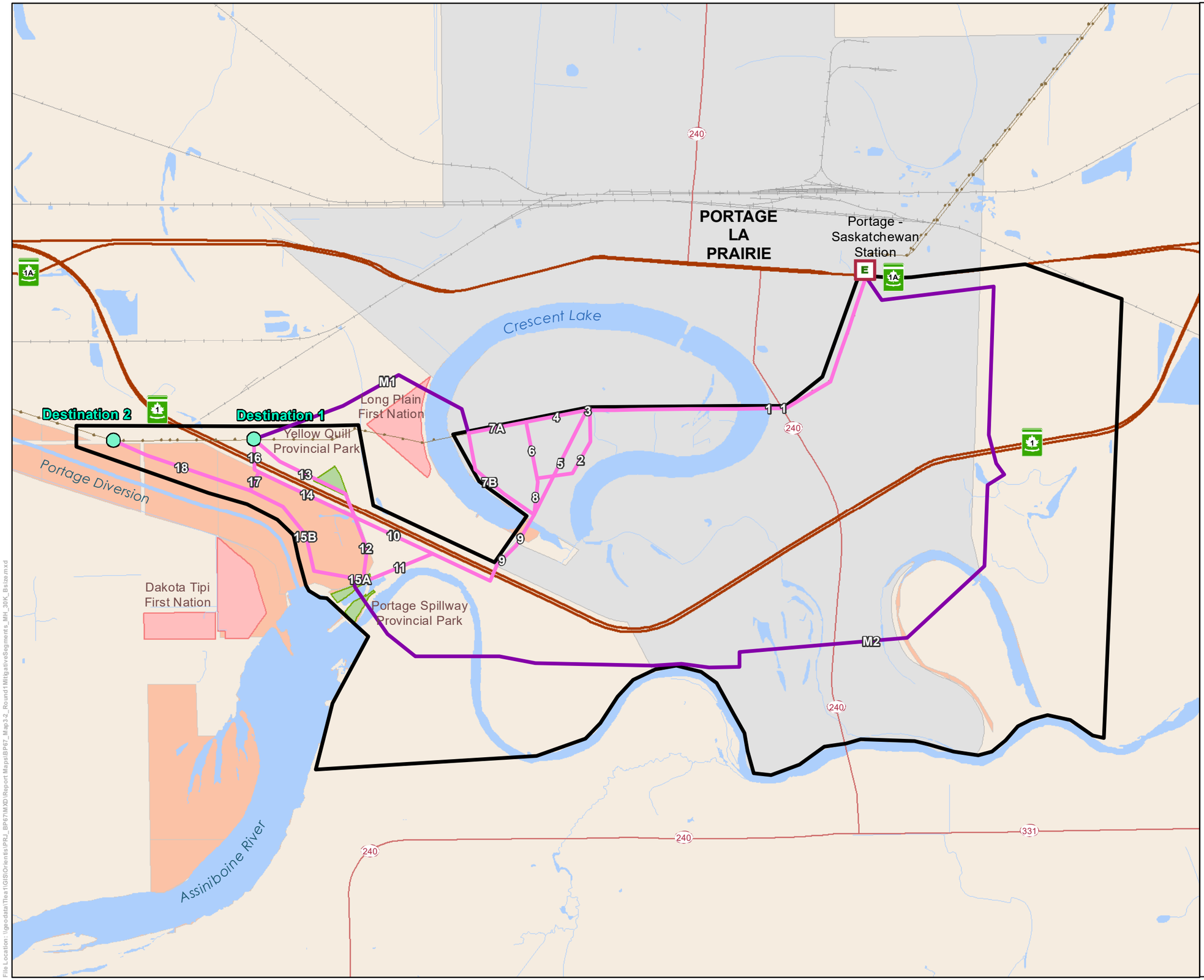
Alternative Route Segments

Map 3-1

File Location: \\geodata\Tlea1\GIS\Orients\PRJ_BP67\MXD\Report Maps\BP67_Map3-1_AlternativeRouteSegments_MH_30K_Bsize.mxd



BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- End Point
- 5 — Alternate Route
- M1 — Mitigative Segment

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 14, 2021

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0 0.25 0.5 Mile

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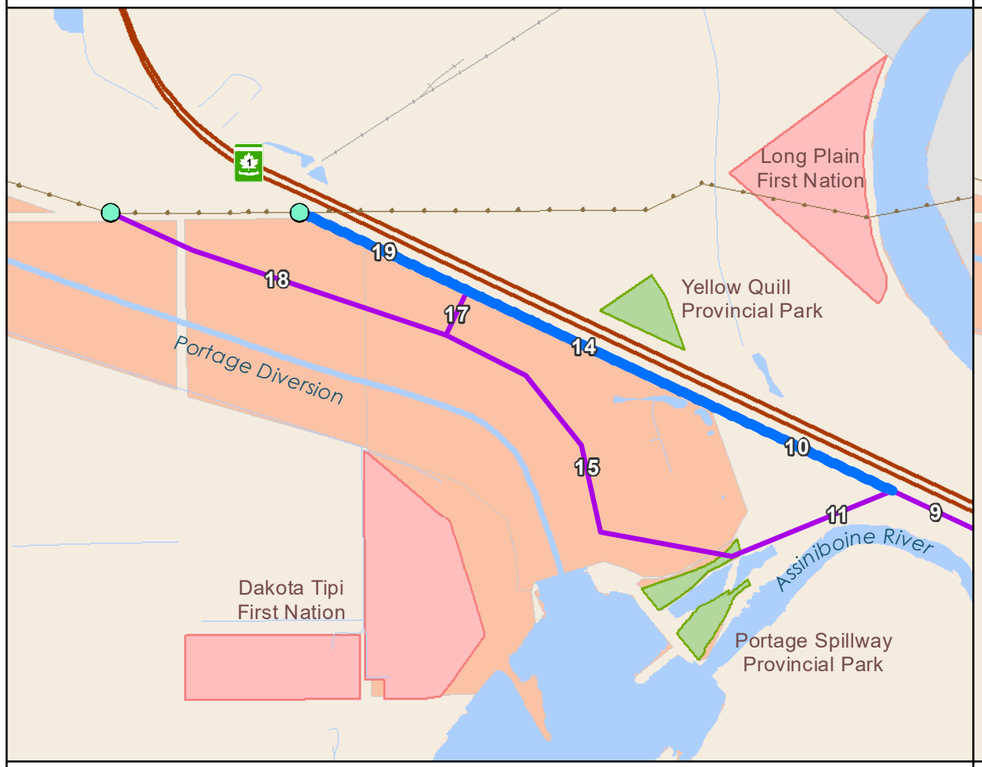
Alternate Routes and Mitigative Segments

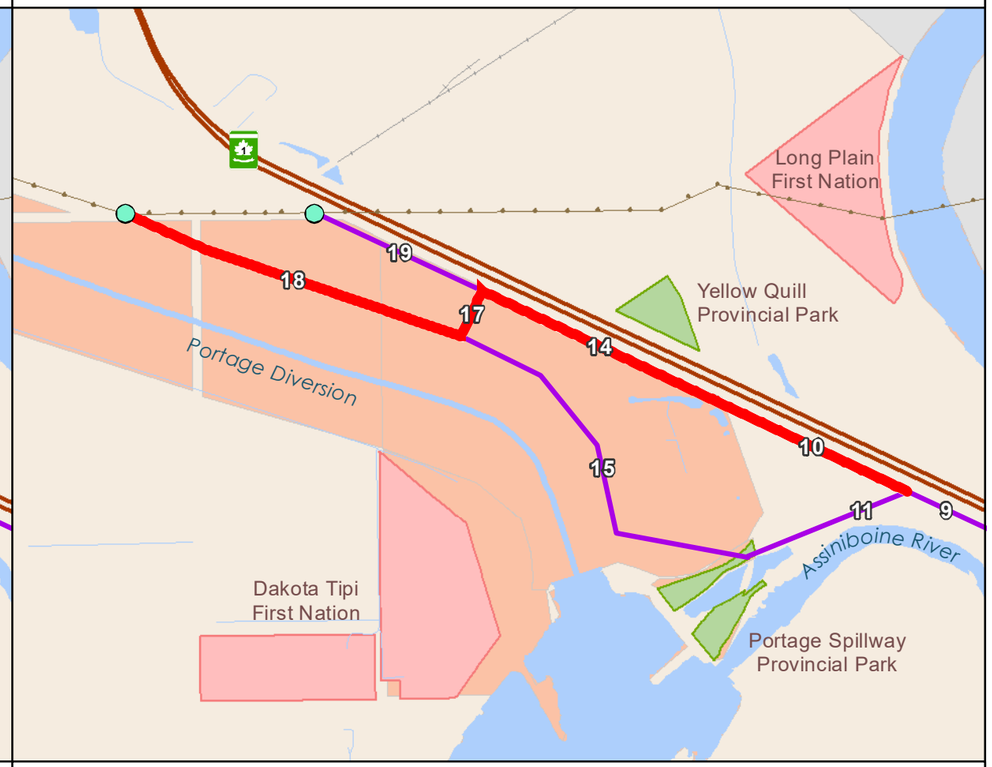
Map 3-2

File Location: \\geodata\Tea1\GIS\Orientia\PRJ_BP67\MXD\Report Maps\BP67_Map3-2_Round1MitigativeSegments_MH_30K_Bsize.mxd

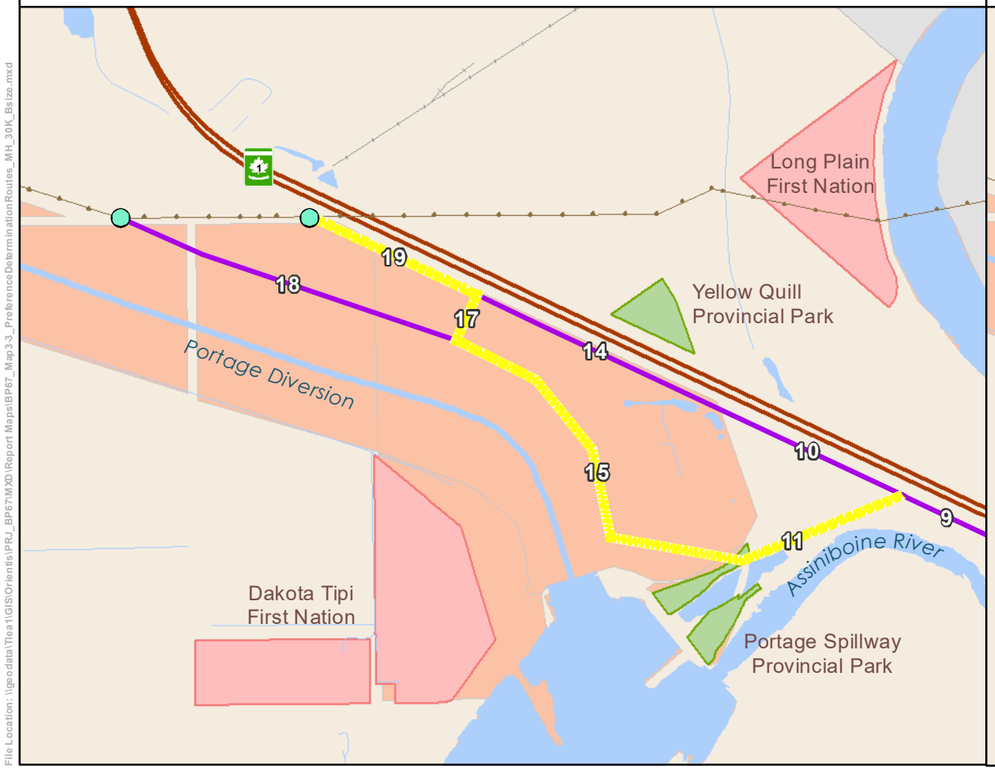
Route A



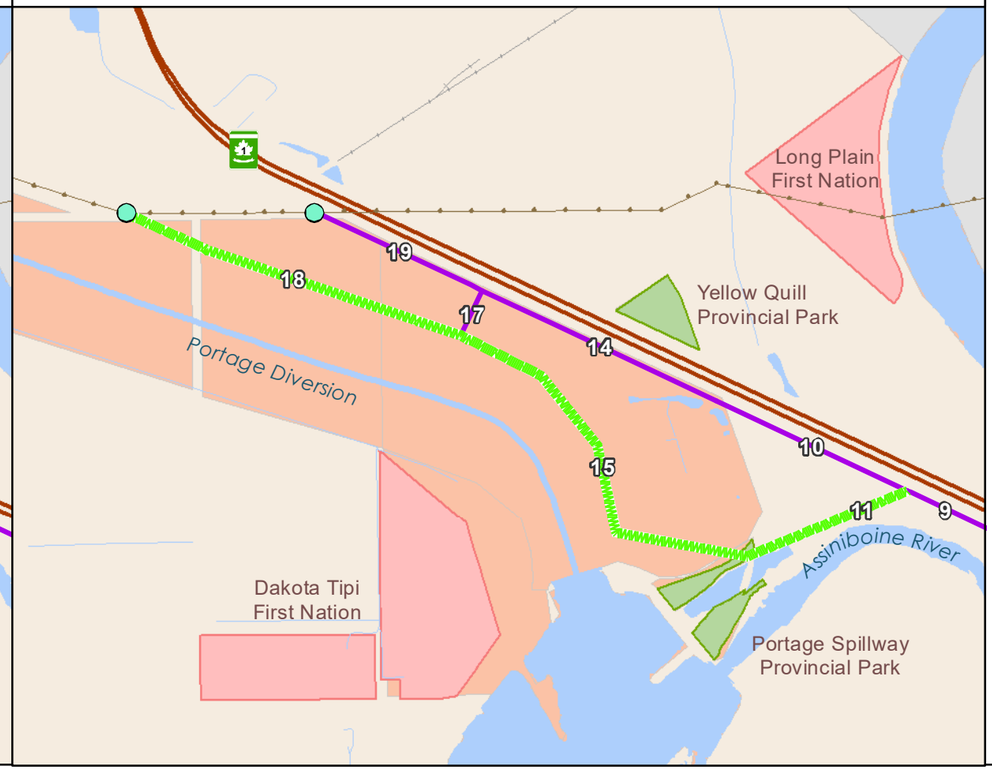
Route B



Route C



Route D



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- Destination Point
- 5 — Alternative Route Segment

Preference Determination Routes

- Route A
- Route B
- Route C
- Route D

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: March 30, 2021

N

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0 0.25 0.5 Mile

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Preference Determination Routes

Map 3-3

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PORTAGE LA PRAIRIE

Portage - Saskatchewan Station

Crescent Lake

Long Plain First Nation

Yellow Quill Provincial Park

Portage Diversion

Dakota Tipi First Nation

Portage Spillway Provincial Park

Assiniboine River

240

1A

1

331

55

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- Preferred Route Segment
- Alternative Route Segment

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: March 30, 2021

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0 0.25 0.5 Mile

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Preliminary Preferred Route

Map 3-4

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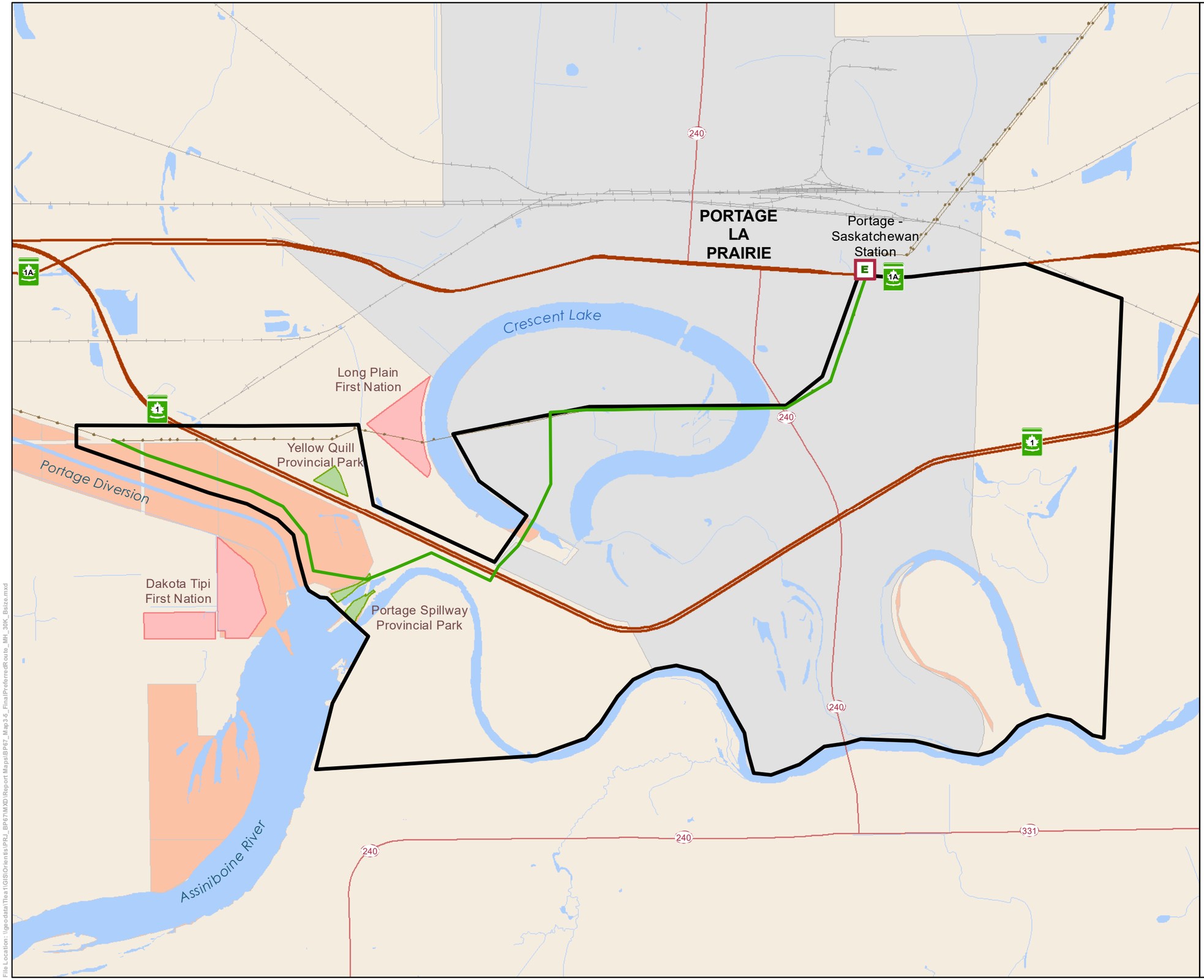

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

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0 0.5 1 Kilometre
0 0.25 0.5 Mile

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BP6/BP7 Final Preferred Route

Map 3-5

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4.0 Public engagement process

4.1 Goal and objectives

The goal of the public engagement process (PEP) was to conduct a transparent engagement process that involved communities, individuals, and groups in the decision-making process, while working together to resolve concerns and build relationships.

The engagement objectives for this project included:

- Identifying interested communities, individuals and groups and asking for input in designing how they wanted to participate in the process
- Delivering an engagement process that was adaptive and inclusive
- Involving communities, individuals, and groups in the decision-making process
- Informing communities, individuals, and groups about how their input influenced decision making

Communication objectives were to:

- Share timely information that was easy to understand
- Provide opportunities for communities, individuals, and groups to share information, and communicate in the way they preferred
- Be open to listening and discussing concerns about the project, and to work together to find solutions
- Track and implement commitments
- Let audiences know how their input influenced the project

4.2 Communication methods

Communication methods included:

- Project webpage
- Postcards
- Printed materials
- eCampaign
- Emails
- Phone calls
- Landowner letters
- Media outreach
- Social media

4.2.1.1 Project webpage

A project-specific webpage exists for the project. This page will continue to share project information, act as a document library and a place to seek input on draft documents. Manitoba Hydro will continue to update the project webpage with key milestones and at key stages in the Project, such as key regulatory milestones and construction progress updates.

4.2.1.2 Postcards

For Round one, Manitoba Hydro sent postcards informing Portage la Prairie residents about the upcoming virtual information sessions and opportunities to participate in the survey and online feedback portal. For Round one, postcards were mailed on October 21, 2020 and included 7,026 postcards. For Round 2, postcards were mailed on March 3, 2021 and included 7,100 postcards.

4.2.1.3 Printed materials

Manitoba Hydro routinely creates printed materials containing project related updates including info sheets and maps.

4.2.1.4 eCampaign

This is a notification mechanism targeted to self-identified interested parties. Email campaign recipients can unsubscribe from the email campaign service at any time, forward to other individuals, post on Twitter or share on Facebook. Over 40 people have subscribed for Project updates.

4.2.1.5 Phone calls

Manitoba Hydro maintains a toll-free number for project related questions and concerns.

4.2.1.6 Emails

Manitoba Hydro staff regularly sends and receives emails regarding project updates and maintains an email address for project related emails.

4.2.1.7 Landowner letters

For Round one, Manitoba Hydro sent potentially affected landowners a letter and map by direct mail on November 5, 2020. For Round 2, Manitoba Hydro sent potentially affected landowners a letter, info sheet and map by direct mail on March 1, 2021.

4.2.1.8 Media outreach

Manitoba Hydro reached out to local media to share project information including Portage Online. Manitoba Hydro ran radio spots on CFRY Portage from October 22 – November 3.

4.2.1.9 Social media

Manitoba Hydro uses several social media platforms to communicate information to its customers. Information updates (status and upcoming events) relating to the project was posted on Facebook, Twitter and Instagram.

In Round one, over 6,000 people viewed the Facebook ad and over 170 people clicked on the link for more information. In Round 2, over 9,000 people viewed the Facebook ad and over 800 people clicked on the link for more information.

4.3 Engagement methods

Engagement methods for the Project included:

- Virtual information sessions
- Interested parties' meetings
- Online survey
- Feedback portal
- Email and telephone communications with landowners and other interested parties

The techniques chosen for the public engagement process were guided by the International Association of Public Participation (IAP2). IAP2 defines public participation as a "means to involve those who are affected by a decision in the decision-making process. It promotes sustainable decisions by providing participants with the information they need to be involved in a meaningful way, and it communicates to participants how their input affects the decision." IAP2's core values for public participation are as follows:

1. Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.

2. Public participation includes the promise that the public's contribution will influence the decision.

3. Public participation promotes sustainable decisions by recognizing and communicating the needs and interests of all participants, including decision makers.

4. Public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision.

5. Public participation seeks input from participants in designing how they participate.

6. Public participation provides participants with the information they need to participate in a meaningful way.

7. Public participation communicates to participants how their input affected the decision.

IAP2's public participation spectrum (Figure 4-1) was also used to guide the project's public engagement techniques. The public engagement process strategically used techniques that follow the consult and involve levels identified on the public participation spectrum. These levels are described as follows:

- Consult: To obtain public feedback on analysis, alternatives and/or decisions.
- Involve: To work directly with the public throughout the process to ensure that public concerns and aspirations and consistently understood and considered.

IAP2'S PUBLIC PARTICIPATION SPECTRUM

iap2 international association for public participation

The IAP2 Federation has developed the Spectrum to help groups define the public's role in any public participation process. The IAP2 Spectrum is quickly becoming an international standard.

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Figure 4-1: IAP2's public participation spectrum.

The virtual information served as a method to consult the public of the project, while the community ranking process described in the routing chapter was used to involve the interested parties.

4.3.1 Virtual information sessions

The purpose of the virtual information sessions was to share information about the project, answer questions and hear feedback from interested parties, landowners and members of the public regarding the project.

During Round one, Manitoba Hydro held four virtual information sessions using Microsoft Teams.

- October 26, 2020 at 7:00 pm
- October 27, 2020 at 4:00 pm
- November 3, 2020 at 12:00 pm
- November 4, 2020 at 7:00 pm

During Round 2, Manitoba Hydro held three virtual information sessions using Microsoft Teams.

- March 16, 2021 at 7:00 pm
- March 17, 2021 at 12:00 pm
- March 18, 2021 at 7:00 pm

The sessions were held at various time to allow for flexibility for participant's schedules. The sessions started out with introductions, a brief presentation from Manitoba Hydro and discussion with the participants.

4.3.2 Interested party meetings

The purpose of the interested party meetings was to engage representatives of a wide range of organizations with an interest in the Project to share information, answer questions and hear feedback from interested parties regarding the project.

During Round one, participants were asked to identify their individual issues and concerns, particularly those based on local knowledge to provide feedback to be considered during the transmission line routing process and to suggest possible mitigation strategies to address the effects related to the 18 alternate route segments identified by Manitoba Hydro for the Project.

In Round one, Manitoba Hydro staff held interested party meetings to discuss the alternate route segments with various government agencies, a local organization, the Rural Municipality and the City of Portage la Prairie. between October 23, 2020 and November 26, 2020 (Table 4-1).

Table 4-1: Interested parties meetings

Date of Meeting	Interested parties
October 2, 2020	City of Portage la Prairie
October 23, 2020	Portage la Prairie planning district
October 27, 2020	Rural Municipality of Portage la Prairie
October 29, 2020	Manitoba Infrastructure
November 5, 2020	City of Portage la Prairie Water Treatment Plant
November 6, 2020	Manitoba Infrastructure
November 10, 2020	Manitoba Parks and Resource Protection
November 13, 2020	Historic Resources Branch
November 26, 2020	Portage Regional Recreation Authority

During Round 2, Manitoba Hydro shared the preferred route with participants and provided an overview of feedback received during Round one. Participants were asked to identify their individual issues and concerns, particularly those based on local knowledge to provide feedback to be considered during the transmission line routing process and to suggest possible mitigation strategies to address the effects related to the preferred route identified by Manitoba Hydro for the project.

In Round 2, interested party meetings to discuss the preferred route were held between Manitoba Hydro staff and the Historic Resources Branch and the Rural Municipality between March 12 and March 23 (Table 4-2)

Table 4-2 Round 2 interested parties meetings

Date of Meeting	Interested parties
March 12, 2021	Historic Resources Branch
March 23, 2021	Rural Municipality of Portage la Prairie

A Manitoba Hydro representative recorded the summaries of the interested party meetings. Additionally, any correspondence with an interested party representative, including phone or email, was documented. Summaries of the interested party meetings are provided in Appendix B.

4.3.3 Online survey

During Round one, Manitoba Hydro hosted an online survey using Simple Survey on the BP6/BP7 webpage from October 16 – December 20, 2020. There were 48 respondents to the survey.

During Round 2, Manitoba Hydro hosted an online survey using Simple Survey on the BP6/BP7 webpage from March 1 - March 18, 2021. There were 28 respondents to the survey.

4.3.4 Feedback portal

During Round one, Manitoba Hydro hosted a link on the Project webpage to an online feedback portal from October 16 – December 20, 2020. The feedback portal was an interactive way for participants to comment on the alternate route segments, share suggestions, and identify points of interest in the area.

During Round 2, Manitoba Hydro hosted a link on the Project webpage to an online feedback portal from March 1 – March 23, 2021. The feedback portal was an interactive way for participants to comment on the preferred route and identify points of interest in the area.

4.3.5 Email and telephone communications

Both the Project Information Line (1-877-343-1631) and email address (leaprojects@hydro.mb.ca) were available for external audiences and the public to share concerns and pose questions.

4.4 Public engagement feedback

4.4.1 Overview

Engagement feedback typically focused around one or more of the following topics:

- Proximity to homes
  - Neighborhoods
  - Property values
  - View
- Recreational activities
- Health and safety
- Existing infrastructure
- Heritage sites
- Riverbank erosion
- Agriculture
- Trees, birds, and wildlife

In addition to these main topics, other topics included routing, access to virtual information and impacts to waterways.

4.4.2 Proximity to homes

The most common concern shared by participants in round one was about impacts to their homes and neighbourhoods, such as decreased property values and impacts to their view. In round two, participants who live on Pine Crescent shared concerns about potential impacts on their view across the river if the most westerly route was chosen on the island. They shared that they are concerned that the route across the river will impact their property values.

4.4.3 Recreational activities

In round one, participants shared concerns about potential impacts to recreational areas and activities, such as the local dog park and fishing areas.

4.4.4 Health and safety

Participants shared concerns about living near high voltage transmission lines and traffic collision risks with routing near the Trans-Canada Highway.

4.4.5 Existing infrastructure

Interested parties shared concerns about potential impacts on existing infrastructure including the floodway and Trans-Canada highway.

4.4.6 Heritage sites

Participants shared concerns about the potential heritage impact of all segments on Crescent Island and those in proximity to historic Fort la Reine. The Historic Resources Branch noted they could require extensive heritage work on the island and near Fort la Reine.

4.4.7 Riverbank erosion

In round two, participants shared concerns about the preferred route and riverbank erosion. Participants shared that they are concerned that the topography of the land near the Assiniboine river is not suitable for a transmission line.

4.4.8 Agricultural lands

Participant shared concerns about impacts to their irrigation infrastructure and high valued crops. A participant shared concerns that this project is going to completely change the way they farm. The participant shared that they do not know if they will

ever be able to be compensated enough and they might not be able to irrigate under the line again.

4.4.9 Trees, birds and wildlife

Participants shared concerns about potential impacts to trees and shared that some of the bushes in the area are 200 years old and provide a visual and noise buffer for them. Participants also shared concerns about birds including the Eastern Peewee and concerns about potential bird wire collisions. Wildlife concerns were also shared.

4.4.10 Ongoing engagement

Manitoba Hydro will continue to notify landowners, interested parties and the public within the area. This includes notifying each affected landowner once the final preferred route is determined and providing them with contact information, an outline of the regulatory process and the upcoming timelines. The project webpage will continue to be updated as the project progresses, and the information line and email address will remain active.

5.0 Indigenous engagement process

5.1 Purpose, goals and objectives

This section provides an overview of the Indigenous engagement process (IEP), including principles and goals of the process, the scope and adaptable nature of the process, key concerns, and outcomes resulting from engagement. Follow-up and ongoing engagement is also planned throughout the regulatory and construction phases of the project.

The following principles guided Manitoba Hydro's approach to Indigenous engagement for this project:

- Traditional territories and activities important to Indigenous peoples' way of life and culture should be acknowledged, valued and protected.
- The diversity of Indigenous cultures and worldviews should be understood and appreciated.
- Manitoba Hydro should work with Indigenous communities to better understand perspectives and determine mutual approaches to address concerns and build relationships.
- Indigenous communities should be provided opportunities to communicate early in the process and on an ongoing basis.
- Indigenous communities should be involved in the decision-making process and should understand how their input influenced decision-making.

In addition to the shared engagement process goals provided in the PEP section, the IEP had the following specific goals:

- Continue to build and strengthen working relationships with Indigenous communities in Manitoba
- Provide opportunities for Indigenous communities to have meaningful input and contributions to the project
- Provide opportunities for Indigenous communities to participate in an on-going engagement process through Indigenous Community and Assessment Coordinator (ICAC) positions for multiple projects in the Portage la Prairie area.
- Provide opportunities for Indigenous communities potentially impacted by projects to benefit economically from that project through employment opportunities and use of local businesses.

5.2 Process methods

5.2.1 Overview

Manitoba Hydro designed the IEP for the Project to engage Indigenous communities early in the process and at every stage. The IEP was adaptive and flexible, with opportunities for input provided at every stage to meet the specific context and needs of each group. This engagement process is separate from any Crown–Indigenous consultation process that could be initiated by the government. Engagement with Métis people for this Project was facilitated primarily through the Manitoba Métis Federation (MMF). As part of the IEP, Manitoba Hydro also collaborated with three Indigenous communities to create Indigenous Community and Assessment Coordinator (ICAC) positions to assist in the coordination of engagement and assessment activities for communities with high potential for adverse effects as a result of the Project.

5.2.2 Identification of Indigenous communities

Manitoba Hydro engaged with Indigenous communities who have historical and contemporary connection to the study area, whose use of the area would be potentially affected by the Project and who have indicated an interest in the project. Manitoba Hydro also reached out to a representative from the Consultation and Reconciliation Branch of the Provincial Indigenous and Northern Relations Department who indicated they would consider other communities. The Project is in Treaty 1 territory of the ancestors of the Anishinaabe, Cree, and Dakota peoples and the homeland of the Métis Nation. The project is in an area of the province that is of historical and contemporary interest to the MMF and its citizens.

Manitoba Hydro considered several factors in determining whom to contact regarding participation in the IEP and the level of involvement. The IEP was designed to tailor engagement for individual Indigenous communities by considering four key criteria then assessing the level of potential adverse effect from the project. The approach to the IEP was meant to be adaptive and responsive to feedback from communities as the IEP progressed. The four criteria used were:

1) Historical and contemporary connection to the study area
2) Potential for adverse impacts related to the Project
3) Interest in the Project
4) Recommended inclusion by the province

Based on our understanding of potential effects related to the project, Manitoba Hydro worked closely with three Indigenous communities to develop and support ICAC positions. The three communities that had ICAC positions were: Dakota Tipi

First Nation, Long Plain First Nation and the MMF. It is our understanding that these three communities met the four criteria. Other Indigenous communities engaged on the project included Brokenhead Ojibway Nation, Dakota Plains Wahpeton First Nation, Peguis First Nation, Roseau River Anishinabe First Nation, Sandy Bay First Nation and Swan Lake First Nation. Manitoba Hydro also engaged with the Portage Urban Indigenous Peoples Coalition (PUIPC).

Table 5-1 table describes the rationale for engaging with each community in the project.

Table 5-1: Rationale for engaging with each community in the project	
Indigenous Community	Rationale for engaging in the project
Brokenhead Ojibway Nation	1) Historical and contemporary connection to the study area; and 2) Recommended inclusion by the province
Dakota Tipi First Nation	1) Historical and contemporary connection to the study area; 2) Strong potential for adverse impacts related to the Project; and 3) Interest in the Project
Long Plain First Nation	1) Historical and contemporary connection to the study area; 2) Strong potential for adverse impacts related to the Project; and 3) Interest in the Project
Dakota Plains Wahpeton First Nation	1) Historical and contemporary connection to the study area
Peguis First Nation	1) Historical and contemporary connection to the study area; and 2) Interest in the Project
Roseau River Anishinabe First Nation	1) Historical and contemporary connection to the study area; and 2) Recommended inclusion by the province
Sandy Bay First Nation	1) Historical and contemporary connection to the study area
Swan Lake First Nation	1) Historical and contemporary connection to the study area
MMF	1) Historical and contemporary connection to the study area; 2) Strong potential for adverse impacts related to the Project; and 3) Interest in the Project
Portage Urban Indigenous Peoples' Coalition (PUIPC)	1) Potential for adverse impacts related to the Project; and 2) Interest in the Project

A community profile of the Indigenous communities included in engagement is provided below. Information describing each community was drawn from community websites or was drafted by the community themselves. Dakota Tipi First Nation, Long Plain First Nation and the MMF drafted their own community profile, included below.

5.2.2.1 Brokenhead Ojibway Nation

"The Brokenhead Ojibway Nation (BON) is a Treaty 1 Nation located northeast of the Winnipeg, Manitoba on Hwy. 59. The Brokenhead Ojibway Nation are a proud and thriving First Nation. We're focused on providing education and opportunities that can help assure a positive tomorrow for our youth, our families and our Elders.

Brokenhead Ojibway Nation #4 extends north to the shores of Lake Winnipeg and includes part of the Netley Creek Mars area. The Brokenhead River runs through the core area of the community. Both PTH #59 and the CN rail line cross through the northwest section of the Reserve. To the south is Winnipeg, 82 kilometres down highway #59 and to the north is Grand Beach, Patricia Beach and Victoria Beach to mane only three beaches in this area located along 59 north." (Brokenhead Ojibway Nation 2020).

Brokenhead Ojibway Nation has an on-reserve population of 801 and an off-reserve population of 1,311 for a total membership of 2,112 (Brokenhead Ojibway Nation 2020).

5.2.2.2 Dakota Plains Wahpeton First Nation

"Dakota Plains Wahpeton First Nation is in South Central Manitoba, 20 miles south west of Portage la Prairie. The Dakota of this community were relocated here due to a motion made by the City Council of Portage la Prairie on March 11, 1920." (Dakota Plains Wahpeton Oyate 2021)

As of 2013, the total registered population of Dakota Plains Wahpeton First Nation is 239 with 168 living on reserve (INAC, 2013).

5.2.2.3 Dakota Tipi First Nation

<u>Introduction</u>

OVERVIEW OF THE DAKOTA TIPI OYATE BEING PART OF THE DAKOTA NATION and as it relates to the project

In the (TKS) study the DTFN intends to provide information about the cultural and historical context of the Dakota Tipi community and who we are as a part of the larger Dakota Nation.

While there are differing views on the extent of the Dakota Homeland or Traditional Territory, most sources agree that at the time of contact the Dakota People /Nation (which the Dakota Tipi People are apart of) used and occupied areas within the current jurisdictions of Canada and the United States, the North West Territories, Alberta, Saskatchewan, Manitoba and portions of Ontario.

The DTFN and several other Dakota Nations within Manitoba are in a unique position, as they never adhered to a treaty and thus retain, hold and assert Aboriginal Rights and Title to areas within southern Manitoba, and areas the project traverses. Some of the Aboriginal Rights that DTFN exercise and assert include (but are not limited to) the right to hunt, fish, harvest land and water based resources, practice various forms of cultivation, build and occupy settlements, build and occupy camps and cabins, and the ability to travel to and access resource activity areas, etc.

The DTFN also asserts and maintain that it has never ceded its title or interests to its ancient homelands or traditional territory nor its inherent jurisdiction and decision-making authority in relation to the lands, waters, and resources.

Given this, at a minimum, Manitoba Hydro should begin its consideration of any potential known biophysical and socioeconomic effects against these noted broad rights categories through portions of southern Manitoba.

Community at a Glance

In 1959 the Old Sioux Village near Portage la Prairie relocated to the current location site of the Dakota Tipi First Nation. In 1972 the community divided and thereby creating two (2) First Nations presently known as Dakota Tipi First Nation (IR No.#56 or 295) and Dakota Plains Wahpeton Nation (which borders the Long Plain First Nation, south of Edwin Manitoba Canada).

The Dakota Tipi First Nation was granted “Indian Reserve” Status in 1972.

Dakota Tipi First Nation is situated approximately 2 kilometers southwest of the city of Portage la Prairie, Manitoba, and is roughly 80 kilometers west of Winnipeg, Manitoba, and located on the Yellowquill Trail highway, just off of the Trans-Canada No. 1 Highway, and can be reached by a paved class "C" highway.

The current Dakota Tipi First Nation consists of Parish lot 25 and Parish Lot 24 and in 1985 the First Nation also secured Parish Lot 16, 17 and 18 for a total of 371.8 acres or 150.48 hectares.

The current population of the Dakota Tipi First Nation is approximately 275 people “on reserve on” and has on “off reserve” population of approximately 300 people.

Current Vision of the Dakota Tipi First Nation

The Dakota Tipi First Nation currently works with several industries and industry partners, such as Manitoba Hydro, in consultation to ensure the concerns of the Dakota Tipi Nation are dealt with in an according, proper and traditional way.

The Dakota Tipi Nation continues to work towards the goals and vision of itself as a part of the larger Dakota Nation in creation of a strong and viable future for its

membership and in honour of the history of the ancestral Dakota people that which we derive from." (Appendix C).

5.2.2.4 Long Plain First Nation

"A signatory to Treaty 1, 1871, Long Plain First Nation is a proud, prosperous community of both Ojibway and Dakota people situated in the central plains region of Manitoba.

Long Plain has a population of over 4,500 with approximately 2,475 of its registered members living on reserve, 1940 living in urban areas and the remining 60 living in other reserve communities.

Long Plain is Reserve No. 6 on a land base of 10,800 acres comprised of 3 reserves of which 2 are urban. Long Plain is situated in the south-central area of Manitoba, known as the "Central Plains Region". The reserve is located 14 km southwest of Portage La Prairie, and 98 kilometers west of Winnipeg and 10 kilometers south of the TransCanada Highway No. 1. The landscape of the reserve begins along the northwest and southeast banks of the Assiniboine River for approximately five miles and extending three miles west. A portion of the reserve also lies across Assiniboine River.

The urban reserves are situated along the city limits of Portage la Prairie (Keeshkeemaquah Reserve) and in the City of Winnipeg (Madison Indian Reserve No. 1). Long Plain has additional plans for Treaty Land/Reserve expansion in Manitoba. These plans are in various stages of the Addition to Reserve process.

The Portage and surrounding areas have been our people's traditional territory and homeland for thousands of years. The lands in the Portage area were historically considered Long Plain's traditional and tribal territory and are still currently used by Long Plain First Nation registered members for traditional hunting, harvesting and cultural practices.

Long Plain has a custom election system and a tribal government consisting of five; a Chief and four Councillors. Each of the five elected members are responsible for a diverse portfolio of Long Plain's programs and services that includes Arrowhead Development Corp., Economic Development, Gaming, Employment / Training / Daycare, Security / Fire, Education, Social Services, Membership, Land Management, Public Works, Justice / Legal, Recreation / Culture, Child & Family Services, Housing, Residential School, Health and Veterans Affairs.

The community has a diverse economic development portfolio including one of the most successful Petro Canada stations in all of Canada at the Madison Indian Reserve No.1, a thriving Hotel and Gaming Centre on the Keeshkeemaquah Reserve as well as recent acquisitions and builds that will only continue to make Long Plain a fixture in

both the Economic and Local Landscape for future generations to come." (Appendix C).

5.2.2.5 MMF

"The MMF is the democratically elected government of the Métis Nation's Manitoba Métis Community (Manitoba Métis Community). The MMF is duly authorized by the Citizens of the Manitoba Métis Community for the purposes of dealing with their collective Métis rights, claims, and interests, including conducting consultation and negotiating accommodations (as per the MMF Resolution No. 8). While the MMF was initially formed in 1967, its origins lie in the 18th century with the birth of the Manitoba Métis Community and in the legal and political structures that developed with it. Since the birth of the Métis people in the Red River Valley, the Manitoba Métis Community—as a part of the larger Métis Nation—has asserted and exercised its inherent right of self-government. The expression of this self-government right has changed over time to continue to meet the needs of the Manitoba Métis Community. For the last 50 years, the MMF has represented the Manitoba Métis Community at the provincial and national levels.

During this same period, the MMF has built a sophisticated, democratic, and effective Métis governance structure that represents the Manitoba Métis Community at the local, regional, and provincial levels throughout Manitoba. The MMF was created to be the self-government representative of the Manitoba Métis Community—as reflected in the Preamble of the MMF's Constitution (also known as the MMF Bylaws):

WHEREAS, the Manitoba Métis Federation Inc. has been created to be the democratic and self-governing representative body of the Manitoba Métis Community.

In addition, the purpose "to provide responsible and accountable governance on behalf of the Manitoba Métis Community using the constitutional authorities delegated by its citizens" is embedded within the MMF's objectives, as set out in the MMF Constitution as follows:

I. To promote and instill pride in the history and culture of the Métis people.
II. To educate members with respect to their legal, political, social and other rights.
III. To promote the participation and representation of the Métis people in key political and economic bodies and organizations.
IV. To promote the political, legal, social and economic interests and rights of its citizens.

V. To provide responsible and accountable governance on behalf of the Manitoba Métis community using the constitutional authorities delegated by its members.

The MMF is organized and operated based on centralized democratic principles, some key aspects of which are described below.

President: The President is the Chief Executive Officer, leader, and spokesperson of the MMF. The President is elected in a province-wide ballot-box election every four years and is responsible for overseeing the day-to-day operations of the MMF.

Board of Directors: The MMF Board of Directors, or MMF Cabinet leads, manages, and guides the policies, objectives, and strategic direction of the MMF and its subsidiaries. All 23 individuals are democratically elected by the citizens.

Regions: The MMF is organized into seven regional associations or "Regions" throughout the province (Figure 3 in Appendix C.): The Southeast Region, the Winnipeg Region, the Southwest Region, the Interlake Region, the Northwest Region, the Pas Region, and the Thompson Region. Each Region is administered by a Vice-President and two executive officers, all of whom sit on the MMF's Cabinet. Each Region has an office which delivers programs and services to their specific geographic area.

Locals: Within each Region are various area specific "Locals" which are administered by a chairperson, a vice-chairperson and a secretary-treasurer. Locals must have at least nine citizens and meet at least four times a year to remain active. There are approximately 140 MMF Locals across Manitoba.

While the MMF has created an effective governance structure to represent the Manitoba Métis Community at the local, regional, and provincial levels, it is important to bear in mind that there is only one large, geographically dispersed, Manitoba Métis Community. Citizens of the Manitoba Métis Community live, work and exercise their s. 35 rights throughout and beyond the province of Manitoba." (Manitoba Métis Federation 2021).

5.2.2.6 Peguis First Nation

"Peguis First Nation is a Treaty 1 First Nation, located in Manitoba, Canada. With a population of approximately 10,246 members of Ojibway and Cree descent, it is the largest First Nation community in Manitoba.

The main community of Peguis First Nation, Peguis 1B, is located approximately 196 kilometres north of Winnipeg, MB.

Peguis First Nation has a rich culture, strong traditions and a significant history within Canada. The community is named after Chief Peguis. Peguis led the band of Saultaux

people from present day Sault Ste. Marie, Ontario to a settlement at Netley Creek, Manitoba, and later to St.Peter's (present day East Selkirk, Manitoba). After an illegal land transfer in 1907, Peguis First Nation was moved to its present location at Peguis 1B." (Peguis First Nation 2020)

5.2.2.7 PUIPC

"The Portage Urban Indigenous Peoples Coalition (PUIPC) was created to provide an environment for collaboration and increased dialogue for the Urban Indigenous people living in Portage la Prairie. This Coalition of community stakeholders have worked to create a Community Action Plan using feedback from the local Indigenous Community." (Portage La Prairie Revitalization Corporation 2021) "The 20-member Coalition works on several initiatives and commitments such as partnering with the Indigenous peoples in creating an inclusive community that values and respects the diversity that exists in the City of Portage la Prairie, to work with the Urban Indigenous peoples to identify and assist with the removal of barriers that hinder their full participation, recognize the resourcefulness of Indigenous Youth and assist with the creation of opportunities that will encourage them to participate in building the community" (Portage La Prairie Revitalization Corporation 2021). Members of the coalition include City Council, members of the community at large, the MMF, the Red River Community College, the RCMP, the Portage School Division, the Portage Friendship Centre, Health Santé Sud, the Dakota Ojibway Tribal Council, the Portage Community Revitalization Corporation, the City Manager of Portage la Prairie and the Indigenous Community Coordinator.

5.2.2.8 Roseau River Anishinabe First Nation

"Roseau River Anishinabe First Nation is a rural community located approximately one hour south of Winnipeg, Manitoba. Roseau River Anishinabe First Nation has three physical reserves.

The people of Roseau River Anishinabe First Nation have a rich history in the Red River and Pembina Valleys. Their main community is located about an hour south of Winnipeg, near Emerson, with a total membership of 2,000 people across their three reserve communities.

As part of the collective Ojibway of Manitoba, they were known as the "Strong Heart People" in recognition of their bravery. Roseau River signed Treaty 1 on August 3, 1871 and finally resolved their land claim in 2011 with a final settlement offer that is held in trust for future generations." (Roseau River Anishinaabe First Nation 2021)

5.2.2.9 Sandy Bay First Nation

"The Sandy Bay Ojibway First Nation is situated on Reserve No. 5, a 16,456 acre site on the western shore of Lake Manitoba. It is 165 kilometers northwest of Winnipeg and 90 kilometers from Portage la Prairie.

The reserve is accessible by all-weather roads via provincial highways #16 and #50 north from Portage la Prairie. Approximately three quarters of this land is committed to farming. Located in the lowlands with a gentle rise westward from Lake Manitoba, most of the shoreline along the lake consists of a fine sand beach bordered by Balsam Popular and Trembling Aspen.

A bog and marshland run alongside and into the lake. At the time of the signing of the treaty, Sandy Bay was called the White Mud Band, separate from the Portage Band of Chief Yellow Quill. It was a treaty after wards, the signing of treaty 1 of 1871 and in 1876 that settled the present location. The first chief after the treaty was Nawachegapow. Townships 17 & 18 were then granted to the band.

Sandy Bay does not have any more outstanding treaty land entitlements. Some of the economy for Sandy Bay Ojibway First Nation comes from and includes farming for livestock and various crops that are maintained by local Sandy Bay farmers. Our people of Sandy Bay have been a role model in keeping and speaking fluently in Ojibway. There is about an 80% average of Ojibway speaking community members, thus keeping our language alive.

POPULATION TO DATE: The total registered population of Sandy Bay First Nation as of July 2013 is 6174. With Sandy Bay's ever growing population, the birth rate now stands at 8-12 births a month. Not included in the population figures, are the non-aboriginal members on reserve." (Sandy Bay Ojibway First Nation 2021)

5.2.2.10 Swan Lake First Nation

"Swan Lake First Nation (SLFN) is in southern Manitoba, along the junction of Hwy 23 and 34. Most reserve lands are strategically located close to major provincial transportation corridors.

In 1995 a Treaty Land Entitlement (TLE) was settled with the Federal Government that enabled SLFN to expand the land base for future developments with a minimum of 4484 acres outstanding through careful negotiations sound community consultation, we have doubled the size of our community.

Swan Lake First Nation is located on prime agricultural land and agriculture is an important part of its economy.

As of August 30, 2019, there are 359 on-reserve members and 1,094 off-reserve members for a total of 1,453 registered members." (Swan Lake First Nation 2021)

5.2.3 Notification methods

On August 4, 2020 Manitoba Hydro sent information packages to Dakota Plains Wahpeton First Nation, Dakota Tipi First Nation, Long Plain First Nation, Sandy Bay Ojibway First Nation, Swan Lake First Nation, Peguis First Nation, the MMF and the PUIPC. Each package included:

- An email outlining the project and other rebuild work in the Portage la Prairie area, including potential engagement activities, and inviting the community/organization to contact Manitoba Hydro if there are any questions or concerns
- A Project newsletter outlining the Project, the regulatory process, the engagement process, the routing process, an anticipated timeline and a Project map with the location of the damaged BP6/BP7 lines and temporary lines. The newsletter included a link to the Project website (described in section 3.2)
- Manitoba Hydro contact information to share concerns or ask questions regarding the project

On October 16, 2020 Manitoba Hydro sent a second information package to Dakota Plains Wahpeton First Nation, Dakota Tipi First Nation, Long Plain First Nation, Peguis First Nation, Sandy Bay Ojibway First Nation, Swan Lake First Nation, the MMF and the PUIPC. Each package included:

- An email outlining the project with links to the project website, the online feedback portal and the survey, details on the upcoming virtual information sessions, and an invitation for the community/organization to contact Manitoba Hydro if there is interest in scheduling a virtual session
- An information sheet outlining the project including a map with the location of the alternative route segments, a tentative schedule, links to the project website, the online feedback portal and the survey, and details of the upcoming virtual information sessions
- Manitoba Hydro contact information to share concerns or ask questions regarding the project
- After a discussion with Provincial Consultation and Reconciliation Branch staff, a combination of the two information packages were subsequently sent to Roseau River Anishinabe First Nation on November 4, 2020 and to Brokenhead Ojibway Nation on November 10, 2020.

On March 3, 2021 Manitoba Hydro sent a third information package to Brokenhead Ojibway Nation, Dakota Plains Wahpeton First Nation, Dakota Tipi First Nation, Long Plain First Nation, Peguis First Nation, Roseau River Anishinabe First Nation, Sandy Bay First Nation, Swan Lake First Nation, the MMF and the PUIPC to announce the preferred route. Each package included:

- An email outlining the preferred route selected for the project, and inviting the community/organization to contact Manitoba Hydro if there are any questions or concerns
- A project newsletter outlining the project, the regulatory process, the engagement process, the routing process, an anticipated timeline and a project map with the location of the preferred route, the newsletter included a link to the project website (described in section 3.2)
- Links to the online survey and feedback portal for the project and details of the virtual information sessions
- Manitoba Hydro contact information to share concerns or ask questions regarding the project

Information packages can be found in Appendix B.

5.2.4 Engagement activities

It was Manitoba Hydro's understanding that some Indigenous communities had the potential to experience greater impacts to activities considered important to them as a result of the project, including constitutionally protected activities. Manitoba Hydro offered those communities an ICAC position, more targeted community engagement and support for the gathering and sharing of Indigenous Knowledge to inform the project.

5.2.4.1 Indigenous Assessment and Community Coordinators (ICAC)

There is the potential for additional Manitoba Hydro transmission work in the Portage la Prairie area soon. Manitoba Hydro worked to develop a regional approach to engagement that contemplated cumulative engagement needs across multiple projects. Learning from past project engagement, Manitoba Hydro representatives worked with Dakota Tipi First Nation, Long Plain First Nation and the MMF, to develop agreements that provided mutual support where ICAC positions would be embedded in the project team for BP6/BP7 and well as upcoming future projects in the area. To facilitate this type of process, Manitoba Hydro developed a broader planning area that encompassed both ongoing and planned projects in the area over the 2020 to 2023 period, including:

- Brandon–Portage la Prairie (BP6/BP7)
- Portage Area Capacity Enhancement (PACE) – new transmission line
- PACE station

The ICACs were provided with the opportunity to undertake their own interviews with knowledge holders, engage with their own community and provide their understanding of effects as a result of the project. The intent of the ICACs is to

provide continuity of knowledge across multiple projects, represent their community at key routing and assessment meetings, undertake meaningful Indigenous community involvement in the Portage la Prairie area environmental assessments including collaborating on heritage work, routing feedback and assessment.

The anticipated benefits of the ICACs to their respective communities and to Manitoba Hydro were to:

- Facilitate sharing and review of Project information within the community
- Allow for a dedicated community representative to help move forward the engagement needs of their community
- Provide an opportunity to understand the Manitoba Hydro routing and assessment process by participating on the team
- Help Manitoba Hydro understand and address concerns relevant to their community earlier in the engagement process
- Help Manitoba Hydro develop a less impactful project with relevant mitigation developed collaboratively
- Facilitate input in the routing and assessment processes to understand mitigation that works to resolve issues
- Provide a useful bridge into each of the communities to help facilitate communication between Manitoba Hydro and the community
- Facilitate a process that builds knowledge over time for all involved where learnings from this project may be applied to upcoming projects in the Portage la Prairie Area and providing the opportunity to have consistency across these upcoming projects over time

ICACs were hired by each of the three communities with financial support from Manitoba Hydro for part time positions for a duration of up to three years. Each of the three communities developed the position at their own pace, with different levels of participation. The positions provided the opportunity to support community leadership, community members and Manitoba Hydro through the Indigenous engagement process for projects in the Portage la Prairie area by providing information on the projects and developing and implementing community input into the routing and environmental assessment processes, including assisting in the completion of various initiatives/projects to gather and share Indigenous Knowledge as it relates to the Project and the area.

Key deliverables for the BP6/BP7 project included:

1) Attendance at an introduction meeting, a background meeting on Manitoba Hydro's routing process, a community route ranking meeting and an environmental assessment meeting

2) Preparation of a routing brief to summarize community-specific routing preferences and rationale
3) Preparation of a section of this environmental assessment report to inform Chapter 8 on Traditional Practices, Culture and Heritage
4) Review the environmental assessment report Chapter 8 on Traditional Practices, Culture and Heritage

The budget also included funding for external training and for consultant support to help meet deliverables for the potential PACE transmission line and station and was later made available for BP6/BP7 if needed. There were several challenges in establishing the ICAC positions. Preparing and finalizing contribution agreements that were appropriate for each community took several months and rounds of revisions. This resulted in the deliverable due dates to be delayed on multiple occasions. Filling the positions also posed some challenges. One of the communities expressed concern with timelines and did not have time to hire an ICAC and instead chose to produce deliverables using existing staff. One community had turnover in the ICAC within a short period of time due to transitions within the First Nation's administrative office. The third successfully hired an ICAC and successfully completed deliverables. All three communities took part in key routing and assessment meetings and shared preferences and concerns throughout the process. The positions will be revised based on lessons learnt during BP6/BP7 and prior to engaging on the potential PACE transmission line and station work.

5.2.4.2 Virtual meetings

Round one engagement

The purpose of meeting with Indigenous communities and the PUIPC during round one of engagement was to share information about the project, answer questions and hear feedback from representatives of interested communities and organization regarding the project. Due to COVID-19 restrictions, most meetings during the engagement process were held virtually through Microsoft Teams or Zoom. Some meetings were held in person while following health and safety guidelines. A copy of the presentation shared during Round one is found in Appendix C.

Participants were asked to identify issues and concerns for their community or organization relating to the project area and specific route segments. Feedback was considered in the transmission line routing process and was used to suggest possible mitigation strategies related to the 18 alternative route segments that had been identified by Manitoba Hydro for the project.

Round 2 engagement

The purpose of meeting with Indigenous communities during round two engagement was to share information about the project, share a summary of feedback received during round one engagement, explain how feedback influenced the preferred route, announce the preferred route, answer questions and receive feedback from community representatives on the preferred route. A copy of the presentation shared during Round two is found in Appendix C.

Table 5-2 shows the virtual meetings held between Manitoba Hydro and Indigenous communities and the PUIPC

Table 5-2: Virtual meetings held between Manitoba Hydro and Indigenous communities and the PUIPC[1]

Date of Meeting	**Indigenous community or organization**
July 16, 2020	Long Plain First Nation
August 4, 2020	MMF
August 17, 2020	Peguis First Nation
September 30, 2020	Portage Urban Indigenous Peoples Coalition (PUIPC)
October 16, 2020	MMF
November 2, 2020	Dakota Tipi First Nation
November 3, 2020	Peguis First Nation
November 6, 2020	Long Plain First Nation
November 9, 2020	MMF
November 9, 2020	PUIPC
December 7, 2020	Dakota Tipi First Nation
December 9, 2020	Long Plain First Nation
December 11, 2020	Long Plain First Nation
December 11, 2020	MMF

[1] This is not an exhaustive list of meetings held between Manitoba Hydro and Indigenous communities related to the Project. There were additional informal meetings and discussions not included in the table.

Table 5-2: Virtual meetings held between Manitoba Hydro and Indigenous communities and the PUIPC[1]

Date of Meeting	Indigenous community or organization
January 13, 2021	Long Plain First Nation
January 20, 2021	Dakota Tipi First Nation, Long Plain First Nation, MMF
March 3, 2021	Dakota Tipi First Nation, Long Plain First Nation, MMF
March 11, 2021	Dakota Tipi First Nation, Long Plain First Nation
March 26, 2021	Dakota Tipi First Nation
March 26, 2021	Long Plain First Nation
April 8, 2021	Long Plain First Nation
April 16, 2021	MMF

Community route ranking meeting

To involve communities in decision-making, Manitoba Hydro decided to pilot a more inclusive routing and environmental assessment process for projects in the Portage la Prairie area. Manitoba Hydro invited representatives from key interested communities including Dakota Tipi First Nation, Long Plain First Nation, the MMF, the PUIPC, the City of Portage la Prairie, the RM of Portage la Prairie and the Portage la Prairie Planning District to participate in a Community Route Ranking Meeting. An introductory meeting was held on February 10, 2021 and on February 11, 2021 (for those who were unable to attend the first meeting) to provide background information and an opportunity to familiarize participants with the route ranking process. In this meeting, Manitoba Hydro shared details on the process of route evaluation and selections, information on how the community route ranking will influence the overall route ranking, and summaries of data gathered through the engagement process to date. A copy of the presentation shared during the community route ranking meeting is found in Appendix C.

A second meeting was held on February 18, 2021 where participants were asked to contribute directly in determining the relative ranking of the route finalists under consideration.

Table 5-3: Virtual meetings between Manitoba Hydro and participants of the community route ranking

Date of Meeting	Indigenous community or organization

February 10, 2021	Dakota Tipi First Nation, Long Plain First Nation, MMF
February 11, 2021	PUIPC
February 18, 2021	Dakota Tipi First Nation, Long Plain First Nation, MMF, PUIPC

Summaries of the Indigenous communities and organization meetings were recorded by a Manitoba Hydro representative and draft meeting notes were sent to participants for review. Additionally, any correspondence with Indigenous communities and organization, including phone or email, was documented. Summaries of the meetings are provided in the following sections and additional meeting details are provided in Appendix B.

5.3 Indigenous engagement feedback

5.3.1 Overview

Feedback was received during virtual meetings and through the ICAC positions from Dakota Tipi First Nation, Long Plain First Nation, the MMF, Peguis First Nation and the PUIPC.

5.3.2 Dakota Tipi First Nation

Meeting discussions from round one engagement were primarily about heritage concerns in and around Portage la Prairie. Dakota Tipi First Nation identified burial sites at Wilkinson Crescent and Phoebe Street as well as on Island Park. Dakota Tipi First Nation expressed interest in a community and assessment coordinator position and in having a Dakota representative involved in heritage work and organizing traditional ceremonies for the project.

The ICAC from Dakota Tipi First Nation submitted a Routing Brief summarizing the concerns of eleven community members that participated in interviews. Concerns included the discovery of human remains near Wilkinson Crescent and Phoebe Street as well as known tipi mounds and graves near Brandon Avenue. Participants expressed that Manitoba Hydro needs to remain diligent with monitoring for culture and heritage findings anywhere on the line. The Yellow Quill Trail was also identified as important from a heritage perspective. Participants also shared that no hunting is being done in the urban area and that fishing is only done at designated areas. It was concluded that going along a man-made structure (the Portage Diversion) where the environment has been pre-disturbed was preferred. Other comments and concerns from participants included in the routing brief related to economic development and benefits from the project, health concerns, monitoring on the project and organizing

a ceremony. The routing brief included photos and maps identifying important and sensitive areas.

The routing brief can be found in Appendix B. The ICAC from Dakota Tipi First Nation also prepared a section for the environmental assessment, which can be found in Appendix C.

5.3.3 Long Plain First Nation

Meeting discussions from round one engagement included existing and planned residential and commercial development to the south of Long Plain First Nation's Keeshkeemaquah Reserve. Long Plain First Nation shared that routing along the north side of the Trans-Canada Highway conflicts with this planned development, which influenced the decision to have the route segments be on the south side. The community representatives also shared concerns with goose nesting and staging near Crescent Lake. Long Plain First Nation expressed interest in a community and assessment coordinator position.

Through the ICAC position, Long Plain First Nation prepared a section of the environmental assessment, which can be found in Appendix C. In this submission, Long Plain First Nation identified culture and heritage concerns and sacred medicines within Long Plain Reserve No. 6 borders. It was expressed that no conflict or immediate adverse effect on current traditional practices and culture should result from the Project other than disturbances to wildlife habitats and migration routes, which are still a source of food for some families today (Long Plain First Nation 2021). In their report, Long Plain First Nation also recommended mitigation measures related to vegetation management, which have been included in this EA.

5.3.4 Manitoba Métis Federation

Meeting discussions from round one engagement were primarily about land designation, land use and accessibility. The MMF requested more information about land designation and ownership in the Project area to comment on impact to Métis resource use. The MMF also shared that the entire line should be included in the EA rather than just the new portion of the line. The MMF expressed interest in a community and assessment coordinator position.

Through the ICAC position, the MMF prepared a section for the environmental assessment, which can be found in Appendix C. In their report, the MMF assessed their existing land use and occupancy database and determined that "Métis citizens are actively exercising their rights in the BP6/BP7 area" (Appendix C). The MMF identified the presence of 80 existing Métis Knowledge features in the general project area and shared a series of Métis concerns with transmission lines, including:

- Concerns about impacts to Métis rights, claims and interests
- Concerns about Métis Valued Components being considered in the process
- Concerns that contiguous Unoccupied Crown Land will not be maintained
- Potential for impact to Lands for Métis Use
- Potential changes to wildlife habitat and the ability harvest in the area
- Cumulative effects of development on the ability to harvest
- Numerous concerns related to transmission line project impacts including the following:
  - Aquatic harvesting and water quality
  - Chemical spraying
  - Human population increase causing pressures on harvesting
  - Impacts to animal health and habitat
  - Sensitive Habitat such as a swamp
  - Access to historic and culturally important harvesting areas and impacts on gathering berries
  - Economic impacts
  - Effects on commercial trapping
  - Wood harvesting impacts
  - Challenges presented by needing to change harvesting locations
  - Cultural impacts
  - Changes to the landscape and foreign objects
  - Aesthetic and visual concerns
  - Human health impacts and noise concerns
  - Safety
- Fears and psycho-social concerns
- Concerns with the administration of monitoring programs. (Appendix C)

5.3.5 Peguis First Nation

Meeting discussions from round one engagement included a request from Peguis First Nation to know who the contractors are at the onset of the Project and for contractors to know that Peguis First Nation is interested in employment on projects. Peguis First Nation also mentioned that they will be raising Treaty Land Entitlement (TLE) issues on future projects.

A representative from Peguis First Nation also participated in a round one virtual information session and shared concerns about salamanders and frogs and a wildlife refuge in the area. The representative also expressed concerns that homeowners would be affected and that use of park spaces, including picnics with children in foster care and for ceremonial purposes, would be affected.

5.3.6 Portage Urban Indigenous Peoples Coalition

Meeting discussions from round one engagement were primarily about heritage concerns. The PUIPC shared that Island Park is a sensitive area as there are many burials and heritage sites. The PUIPC expressed that the route segment that runs along the existing line (Segment 1) should have less impact since the land there is already disturbed. It was shared that burials were found at Wilkinson Crescent and Phoebe Street and that the PUIPC is working with the city of Portage la Prairie to acknowledge and commemorate the remains with a plaque. The PUIPC shared a preference for avoiding Island Park entirely because of the high potential for culture and heritage discoveries and cautioned Manitoba Hydro to be very careful not to desecrate any heritage sites. It was also noted that the Yellowquill Trail has the potential for heritage findings. The PUIPC shared segment-specific areas of concern.

5.4 Ongoing engagement

Following a decision regarding the Project, Manitoba Hydro will notify all Indigenous communities engaged on this Project and the PUIPC about the decisions and keep them informed about construction schedules and activities. Manitoba Hydro will also contact the Indigenous communities and the PUIPC about monitoring options for the project. Manitoba Hydro will remain open and responsive to any questions or concerns from communities. The telephone line and email address will remain operational throughout the regulatory review, construction and operation phases for the project.

This chapter was reviewed by Indigenous Community and Assessment Coordinators. Their feedback was considered and adjustments to the chapter were made in response.

6.0 Environmental assessment methods

The following is an overview of the methods that were used to conduct this environmental assessment. This report was completed to meet the requirements of The *(Manitoba) Environment Act* and the Environment Act Proposal Report Guidelines Information Bulletin (Manitoba Sustainable Development 2018). These methods have been developed through a review of regulations, current practice in environmental assessment and experience on assessments of similar projects.

Project-related environmental effects were assessed using a standard framework for each valued component, with standard tables and matrices to facilitate and document details of the assessment. Although Manitoba guidelines do not require cumulative effects assessments for Class 2 developments, a cumulative effect assessment has been included.

Residual project-related environmental effects (i.e., after mitigation has been applied) were characterized using specific criteria. These criteria are specific to each valued component and defined within each chapter. The significance of the project-related environmental effects was then determined based on predefined criteria or thresholds (also called significance criteria). If there was potential for residual effects of the project to interact cumulatively with the residual effects of other projects or physical activities, these cumulative environmental effects were assessed. The significance of cumulative effects has not been determined and instead is described in a manner relevant to each valued component in plain language.

The assessment progressed through the following steps (discussed in detail below):

- Scoping
  - Scoping the assessment
  - Scoping the project
- Selecting valued components
- Determining spatial and temporal boundaries
- Determining project interactions with the environment
- Determining pathways of effects
- Developing mitigation
- Characterizing residual effects
- Determining significance
- Assessing cumulative effects
- Developing follow-up and monitoring programs

6.1 Scope

This section describes the scope of the proposed project and the scope of the assessment. It serves to focus the assessment on important components of the project and the environment. Spatial and temporal boundaries for the project and assessment are also provided.

Scoping identifies the valued components that will be considered in the environmental assessment, the geographic areas and timescales over which potential effects will be studied, and the thresholds of change for determining if predicted project effects would be significant.

Scoping is an iterative process that is adjusted throughout the environmental assessment process as new information becomes available. This iterative process is particularly important during routing where the impacts of different route segments on valued components are considered.

6.1.1 Scope of the project

The scope of the proposed project includes the construction, operation, maintenance, and eventual decommissioning of the 115 kV transmission lines. The project's scope also includes acquisition of property and the salvage of existing towers on the unused portion of the damaged line.

The project scope includes the following (details for each are provided in chapter 2):

- Transmission line construction
    - Mobilization
    - Right-of-way clearing
    - Vehicle / equipment use
    - Marshalling yards, fly yards
    - Transmission tower construction
    - Foundation installation
    - Tower assembly and erection
    - Conductor stringing
    - Helicopter use
    - Implodes
    - Project wrap up and leaving the site
- Transmission line operations/maintenance
    - Transmission line presence
    - Inspection patrols
    - Maintenance
    - Vegetation management

- Decommissioning

6.1.2 Valued components

The first step in scoping the assessment is selecting valued components. Valued components are elements that have the potential to interact with the project and that meet one or more of the following criteria:

- represent a broad environmental, ecological or human environment component
- are considered important to Indigenous communities engaged on the project or a part of their current use of lands for traditional purposes
- are of scientific, historical, or archaeological importance
- have been identified as important issues or concerns by participants in the engagement process or by other effects assessments in the region

Several factors were considered while selecting valued components including reviewing valued components from previous assessments on transmission lines; considering input from Indigenous communities, landowners, interested parties and/or the public; and the professional judgment of the assessment team.

The final valued components selected are shown in Table 6-1.

Table 6-1: Valued components

Valued component	Rationale for inclusion
Fish and fish habitat	Generally, transmission line development has limited potential to affect aquatic habitat. This valued component is included to address the crossing of Crescent Lake and riparian habitat adjacent to the Assiniboine River. Aquatic resources could also be negatively affected by spills, accidents or herbicide application for vegetation control.
Vegetation	Within the study area, broad vegetation classes include deciduous forest, grassland, riparian and wetland habitats. These habitats can support many plant and animal species of concern to regulators and others.
Wildlife and wildlife habitat	Wildlife and wildlife habitat is a critical part of a functioning ecosystem and plays a vital role in ecological and environmental processes.
Economic opportunities	There is some potential for benefits to local business during project construction and additional benefits to the local economy during project operations.

Human health and safety	This valued component discusses potential for effects on human health and public safety. These areas are of concern to residents, Indigenous communities, regulators and other government departments.
Parks and recreation	Concerns were raised during engagement regarding potential effects on several recreational activities. The area has many recreational opportunities that could be affected by the project.
Property value, residential development and visual quality	Manitoba Hydro recognizes that effect on property value is a concern regarding transmission line development. This concern was raised during engagement activities for this project. Aesthetics was also mentioned as a concern in the area.
Agriculture	The area has several specialty agricultural practices (including irrigated lands and a specialty u-pick / farm gate store) that have the potential to be affected by the project.
Traditional practices, culture and heritage	It was recognized that there is potential for development of this Project to affect traditional land use by First Nations and Métis. This Project is near Long Plain First Nation and Dakota Tipi First Nation. The Manitoba Métis Federation (MMF) has also indicated that their members have land use and interests in the area. Heritage sites / objects are protected by legislation and must be considered in any development that has the potential to affect them. Project engagement highlighted substantial heritage concerns on Crescent Island

6.1.3 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas as described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as fly yards or marshalling yards and access road allowances.

Local assessment area: Represents the area where direct and indirect or secondary effects of construction, operation and maintenance are likely to be most pronounced or identifiable. The local assessment area will be specific to each valued component.

Regional assessment area: Encompasses the area where project-specific environmental effects overlap with those of past, present, and reasonably foreseeable

future projects and activities. It is used to provide regional context and is generally the area used for assessing the project's contribution to cumulative effects.

The direct, indirect and cumulative environmental effects of the proposed project are considered within these assessment areas.

6.1.4 Temporal boundaries

The primary temporal boundaries for the assessment are based on the timing and duration of project activities. More detailed temporal boundaries could be established for specific environmental and/or socioeconomic components being assessed, and this is discussed in each assessment section. The two primary temporal boundaries are:

- Construction – estimated to be four months
- Operations and maintenance – for the life of the project, estimated to be a 75-year design life.

6.2 Assessment of project effects

6.2.1 Project-environment interactions

Assessing project effects on the environment begins with an understanding of which project activities interact with the valued components. Identifying these interactions allows the assessment to focus on the issues of greatest concern. A matrix was developed by listing the project activities and noting where they have the potential to interact with the valued components. The interactions were identified by the discipline specialists based on experience with similar projects and a review of previous transmission line environmental assessments. Table 6-2 is an interaction matrix for the project.

Table 6-2 Project-environment interactions

Project activity	Valued components								
	Fish and fish habitat	Vegetation	Wildlife and wildlife habitat	Economic opportunities	Human health and safety	Parks and recreation	Property value, planned development and visual quality	Agriculture	Traditional practices, culture and heritage
Construction									
Mobilization (staff presence)			X	X	X	X			X
Vehicle / equipment use	X		X		x		X	X	X
Right-of-way clearing	X	X	X			X	X	X	X
Marshalling / fly yards		X	X			X	X	X	X
Transmission tower construction			X				X	X	X
Implodes			X		X	X			
Helicopter use			X		X	X	X	X	X
Project wrap up and leaving the site					x	X			
Operation and maintenance									
Transmission line presence			X		X	X	X	X	X
Vehicle equipment use			x		x		X	X	X
Inspection patrols		X	X	X	x	X	X	X	X
Vegetation management	X	X	X		X	X	X		X
Decommissioning	X	X	X		X	X	X	x	X

6.2.2 Effects pathways

Once interactions likely to have effects are determined, the potential resulting effects for each valued component are identified. This is done based on available scientific information, the assessment team's professional judgement and understanding of the interactions, previous experience from similar types of projects and recent environmental assessments, and input from engagement with the First Nations, Métis, the public, regulators and technical experts.

The pathways where these effects may occur are identified, and one or more measurable parameter(s) are selected for the quantitative (where possible) or qualitative measurement of potential project and cumulative effects.

Examples of measurable parameters include the area of wildlife habitat that may be affected or the expected number of workers that will move into the area for project construction. The amount of change in these measurable parameters is used to help characterize the environmental effects and to assist in evaluating their significance.

6.2.3 Mitigation

Mitigation measures are developed to eliminate, reduce, or control potential adverse effects to manageable levels where they do not threaten the sustainability of a valued component and become significant.

The process of characterizing, quantifying and mitigating effects is typically an iterative process for most environmental components. Initial measures considered in the planning and design phase include avoiding a sensitive location or critical timing for a valued component, reducing the size or magnitude of the project activity and its associated effect, reducing its geographic extent, or reducing the frequency or duration that a project activity occurs (e.g., number of times a day, number of hours a day).

Where residual adverse effects still occur, measures are developed to try to address them through replacement, restoration or compensation measures, by allowing natural recovery, actively facilitating recovery, or constructing something to replace what is being lost.

As an initial step, the flexible nature of transmission line routing allows for the project team to route the line to reduce effects to people and the environment. Beyond routing, additional mitigative measures during the design, construction and operation of the project are applied depending on the nature of interactions with the valued components.

Manitoba Hydro also sought mitigation suggestions from the public through online surveys and virtual information sessions and through engagement with Indigenous community representatives. For example, the Dakota Tipi First Nation Coordinator suggested mitigation for the spiritual impacts to the land that includes a ceremony prior to initiating construction.

Some mitigation measures are broad measures that deal with a host of potential adverse effects for several valued components. For example, by conducting clearing activities in wetlands under frozen conditions, potential disturbance to underlying vegetation is reduced because the ground is frozen and potential disturbance to waterfowl is reduced because they are not present or are in non-critical life stages.

In some cases, additional valued component specific measures are also required to deal with valued component-specific issues not otherwise addressed. In some instances, the project provides an opportunity to create a net positive effect for the current state of a valued component.

Mitigation measures are addressed largely through implementation of the environmental protection program described in Chapter 9.0. General and specific mitigation measures are described in the construction environmental protection plan, which will be created after license receipt and cultural and heritage resources protection plan (CHRPP -Appendix H).

Specific mitigation measures for each biophysical and socioeconomic component are described in each of the assessment sections.

6.2.4 Characterizing residual effects

Residual effects are those that remain after the application of mitigation measures. The process is typically iterative and the goal in developing mitigation measures is to reduce residual adverse effects to “acceptable” levels where they do not threaten the sustainability of a valued component and become significant.

Guidance is provided through the various criteria listed in Table 6-3 using results of research, field studies, engagement and professional judgement, to predict potential significance.

The Canadian Environmental Assessment Agency (Canadian Environmental Assessment Agency 2018) has developed guidance on determining whether a project is likely to cause significant effects.

Guidance from the British Columbia Environmental Assessment Office (British Columbia Environmental Assessment Office 2020) was also used.

Characterization of residual effects were assessed with respect to the nature of the interaction. The direction, magnitude, geographic extent, duration, frequency and reversibility were determined.

Table 6-3 describes the factors used to characterize the interactions.

6.2.5 Determination of significance

Assessment practitioners included a determination of the significance of residual effects. In general, significant effects are those likely to be of enough magnitude, duration, frequency, geographic extent or irreversibility to cause a change in the valued component that will alter its status or integrity beyond an acceptable level.

Significance thresholds were selected by the valued component discipline specialists with consideration of provincial and federal regulatory requirements, standards, objectives, guidelines, and other relevant planning objectives applicable to each valued component.

Thresholds are developed in consideration of guidance, past practice, and the specific conditions of the receiving environment. There are few listed or legal standards or thresholds for defining significance of effects or activities for the valued components identified. In lieu of regulatory standards or thresholds, detailed definitions of the significance criteria for each environmental effect are provided in the valued component assessment chapters. A threshold approach for the determination of significant effects is supported by the Clean Environment Commission (Manitoba Clean Environment Commission 2013).

Table 6-3 Factors and criteria used to characterize interactions

Factor	Definition	Criteria	Evaluation
Direction	Describes the difference or the trend of the effect on the environment	Positive	Beneficial or desirable change
		Neutral	No expected change
		Adverse	Adverse or undesirable change
Magnitude	The predicted degree or intensity of disturbance of an effect	Small	No definable or measurable effect; or below established thresholds of acceptable change; or within the range of natural variability; or minimum impairment of an ecosystem component's function
		Moderate	Effects that could be measured and could be determined with a well-designed monitoring program; or are generally below established thresholds of acceptable change; or are marginally beyond the range of natural variability or marginally beyond minimal impairment of ecosystem component's function
		Large	Effects that are easily observable and described, and well beyond guidelines or established thresholds of acceptable change; are well beyond minimal impairment of an ecosystem component's functions.
Geographic extent	The spatial boundary where the residual environmental effect is expected to occur	Project footprint	Effects confined to the Project footprint including the right-of-way.
		Local	Direct and indirect effects that extend beyond the Project footprint but remain within the local study area defined for each valued component.
		Regional	Direct and indirect effects that extend into the regional assessment area described for each valued component.
Duration	The length of time that the predicted residual effect is expected to last	Short-term	Effects that generally are limited to the construction phase of the project (i.e., less than one year) or recovery cycle of a biological component
		Medium-term	Effects that extend throughout the construction and into the operation phases of the project or that occur within one or two generations of recovery cycles.
		Long-term	High level effects that extend greater than 50 years; or are permanent, or that extend for two or more generations or recovery cycles
Frequency	How often the effect will occur	Infrequent	Effect may occur once during the life of the project
		Sporadic/ Intermittent	Effect may occur without predictable pattern during the life of the project
		Regular/ Continuous	Effect may occur periodically or continuously during the life of the project
Reversibility	Likelihood and time required for the Project to no longer influence a component. For socio-economic components, the manageability of effects is considered rather than reversibility	Reversible	Effect is reversible during the life of the project
		Permanent	Effect is a long-term permanent effect

6.2.6 Follow up and monitoring

Manitoba Hydro uses an adaptive management approach in dealing with potential project effects. Best efforts are made to predict and characterize effects, but follow-up and monitoring may be carried out to verify the accuracy of the environmental assessment of a project, assess the effectiveness of measures taken to mitigate adverse effects through the continuous observation, measurement or assessment of environmental conditions at and surrounding the project and determine compliance with regulatory requirements.

Manitoba Hydro's environmental protection program (Chapter 9.0) provides the framework for implementation, management, monitoring and follow-up of environmental protection activities in keeping with environmental effects identified in the environmental assessment as well as in regulatory requirements. The program outlines how Manitoba Hydro is organized and functions to deliver timely, effective, and comprehensive solutions and mitigations to predicted environmental issues and effects. The program consists of the following:

- An implementation framework outlining how environmental protection is delivered and managed
- The construction environmental protection plan (CEnvPP)
- Contractor environmental management plans
- A culture and heritage resources protection plan (Appendix H)

Adaptive management will be a core approach in implementation of the EPP. Adaptive management is a planned process for responding to uncertainty or to an unanticipated or underestimated project effect. It applies information learned from monitoring actual project effects and compares them with predicted effects. If there is a variance between the actual and the predicted effects, a determination will be made as to whether modifications are required in existing mitigation measures or other actions are necessary to address the variance, or in cases where there may be no mitigating options available, the appropriate information is disseminated in a timely manner. Plans for reporting and disseminating information regarding follow-up and monitoring activities, including any public reporting, are included in the EPP.

6.3 Cumulative effects

Cumulative environmental effects are the environmental effects that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities. It is generally a five-step environmental assessment process for cumulative environmental effects (CEAA 2018) that includes:

1) Scoping
2) Analysis of effects
3) Identification of mitigation
4) Evaluation of significance
5) Follow-up

Manitoba Hydro also considered current cumulative effects best practices and learnings from past assessments. The following sections describe how cumulative effects assessment was completed.

Cumulative effects assessment was conducted for each valued component if it was determined that there is an adverse residual effect from the project and one of the current or future projects listed in Table 6-5 may interact with the valued component (Table 6-5) and affect the environment cumulatively.

The cumulative effects assessment involves examining potential interactions among other projects and activities with the project's residual environmental effects.

Where there are potential interactions, the pathways are examined and interactions with the Projects' residual effects are characterized in combination with those of other reasonably foreseeable future projects. This environmental assessment uses plain language to describe potential cumulative effects.

This discussion occurs at the end of each valued component chapter with adverse residual effects.

This assessment also included a discussion on the common language understanding of cumulative effects in a concluding section. Participants in past environmental assessment processes, such as engaged stakeholders, interveners in past projects, and some Indigenous communities, have shared that cumulative effects discussions are too limited. Learning from this experience, this report includes a discussion on change to the Portage la Prairie landscape broadly over time and how that change has affected the way of life for people living in the area. Manitoba Hydro has worked with ICACs to characterize how future projects may further change the environment and what that may mean to their community.

6.3.1 Scoping

Scoping includes identifying valued components for which residual environmental effects are predicted, determining spatial and temporal boundaries to capture potential cumulative effects, and examining the relationship of the residual environmental effects of the designated project with those of other physical activities. Scoping helps determine which valued components should be carried forward to the

analysis step. All valued components with adverse residual effects are carried forward to the cumulative effects assessment.

6.3.1.1 Spatial and temporal boundaries

Spatial boundaries are generally greater and temporal boundaries are often longer for a cumulative effects assessment since the effects of other projects and activities may occur over a wider area and extend before and after the project boundaries.

The spatial boundaries identified for the cumulative effects assessment area will include the regional assessment areas described for each valued component.

The temporal boundary for the cumulative effects assessment was determined to extend over an approximate 75-year period, which is the normal life expectancy for a transmission line.

6.3.1.2 Existing projects / activities

Ongoing activities in the regional assessment area include agriculture, industry, residential development, traditional resource use and commercial or recreational resource use. Details are provided in Table 6-4. The location of each project is shown on Map 6-2.

6.3.1.3 Future projects / activities

Foreseeable future projects (CEAA 2018) are those that are:

- Certain
  - the physical activity has received approval in whole or in part, such as:
  - environmental assessment approval
  - pre-development approval for early works, permits for exploration, or collection of baseline data or
  - some other regulatory approval from a province
  - The physical activity is under construction
  - The site preparation is being undertaken
- Reasonably Foreseeable
  - The intent to proceed is officially announced by a proponent
  - The physical activity is under regulatory review (i.e., the application is in process)
  - The submission for regulatory review is imminent
  - The physical activity is identified in a publicly available development plan that is approved or for which approval is anticipated

- The physical activity supports – or is consistent with – the long-term economic or financial assumptions and engineering assumptions made for the project's planning purposes
- A physical activity is required for the project to proceed (e.g., rail or port transportation facilities, or a transmission line)
- The economic feasibility of the project is contingent upon the future development
- The completion of the project would facilitate or enable the future development

Certain and reasonably foreseeable future projects or activities are described in Table 6-4.

Table 6-4: Project and activity inclusion list

Project / Activity	Description of project /activity	Potential effects
Ongoing projects and activities		
Agriculture	Agricultural activities, such as cropping, livestock operations and aerial spraying continue throughout the regional assessment area.	Potential effects include noise, dust and GHG emissions, hazardous materials release and spills.
Domestic Resource Use Activities	Hunting, fishing, trapping and other domestic resource use activities continue throughout the regional assessment area.	Potential effects include some pressure on local wildlife populations
Recreational Activities	Recreational activities (e.g. various sports and leisure activities) continue throughout the regional assessment area.	None.
Future projects and activities		
Southeast development Phase I project	A 147 lot residential development on a 45 acre parcel. The development will include a 9.2-acre public reserve area equipped with man-made retention ponds.	Noise and GHG emissions during construction. Loss of ~45 acres of farmland. An increase in wildlife habitat would be expected from the planned retention ponds. Alteration to the current aesthetics, may be positive.
Pea processing facility alteration	The removal of a wastewater emergency lagoon and truck wash bay; the addition of silos for starch and pea protein storage; the addition of a retention basin for site rainwater; and the removal of proposed septic tanks. Construction complete in August 2020.	The main effects of the pea plant are emissions (particulates and GHG) and noise due to ventilation, equipment used at the project site and truck noise.
Portage la Prairie water pollution control facility expansion	The City of Portage la Prairie is planning the upgrade and alteration of the existing water pollution control facility including construction and operation of a nutrient reduction system, to meet new effluent limits. The proposed upgrades and alterations will require building expansions and additional treatment infrastructure. Construction was to be complete in January 2021.	The main effects are GHG emissions and noise during construction (complete) odor and effluent to the Assiniboine River during operation.
Saskatchewan Avenue upgrades	Rebuilding of Saskatchewan Avenue West including the paved avenue, sidewalks, bike paths, green space, parking spaces and enhanced land drainage. Construction is not planned yet.	Noise and emissions during construction. Minimal change during operation would be expected.
Crescent Lake Causeway	Three-lane low level causeway with a culvert structure, including roundabouts at the north and south intersections, and an active transportation pathway. Construction is underway, construction to be complete in 2021.	Noise and GHG emissions during construction, some alteration to the shoreline of Crescent Lake. Some infilling of marginal fish habitat. Alteration to aesthetics, may be positive.
Organics Resource Management Facility	The proposed project consists of developing an organics resource management facility in a newly subdivided property in the RM of Portage la Prairie, previously used for agriculture. Work was completed summer 2020.	Foul odors (composting), risk of fire and explosions, potential for accidents during the transportation of compost; increased dust and particulates; clearing of vegetation; loss of wildlife habitat; contamination of soil and surface water; increased traffic and the associated public attitude.
Truck and travel center	Truck and travel center, with a convenience store, truckers lounge, fuel and diesel services, and truck and trailer parking. Located adjacent to the Days Inn. Construction to potentially start in 2021.	Noise and GHG emissions during construction, altered aesthetics and hazardous materials contamination.
Willow Bay housing development	The Manitoba Métis Federation (MMF) is building a new housing project in Portage la Prairie. The housing development will feature a triplex for families, as well as two duplexes for seniors. Construction to be complete in early 2021.	Noise and GHG emissions during construction. Minimal change during operation.
Portage Area Capacity Enhancement project	Manitoba Hydro is potentially building a new 230-66kV station in the Portage la Prairie area and a new 230kV line from the new station to Dorsey Station northwest of Winnipeg.	Full overlap of potential effects.

Table 6-5: Future projects / activities interaction matrix

Project / Activity	Valued components							
	Fish and fish habitat	Vegetation	Wildlife and wildlife habitat	Parks and recreation	Property value, residential development and visual quality	Agriculture	Traditional practices, culture and heritage	Human health and safety
Agriculture	X	X	X				X	X
Domestic Resource Use Activities			X				X	
Recreational Activities							X	
Southeast development Phase					X	X	X	X
Pea processing facility alteration							X	
Portage la Prairie water pollution control facility expansion	X						X	
Saskatchewan Avenue upgrades							X	X
Crescent Lake Causeway	X	X	X		X		X	X
Organics Resource Management Facility						X	X	
Truck and travel center					X		X	X
Portage area capacity enhancement project	X	X	X	X	X	X	X	X
Willow Bay housing development							X	

6.3.2 Analysis of effects

Valued components that have residual project effects, which may interact with potential effects of a current or future project are carried forward to the analysis step. This step considers how the physical activities examined during scoping may affect the valued components identified for further analysis. Analysis of cumulative effects follows that for project effects (e.g. magnitude, duration etc.).

6.3.3 Identification of mitigation

Identification of mitigation aims to identify technically and economically feasible measures that would mitigate adverse cumulative effects. Mitigation may include elimination, reduction or control or, where this is not possible, restitution measures such as replacement, restoration or compensation should be considered.

One of the challenges in developing mitigation measures for adverse cumulative environmental effects is that it is typically not feasible (or appropriate) for one proponent to manage effects in an area created by several proponents; however, Manitoba Hydro is tentatively planning further work in the Portage la Prairie area. Accordingly, Manitoba Hydro is proposing cumulative mitigation including supporting Indigenous engagement and monitoring over a region that includes these potential projects.

The primary responsibility of any given proponent is to deal with their own projects. The three types of mitigation measures that can be implemented are those:

- Implemented solely by the project proponent
- Implemented by the project proponent in cooperation with other project proponents, government, First Nation, Métis or interested parties
- Implemented independently by other project proponents, government, First Nation, Métis or interested parties

For the latter two, the degree to which the proponent can influence the implementation of these measures is noted, where known.

6.3.4 Evaluation of significance

Significance evaluations have not been completed for cumulative effects assessments and instead the effects of future projects that combine with residual effects of the project are characterized in plain language. Each valued component chapter includes a discussion on the potential incremental future cumulative effects and identifies additional measures that could mitigate cumulative effects.

6.4 Greenhouse gases and climate change

The *Environment Act* proposal report guidelines (Manitoba Sustainable Development 2018) require discussion of climate change implications including a greenhouse gas inventory calculated according to guidelines developed by Environment Canada (Environment Canada 2021) and the United Nations (IPCC 2019). Section 8.11 provides details on climate change and the greenhouse gas inventory for the project.

6.5 Effects of the environment on the project

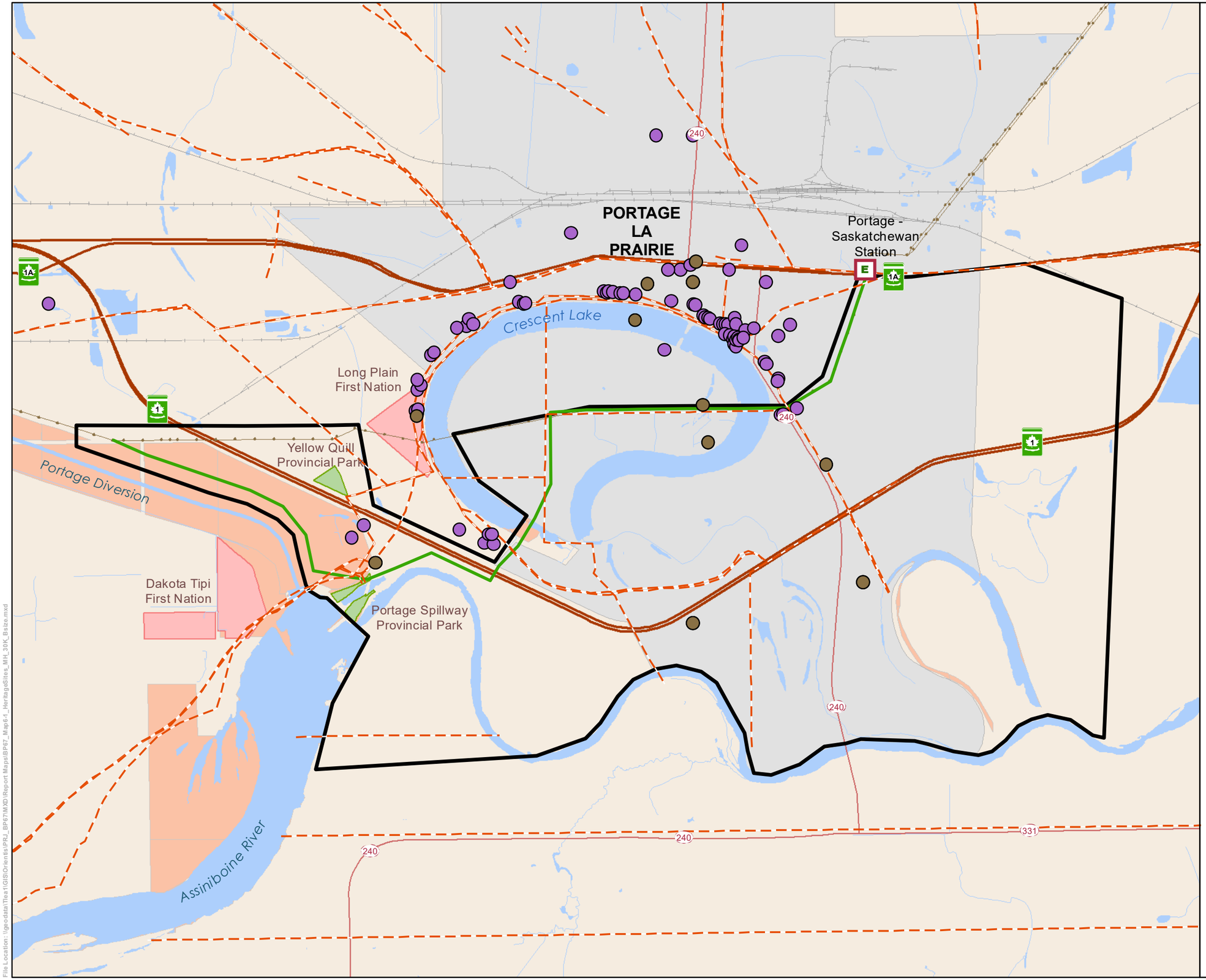
The assessment includes an evaluation of environmental effects that may occur as a result of the environment acting on the project. Potential environmental changes and hazards may include wind, severe precipitation, ice storms, flooding, grass and forest fire, or tornado. The influence that these environmental changes and hazards may have on the project will be predicted and described as well as the measures taken to avoid potential adverse effects. The effects of the environment on the project are presented in Section 8.12.

6.6 Accidents and malfunctions

The assessment considered the effects of accidents and malfunctions that might occur in connection with the project. It includes a range of potential accidents and malfunctions from the construction and operation of the project and evaluates their environmental effects. It provides an initial basis for the development of emergency response planning and what eventually will be incorporated into the emergency response plan.

For each event considered, a possible scenario relating how the event might occur during the life of the project was developed. Details on the types of accidents and malfunctions considered in this environmental assessment and the scenarios developed for this assessment, are discussed in Section 8.13. Potential environmental effects on the valued component due to accidents, malfunctions and unplanned events are assessed in a similar fashion to project environmental effects.

Environmental effects are characterized using the same terms used for project environmental effects, and mitigation measures are prescribed. The significance of the environmental effect is then determined using the same thresholds used for routine project environmental effects.



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Heritage Sites

- Plaque
- Parish Building
- Municipal Heritage Site
- Cart Trail

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

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Heritage Sites

Map 6-1

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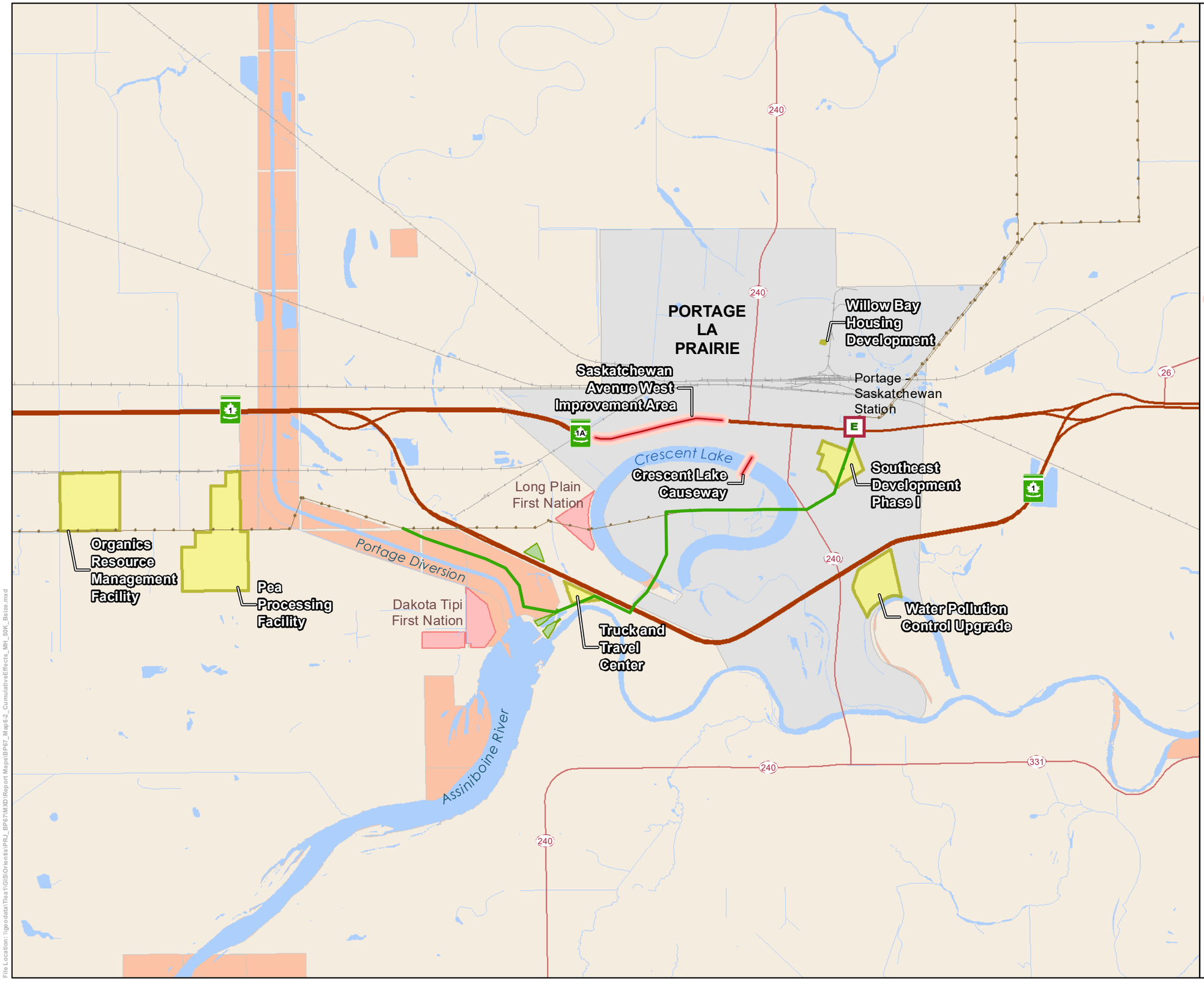

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Projects in the Cumulative Effects Assessment

- Linear Project in Cumulative Effects Assessment
- Project in Cumulative Effects Assessment

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

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Locations of Projects Included in the Cumulative Effects Assessment

Map 6-2

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7.0 Existing environment

This chapter provides an overview of the existing environment in the regional assessment area.

The existing conditions were established based on data collected during desktop analysis, field programs, Indigenous and public engagement. Desktop analysis included literature reviews and personal communications.

This chapter provides an overview of the following:

- Atmospheric environment (climate, noise and air quality)
- Geology and hydrogeology
- Terrain and soils
- Aquatic environment
- Vegetation
- Wildlife and wildlife habitat
- Population, employment and economy
- Public safety and emergency services
- Parks and recreation
- Regional infrastructure
- Property ownership
- Commercial and residential development
- Agriculture
- Traditional practices and culture
- Heritage sites / objects

7.1 Ecological classification

The project is in the Prairies Ecozone, Lake Manitoba Plains Ecoregion and the Portage Ecodistrict. The following ecological classification descriptions have been obtained from Smith et al. (Smith, et al. 1998).

7.1.1 Prairies ecozone

The prairies ecozone is part of the interior plains of Canada, which are a northern extension of the great plains of North America. The relief is typically subdued, consisting of low-lying valleys and plains sloping eastward. With its base along the Canada-United States border, the ecozone stretches from the Rocky Mountains in Alberta to the Red River valley in Manitoba, reaching across the southern third of the prairie provinces.

The prairies ecozone, spanning an area of 520,000 km^2, is one of the Canadian regions most altered by human activity. Farmland dominates the ecozone, covering nearly 94% of the land base.

Agriculture influences most native communities of plants and animals. Loss of habitat is the most critical threat to the flora and fauna. The prairies ecozone is home to high numbers of threatened and endangered wildlife species and its native ecosystems are among the most endangered natural habitats in Canada.

7.1.1.1 Lake Manitoba plain ecoregion

The Lake Manitoba plain ecoregion stretches northwestward from the international boundary with the United States to Dauphin Lake. It is one of the warmest and most humid regions in the Canadian prairies. The mean annual temperature ranges from 2°C in the north to over 3°C along the Canada-United States border. The mean summer temperature is 16°C and the mean winter temperature is -12.5°C. The mean annual precipitation ranges 450-700 mm.

The ecoregion is transitional between areas of boreal forest to the north and the aspen parkland of the southwest. It is a mosaic of trembling aspen/oak groves and rough fescue grasslands. Trembling aspen and shrubs occur on moist sites, and bur oak and grass species occupy increasingly drier sites on loamy to clayey, Black Chernozemic soils. Poorly drained, Gleysolic soils support willow and sedge communities.

This low-relief ecoregion, underlain by limestone bedrock, is covered by extremely calcareous, broadly ridged glacial till in its northern half and by smooth, level, lacustrine sands, silts, and clays in its southern half.

7.2 Atmospheric environment

7.2.1 Climate

The climate of the Portage Ecodistrict is characterized by short, warm summers and long cold winters.

Seasonal temperature data was obtained from the Brandon meteorological station (Environment Canada 2021) and precipitation data was obtained from the Portage la Prairie meteorological station (Environment Canada 2021). Table 7-1 shows the monthly normal data.

Table 7-1: Monthly normal meteorological data

Month	Daily Average Temperature (°C)	Precipitation (cm snow / mm rain)
Jan.	-16.6	21.3
Feb.	-13.6	16.2
Mar.	-6.2	25.7
Apr.	4	28.3
May	10.6	58.4
Jun.	15.9	90
Jul.	18.5	78
Aug.	17.7	68.3
Sep.	11.8	50.1
Oct.	4.1	43.2
Nov.	-5.6	25.8
Dec.	-14	26.8

The area receives 532 mm of precipitation per year, with 415.6 mm as rainfall and 118.5 cm as snow. The annual daily average temperature at the Brandon meteorological station was 2.2°C, ranging from -17°C in January to 19°C in July. Extreme temperatures range from -45.6°C (on January 7 1966) to 38.5°C (on August 6 1988). Extreme precipitation ranges from 29.0 cm of snow (on October 30, 1971) to 137.0 mm of rainfall (on August 16, 1985).

7.3 Noise and air quality

The project is in an area predominantly used for agricultural purposes and existing noise and air quality conditions are not an issue for most of the year. The exception may occur during harvest, which would increase local noise, emissions and particulate matter and reduced visibility from local crop residue burning programs.

7.3.1 Electric and magnetic fields

Electric and magnetic fields are produced by both natural and anthropogenic sources. Natural sources of EMF include the Earth's magnetic field, visible light and lightning. Anthropogenic sources include magnets, electrical appliances (e.g., stoves, refrigerators, microwaves), electronic devices (e.g., cellular phones, computers), vehicles, power lines and high-voltage transmission lines.

In a typical home, away from appliances, background levels of magnetic fields range from 1 to 2 mG, whereas background levels of electric fields range from 0.01 to 0.02 kV/m (Exponent 2015b). However, in proximity to appliances, magnetic fields can be hundreds of times higher and electric fields tens of times higher. The ubiquitous nature of EMF and variability in average background exposure levels make it difficult to quantify EMF levels (Exponent 2015b).

The typical background levels are below International Committee on Non-Ionizing Radiation Protection and International Commission on Electromagnetic Safety reference levels and so short-term effects such as perception, annoyance, and the stimulation of nerves and muscles would not be present.

7.4 Geology and hydrogeology

The project falls within the Manitoba lowland physiographic region, which lies to the east of the Manitoba escarpment (Betcher and Pupp 1995). The area has gentle relief and is underlain by gently southwestward dipping Paleozoic and Mesozoic sediments consisting mainly of carbonate rocks with some clastic and argillaceous units (Betcher and Pupp 1995). Bedrock is overlain by glacial tills and proglacial lacustrine sediments" and the overburden is generally less than 10 m thick, increasing with proximity to the escarpment.

Groundwater aquifers in the bedrock of the regional assessment area are typically not a significant water source as they are generally very saline, with total dissolved solids concentrations ranging between 5,000 mg/L and 100,000 mg/L ((Smith, et al. 1998), (Rutulis 1986a)). The principal source of water is good quality groundwater extracted from shallow, sandy, surface deposits and gravelly aquifers associated with till (Smith, et al. 1998). These shallow groundwater aquifers occurring in some sand and gravel lenses in the Project area have depths ranging from a few meters to more than 100 m. They typically produce well yields between 0.1 L/s and 10 L/s, with groundwater quality ranging from very poor to excellent (Rutulis 1986b).

7.5 Terrain and soils

Soils and terrain information was developed for the RM of Portage la Prairie by Agriculture and Agri-Food Canada (Manitoba Land Resource Unit 1997), and for the Portage Ecodistrict by Smith et al. (Smith, et al. 1998).

The Portage Ecodistrict is a level to very gently sloping alluvial and glaciolacustrine plain (Smith, et al. 1998). Slopes range from level to less than 2 percent and are smooth and long (exceeding more than 150 m). Local relief falls approximately 0.3 m

per km in a northerly direction. Some change of relief, approximately 3 to 10 m, occurs along the meandering Assiniboine River near its southern boundary. Lower micro-relief, 0.5 to 1.0 m is encountered along former Assiniboine River oxbows and blind channels that formed when the river flowed directly into Lake Manitoba.

Most the soils in the Portage Ecodistrict are predominantly well to imperfectly drained Rego Black Chernozems that have developed on shallow, strongly calcareous, loamy to clayey alluvial and glaciolacustrine sediments (Smith, et al. 1998). Significant areas of moderately well to imperfectly drained Regosols occur on the more recently deposited alluvial sediments near the Assiniboine River. In the northern sector, local areas of Gleysolic soils border Delta Marsh.

7.6 Aquatic environment

The proposed transmission line does not cross but runs parallel to the Assiniboine River. The riparian area along this section of the Assiniboine River is primarily cottonwood forest.

The Assiniboine River is characterized as Class A Habitat, complex habitat with indicator species (Milani 2013).

There are 57 fish species representing 16 families documented for the Assiniboine River Watershed (Stewart and Wilkinson 2004). Milani (Milani 2013) sampled three sites in the area, including the Assiniboine River and two tributaries, Edwin and Overhill Drains, and found white sucker (*Catostomus commersonii*), brook stickleback (*Culaea inconstans*), central mudminnow (*Umbra limi*), and fathead minnow (*Pimephales promelas*).

Crescent Lake is an oxbow lake off the Assiniboine River within the city limits of Portage la Prairie. A request was sent to the provincial fisheries branch (Janusz 2020) to determine if Crescent Lake contained fish. According to the provincial fisheries inventory habitat classification system (FIHCS) database, the lake has contained up to 11 species of fish: brook stickleback, *Culaea inconstans*, fathead minnow, *Pimephales promelas*, northern pike, *Esox lucius*, white sucker, *Catostomus commersoni* and yellow perch, *Perca flavescens* are common. Carp, *Cyprinus carpio*, goldfish (accidental / illegal release), *Carassius auratus*, quillback, *Carpiodes cyprinus*, rainbow trout (stocked), *Salmo gairneri*, and walleye, *Stizostedion vitreum* are listed as unknown. Likely they have been present in the past but are not common in the lake. According to FIHCS, the probability of a winterkill is 90% each year.

7.6.1 Species at risk

Fisheries and Oceans Canada, species at risk map (Fisheries and Oceans Canada 2021), was used to determine what species at risk may be present in the local assessment area. The search determined that the bigmouth buffalo (*Ictiobus cyprinellus*) and mapleaf (*Quadrula quadrula*) may occur in the area. A request was also sent to the Manitoba conservation data center. In addition to the above, the chestnut lamprey was also listed. Details on each species are presented below.

7.6.1.1 Bigmouth buffalo

The Bigmouth Buffalo (*Ictiobus cyprinellus*) is listed as special concern on Schedule 3 of the *Species at Risk Act*.

It is a large, deep-bodied fish of the sucker family Catostomidae (Fisheries and Oceans Canada 2019). The Saskatchewan – Nelson River populations of Bigmouth Buffalo was listed as a species of special concern under the federal Species at Risk Act (SARA) in 2011. In Canada, this designated unit is found in three disjunct areas: the Lake of the Woods, Ontario; the Lower Assiniboine, Red, La Salle and Seine rivers, Delta Marsh, southern Lake Manitoba, and southern Lake Winnipeg, Manitoba; and the Qu'Appelle River system, Saskatchewan (COSEWIC 2009).

Fisheries and Oceans Canada considers Bigmouth Buffalo populations in Manitoba secure (Fisheries and Oceans Canada 2019). The long-term management objective is to maintain bigmouth buffalo (Saskatchewan – Nelson River populations) population levels and distribution, and protect habitat within watersheds in which the species is found (Fisheries and Oceans Canada 2019).

The major threats include loss of and access to spawning and rearing habitat, and habitat fragmentation (Fisheries and Oceans Canada 2019), (COSEWIC 2009).

7.6.1.2 Mapleleaf

The mapleleaf (*Quadrula quadrula*) is listed as threatened on Schedule 1 of the Species at Risk Act.

It is a freshwater mussel that occurs in a variety of habitats ranging from medium to large rivers with slow to moderate current, to lakes and reservoirs in mud, sand, or gravel bottoms (COSEWIC 2016). In Manitoba, the species is found in the Red River and some tributaries, the Assiniboine River, and Lake Winnipeg and some tributaries (COSEWIC 2016).

Like almost all North American freshwater mussels, this species is threatened by habitat loss and degradation (e.g. modifications to the banks of the Red and

Assiniboine rivers (e.g., rip-rap and dikes) that alter the flow hydrology) and the effects of invasive species, such as zebra mussels in Manitoba (COSEWIC 2016).

7.6.1.3 Chestnut lamprey

The chestnut lamprey, *Ichthyomyzon castenaeus*, is listed as special concern on Schedule 3 of the Species at Risk Act.

It is a parasitic species found throughout the Saskatchewan-Nelson River system, including a well-documented presence in the Assiniboine River spanning over 100 years (COSEWIC 2010).

Potential threats include destruction of spawning habitat through soil erosion and siltation; eutrophication through runoff of fertilizers; pesticide and herbicide pollution ((Lanteigne 1991) *in* (COSEWIC 2010)); and dams, locks, and stream crossings that inhibit its spawning migration (Government of Manitoba 2002).

7.7 Vegetation

Field and desktop data were analyzed to characterize the existing biophysical information and vegetation in the regional assessment area. Sources included (Smith, et al. 1998) and a technical field report (Appendix D). Information on vegetation species important to Indigenous peoples was received through the Indigenous Engagement Process (Chapter 5). Public engagement documents were also reviewed (Chapter 4).

Map 7-1 shows the land cover in the regional assessment area and Table 7-2 displays the various broad land cover types (Manitoba Conservation 2006) and percent of the total area in both the regional assessment area and in an area one kilometer either side of the right-of-way, established as the local assessment area. Figure 7-1 shows a typical area with more natural vegetation.

Figure 7-1: Typical area of natural vegetation

More than 65% of the land in the regional assessment area is used for agriculture (more than 30% in the local assessment area), with most of this consisting of cropland. Less than 12% of the regional assessment area consists of forested areas, with less than 10% of the local assessment area being forested – mainly consisting of the treed areas along waterways. Areas of grass are also common, comprising approximately 15% of the regional assessment area and 25% of the local assessment area, primarily around the portage diversion.

This description is consistent with (Smith, et al. 1998) who noted that the vegetation in the Portage Ecodistrict has been substantially altered by cultivation and urbanization. The only area remaining in a relatively natural state is the Delta Marsh. The remainder of the ecodistrict was mainly tall-grass prairie with some aspen groves. Most forest cover was, and is, confined to floodplains and levees of streams and rivers, where dense stands of American elm (*Ulmus Americana*), green ash (*Fraxinus pennsylvanica),* Manitoba maple (*Acer negundo*) and basswood (*Tilia americana*)

grow. Bur oak (*Quercus macrocarpa*) is present as an additional species on higher sites not prone to flooding.

Table 7-2: Land cover in the regional and local assessment areas, and project development area

Cover Type	Regional assessment area		Local assessment area		Project development area	
	Hectare	Percent	Hectare	Percent	Hectare	Percent
Annual Cropland	58862.0	63.9	570.5	29.3	6.2	18.2
Barren	7.7	0.0	0.0	0.0	0.0	0.0
Forest	10642.4	11.6	179.3	9.2	5.1	15.1
Grassland	13474.3	14.6	506.1	25.9	18.0	53.3
Pasture	3219.8	3.5	51.3	2.6	0.0	0.0
Urban	4657.2	5.1	419.0	21.5	3.3	9.8
Water	1045.1	1.1	210.7	10.8	1.1	3.1
Wetland	196.6	0.2	13.5	0.7	0.2	0.5
Total	**92104.9**	**100**	**1950.4**	**100**	**33.8**	**100**

A vegetation survey was conducted on August 11th and 12th, 2020. Twenty-four sites were visited. The technical report is provided as Appendix D.

The primary objective was to visit various sites to describe the terrestrial vegetation communities and potential for rare plants along the proposed transmission line routes and study area for the project.

Indigenous and public engagement identified concerns for declining natural vegetation in the area due to this project and other developments. Loss of natural vegetation, including mature trees, was identified as a cause of disturbance to wildlife and natural beauty of the area.

Community types delineated in the field were mixedwood/grassland; deciduous forest/tall shrub; oak forest/tall shrub; marsh wetland; riparian; moist grassland; and disturbed land. Mature cottonwood forest was observed in the study area, at sites in the vicinity of the Assiniboine River.

At least six rare vegetation species were recorded during the survey, including one imperiled species and five vulnerable species. Species included hairy sweet cicely (*Osmorhiza claytonii*), common milkweed (*Asclepia syriaca*), alternate-leaved dogwood (*Cornus alternifolia*), cottonwood (*Populus deltoides*), tall coneflower

(*Rudbeckia laciniata*), and riverbank grape (*Vitis riparia*). None of these are considered species of conservation concern in Manitoba.

Invasive species were commonly observed including: smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), wild barley (*Hordeum jubatum*), field sow-thistle (*Sonchus arvensis*), white sweet clover (*Melilotus alba*), yellow sweet clover (*Melilotus officinalis*), common dandelion (*Taraxacum officinale*) and alfalfa (*Medicago sativa*).

7.8 Wildlife and wildlife habitat

7.8.1 Amphibians and reptiles

Desktop data were analyzed to characterize the existing biophysical information on amphibians and reptiles in the region. Sources included Species at Risk Act Public Registry, COSEWIC List of Canadian Wildlife at Risk, The Manitoba Endangered Species and Ecosystems Act List of Species at Risk, Manitoba Conservation Data Centre Database, the Manitoba Herp Atlas, iNaturalist, and the Amphibians and Reptiles of Manitoba (Preston 1982). Information on species important to Indigenous peoples was received through the Indigenous Engagement Process (Chapter 5). Public engagement documents (Chapter 4) were also reviewed.

The proposed right-of-way (project development area) is on private agricultural and suburban lands in the central Assiniboine River watershed. This watershed supports a variety of amphibians including boreal chorus frog, (*Pseudacris maculate*), leopard frog (*Lithobates pipens*), wood frog (*Lithobates sylvaticus*), spring peeper (*Pseudacris crucifer*), gray tree frog (*Hyla versicolor*) and blue-spotted salamander (*Ambystoma laterale*). Reptiles found in this region include painted turtle (*Chrysemys picta*), snapping turtle (*Chelydra serpentine*), common garter snake (*Thamnophis sirtalis*), plains garter snake (*Thamnophis radix*) and redbelly snake (*Storeria occipitomaculata)* (Preston 1982).

Indigenous and public engagement identified the presence of salamanders that occur in the project area, including near Crescent Lake.

Amphibians and reptiles are not typically found in intensively developed agricultural or suburban areas, and generally prefer natural habitats such wetlands, forests, and grasslands. As shown in Table 7-2, a portion of the project route (approximately 23 ha) does traverse some of these habitats, and in these locations some mitigation may be required.

7.8.2 Birds

Field and desktop data were analyzed to characterize the existing biophysical information about birds in the Project area. Sources included Species at Risk Act Public Registry, COSEWIC List of Canadian Wildlife at Risk, The Manitoba Endangered Species and Ecosystems Act List of Species at Risk, Manitoba Conservation Data Centre Database, the Manitoba Breeding Bird Atlas, and the Environment and Climate Change Canada Bird Conservation Regions. Information on bird species important to Indigenous peoples was received through the Indigenous Engagement Process (Chapter 5). Public engagement documents (Chapter 4) were also reviewed.

Bird Studies Canada (Bird Studies Canada 2021) states that the south-central portion of Manitoba supports approximately 200 species of breeding birds, including 88 species with evidence of breeding identified within the two 10 km by 10 km survey squares around the regional assessment area. Some of these species include Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), blue winged teal (*Anas discors*), mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), clay-coloured sparrow (*Spizella pallid*), and the red-tailed hawk (*Buteo jamaicensis)*.

Most bird species in this region typically breed in natural habitats including wetlands, forests, and grasslands. As shown in Table 7-2, a portion (approximately 23 ha) of the project development area passes through some of these habitats.

Indigenous and public engagement identified a wide variety of birds using the project area for migration and nesting, including rare bird species, such as the Eastern peewee. Waterfowl were identified as using Crescent Lake and other nearby waterbodies.

A breeding bird survey was conducted on July 4, 2020 (Appendix E). The purpose of this survey was to supplement existing breeding bird data (e.g., Manitoba Breeding Bird Atlas) with relative abundance and habitat conditions along various right-of-way options. The survey also helped identify evidence of breeding of bird species of conservation concern.

The most common aquatic bird species were American white pelican (*Pelecanus erythrorhynchos*), Canada goose (*Branta canadensis*) and mallard (*Anas platyrhynchos*). The most common terrestrial bird species were American crow (*Corvus brachyrhynchos*), common grackle (*Quiscalus quiscula*) and red-winged blackbird (*Agelaius phoeniceus*). Important grassland bird species included western meadowlark (*Sturnella neglecta*) and savannah sparrow (*Passerculus sandwichensis*). Forest birds such as red-eyed vireo (*Vireo olivaceus*) and yellow warbler (*Setophaga*

petechia) were common. No bird species of conservation concern were detected during the survey. One member of the public identified an Eastern Wood Peewee (*Contopus virens*), listed as Special Concern under the Species at Risk Act, near Segment 12. Manitoba Hydro also heard concerns about the risk of bird-wire collisions in this regional assessment area.

The most significant habitat type in the study area is associated with Crescent Lake and the Assiniboine River, where riparian and aquatic bird species (i.e., waterfowl, pelicans) are prominent and tend to be numerous. Most birds observed in this study area are common to suburban developments. Although no species of conservation concern were observed, there is potential for barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*) and other species at risk to occur.

7.8.3 Mammals

Desktop data were analyzed to characterize the existing biophysical information about mammals in the region. Sources included Species at Risk Act Public Registry, COSEWIC List of Canadian Wildlife at Risk, Manitoba's The Endangered Species and Ecosystems Act List of Species at Risk, Manitoba Conservation Data Centre Database, and the Manitoba Agriculture and Resource Development wildlife and fisheries branch website. Information on mammal species important to Indigenous peoples was received through the Indigenous Engagement Process (Chapter 5). Public engagement documents were also reviewed (Chapter 4).

As indicated, the proposed right-of-way (project development area) is on private agricultural and suburban lands in the central Assiniboine River watershed. This watershed is known to support a variety of mammal species including jackrabbit (*Lepus townsendii*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), muskrat (*Ondatra zibethicu*), beaver (*Castor canadensis*), and mink (*Neovison vison*). No mammal species of conservation concern are known to occur in this regional assessment area.

Indigenous and public engagement identified a wide variety of mammal species using the project area, most commonly in the remaining natural areas including white-tailed deer and beaver.

The mammal species in the regional assessment area are common and widespread in natural habitats including wetlands, forests, and grasslands. As shown in Table 7-2, a small portion (approximately 23 ha) of the project development area passes through some of these habitats.

7.8.4 Species of conservation concern

Table 7-3 lists species of conservation concern that may occur near in the regional assessment area. To identify species of conservation concern that may occur in the regional assessment area, a variety of databases were examined including the Species at Risk Act Public Registry, COSEWIC List of Canadian Wildlife at Risk, The Manitoba Endangered Species and Ecosystems Act List of Species at Risk, Manitoba Conservation Data Centre Database, the Manitoba Breeding Bird Atlas. In addition, a specific project area query of the Conservation Data Centre was made to identify any known occurrence of species of conservation concern (Appendix G).

The species listed in these databases were cross-referenced with Schedule 1 of the *Species at Risk Act* and *The Endangered Species and Ecosystems Act*, to determine the provincially listed rare or sensitive species within the Manitoba plain ecoregion and regional assessment area. Furthermore, distribution maps and habitat requirements were examined to determine the likelihood of occurrence of federally and/or provincially listed species. There are three bird and two amphibian species of conservation concern known to occur in the regional assessment area. There are no known vegetation species of conservation concern in the regional assessment area. The yellow-banded bumble bee is the one invertebrate species of conservation concern known to occur in the regional assessment area. There are no endangered ecosystems, as defined by *The Endangered Species and Ecosystems Act* (Manitoba) known to occur in the regional assessment area. There is no critical habitat, as defined by the *Species at Risk Act*. Field surveys conducted by avian and vegetation specialists did not identify any species of conservation concern at the project development area.

Table 7-3: Species of conservation concern in the regional assessment area

Species	Federal SARA Species Schedule 1 status	Manitoba Endangered Species and Ecosystems Act status	COSEWIC status	Environmental considerations
Barn swallow (*Hirundo rustica*)	Not listed	Not listed	Threatened	Aerial insectivore that nests in agricultural buildings and bridges

Table 7-3: Species of conservation concern in the regional assessment area

Species	Federal SARA Species Schedule 1 status	Manitoba Endangered Species and Ecosystems Act status	COSEWIC status	Environmental considerations
Western tiger salamander (*Ambystoma mavortium*)	Special concern	Not listed	Special concern	Breed in shallow wetlands
Bobolink (*Dolichonyx oryzivorus*)	Threatened	Not listed	Threatened	Nests in grassland areas, including pastures often near wetlands
Barn Swallow (*Hirundo rustica*)	Threatened	Not listed	Threatened	Aerial insectivore that nests in agricultural buildings and bridges
Northern Leopard Frog (*Lithobates pipens*)	Special concern	Not listed	Special concern	Breed in shallow wetlands
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	Threatened	Threatened	Threatened	Nests in dead or dying deciduous trees, with a preference for open mature woodlands areas.
Chimney Swift *(Chaetura pelagica)*	Threatened	Threatened	Threatened	Aerial insectivore that nests in chimneys and other urban structures
Yellow-banded Bumble Bee (*Bombus terricola*)	Not listed	Not listed	Special concern	Widespread medium-sized bumble bee

7.9 Population, employment and economy

According to the 2016 census (Statistics Canada 2021), the City of Portage la Prairie had a population of 13,304, which represents a 2.3% increase over the reported population of 12,996 in 2011. According to Crown-Indigenous Relations and Northern Affairs Canada the total population of Dakota Tipi First Nation is 347 with 180 living on reserve. The Long Plain First Nation population was 3853, with 2,135 on reserve. Dakota Plains Wahpeton First Nation population was 239, with 168 on reserve (Crown-Indigenous Relations Northern Affairs Canada 2021).

The RM and city coordinate planning through the Portage la Prairie Planning District (Portage la Prairie Planning District 2021). This serves to standardize requirements and *"promote a regional approach to industrial, agricultural, and urban fringe development"*.

The RM contains several small communities, such as St. Ambrose, High Bluff, Newton, Oakville, Poplar Point, Skelding and Edwin. All are outside of the regional assessment area.

The Portage la Prairie Self-contained Labour Area (SLA) includes:

- Municipality of Portage la Prairie
- City of Portage la Prairie
- Long Plain First Nation
- Dakota Plains First Nation
- Dakota Tipi First Nation

The total population of the area is over 20,000. Figure 7-2 shows the distribution of the workforce in the self-contained labor area (Government of Manitoba 2021).

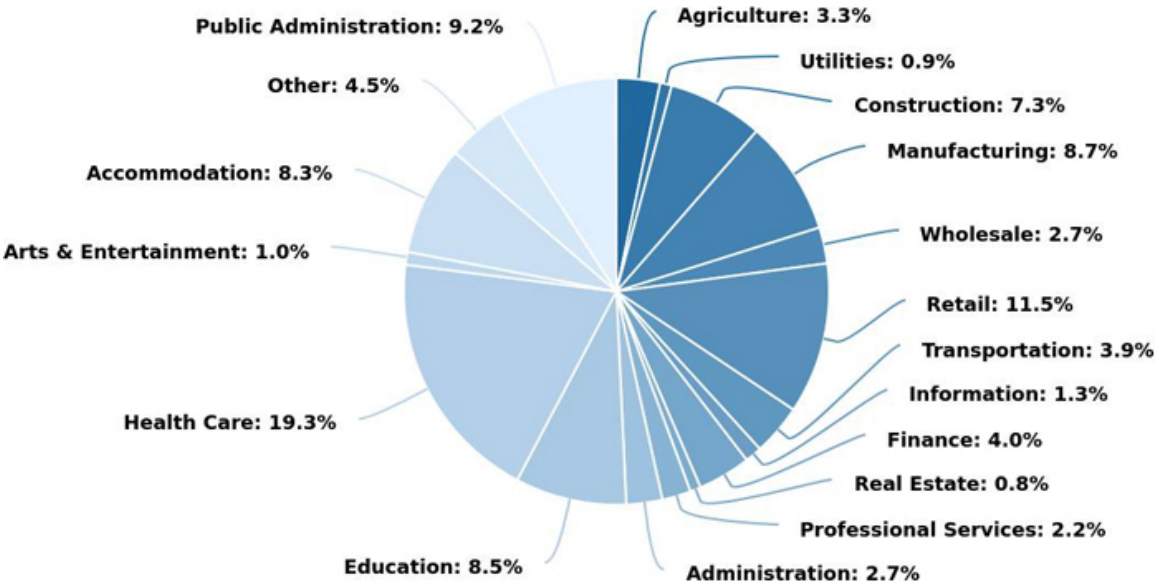


Figure 7-2: Workforce distribution in the Portage la Prairie SLA

7.10 Public safety and emergency services

Emergency services are shared between the City and RM of Portage la Prairie. The Portage District General Hospital, located in the City of Portage la Prairie, is the primary health care centre, with the RM of Portage being served by the Central Region Emergency Medical Services, providing ambulance and paramedic services. The City has several medical clinics, pharmacies, personal care homes, dental clinics, massage therapists and physiotherapists. Emergency services, including 911, are provided by the fire department and the Royal Canadian Mounted Police, both of which are in the City (Rural Municipality of Portage la Prairie 2021).

7.11 Parks and recreation

7.11.1 Provincial parks

Portage Spillway Provincial Park

Portage Spillway Provincial Park is 3.76 hectares in size, situated between the Assiniboine River and Yellow Quill Trail south of Portage la Prairie (Manitoba Conservation and Water Stewardship 2013). The main recreational activities in the park are fishing and picnicking. The purpose of the park is to provide outdoor recreational opportunities and experiences in a natural setting in south-central Manitoba (Manitoba Natural Resources 1997).

Yellow Quill Trail Provincial Park

Yellow Quill Provincial Park is a three hectare plot of land south of Portage la Prairie created to provide outdoor recreational opportunities and experiences in south-central Manitoba (Manitoba Natural Resources 1997). In doing so, the park will provide an off-leash dog walking area for residents of Portage la Prairie and the surrounding area and serve as a highway rest stop (Manitoba Sustainable Development 2017).

Designated lands

According to the provincial Wildlife Management Area (WMA) website (Government of Manitoba 2021), the nearest protected area is the Portage Sandhills WMA, located over 10 km south of the proposed transmission line. It was established to protect "*a unique habitat of sand dunes covered in mixed-grass prairie and aspen-oak forest*." Two provincial parks are located within the regional assessment area; Portage Spillway Provincial Park and Yellow Quill Wayside Park, established primarily for outdoor recreational purposes.

7.11.2 Recreation

Portage la Prairie is located in the central plains tourism area (Central Manitoba Tourism 2021) and the provision of recreation and leisure facilities in the area is managed by the Portage Regional Recreation Authority Inc. (Portage Regional Recreation Authority Inc. 2021), a non-profit corporation funded in part by the City of Portage la Prairie and the Rural Municipality of Portage la Prairie. Facilities include Stride Place, Splash Island Water Park, Rotary Republic Park and Beaver Stadium, Portage la Prairie Regional Library, Portage Curling Rink, Portage Golf Club, and William Glesby Centre, Portage Industrial Exhibition Campground, Island Park Picnic Shelters, as well as many churches in the City of Portage la Prairie.

The regional assessment area falls within provincial Game Hunting Area 32; Game Bird Hunting Zone 4 (Government of Manitoba 2020a); Open Trapping Area Zone 1 (Government of Manitoba 2021), and the Southern Angling Division (Government of Manitoba 2020b).

7.12 Regional infrastructure

Map 7-2 shows the regional infrastructure. The Trans-Canada Highway runs east to west through the regional assessment area and is paralleled on either side by the Canadian National and Canadian Pacific railways. Highway 240 is the main north-south vehicular route, with an extensive network of city roads also within the area. The

existing temporary line (BP6/BP7) is the only transmission line. There is a network of distribution lines present.

The Trans-Canada Highway that runs through Portage la Prairie has an average annual daily traffic (AADT) of over 12,000 vehicles within the city and around 5000 AADT outside the city limits (Manitoba Infrstructure 2020). Provincial Road 240, north and south of the Trans-Canada Highway also has an AADT of around 5000. In all cases, peak traffic (up to 20% increase over AADT) occurs in the summer (May through September) on these key roadways. Based on basic design principles from the transportation planning manual (Manitoba Department of Highways and Transportation 1998), these highways are not operating near capacity.

There are several communication towers within the regional assessment area. Drinking water for the city and RM is supplied by the city of Portage la Prairie water treatment plant and the Cartier regional water co-operative water treatment plant (City of Portage la Prairie 2019). The city of Portage la Prairie operates a water treatment facility for municipal wastewater from the city and some small surrounding residential and commercial areas located in the rural municipality of Portage la Prairie, as well as final treatment of pretreated industrial wastewater from three major industries.

7.13 Property ownership

7.13.1 Overview

Land use planning responsibilities in municipal jurisdictions falls under the jurisdiction of the respective municipalities or planning districts. Municipal jurisdictions may adopt development plans and zoning by-laws to guide land use decisions within their boundaries. Municipalities can become members of planning districts to work together with respect to land use planning (i.e., development plans). The RM of Portage la Prairie and the City of Portage la Prairie have formed the Portage la Prairie Planning District. The planning district is established to ensure standardized planning requirements through an updated development plan and zoning by-law encompassing both municipal jurisdictions. This promotes a regional approach to industrial, agricultural, and urban fringe development. Lands within the regional assessment area is almost entirely privately owned, with most land either agricultural fields or exurban development (homes, recreation, industrial developments etc.).

7.13.2 Indigenous land

Map 7-3 shows the Crown lands, Reserve lands and Treaty Land Entitlement areas in the RM of Portage la Prairie. The project is in Treaty One Territory, the traditional territories of the Anishinabe, Cree, and Dakota people, the homeland of the Métis Nation and within the Recognized Métis Harvesting Zone (Manitoba Metis Federation 2021).

7.13.3 Provincial and federal Crown land

Crown lands are lands vested in the Crown and described under *The Crown Lands Act*. They include lands such as provincial parks, provincial forests, wildlife management areas, community pastures and ecological reserves. Map 7-3 shows the Crown lands, Reserve lands and Treaty Land Entitlement (TLE) areas.

There are Crown land parcels within the RM of Portage la Prairie. The Assiniboine Diversion is Crown land and both Dakota Tipi First Nation and Long Plain First Nation lands exist within the RM of Portage la Prairie.

The MMF explain in their Métis Specific Concerns, Brandon-Portage (BP6/BP7) Transmission Line Replacement Report, "*how important unoccupied land is to the Manitoba Métis as it represents areas where they have access to exercise their Métis rights that does not require permission. On all other land types, the exercise of Métis rights can be restricted from time to time under certain circumstances*." Crown land use codes were examined within the right-of-way, and although occupied and unoccupied terminology is not provided in the data, it is Manitoba Hydro's interpretation that all Crown land traversed by the project is either road allowance or Manitoba Infrastructure property (including the Portage diversion).

The final preferred route traverses Portage Spillway Provincial Park. It does not traverse any provincial forest, wildlife management area or other provincially protected area, community pasture, Treaty Land Entitlement area or First Nation reserve land.

7.14 Commercial and residential development

The Portage la Prairie Planning District has standardized planning requirements through an updated development plan and zoning by-laws encompassing both municipalities. The regional assessment area is largely zoned agricultural. Rural farm residential development is generally widespread throughout the regional assessment area and is associated with agricultural operations, including farm accessory

buildings. Farming activities are permissible in the regional assessment area under the development plan.

7.15 Agriculture

Map 7-4 shows the land capability for agriculture (Canada Land Inventory; (Agriculture and Rural Development Canada 1965) in the regional assessment area. The land capability classification displays the potential for agricultural production in one of seven classes, based on the characteristics of the soil. Class 1 soils (10% of the regional assessment area), have no significant limitations in use for crops and under good management can be moderately high to high in productivity for a wide range of field crops. Thirty-seven percent the regional assessment area consists of Class 2 soils, which have moderate limitations that can restrict the range of crops or require moderate conservation practices. Under good management, Class 2 soils are moderately high to high in productivity for a wide range of crops. Twenty-seven percent of the route planning area is comprised of Class 3 soils, which have moderately severe limitations that restrict the range of crops or require special conservation practices. In addition, there are small patches of Class, 4, 5, 6, and 7 soils, which have severe to very severe limitations that restrict the range of crops, require special conservation practices, are capable only of producing perennial forage crops, or have no capacity for arable agriculture or permanent pasture.

Based on a review of the harvested acres in the R. M. of Portage la Prairie, from 2010-2019 (Manitoba Agricultural Services Corporation 2021), canola, red spring wheat and soybeans were the crops most harvested, followed by barley, grain corn and oats, feed wheat, and winter wheat.

The rural municipality also produces many speciality crops such as carrots, onions, asparagus, parsnips, beans, rutabagas, cauliflower, broccoli, peas, potatoes, various grains and oil seeds, strawberries, Saskatoon berries, and raspberries (PCRC 2018). Much of the rural municipality is under irrigation, and additional acreage can be incorporated into the existing irrigation system. The diverse agricultural production of the Portage area has drawn many food processing plants to the city. These include McCain Foods Ltd., Richardson Milling, Roquette Canada, and JR Simplot's Canadian potato processing plant.

7.16 Traditional practices and culture

As described in Section 5.2.2, Manitoba Hydro worked closely with several Indigenous communities and organizations to understand traditional practices and

culture within the regional assessment area. A description of past and present use of the area is best described by the community submissions provided in Appendix C.

The regional assessment area has been used extensively by Indigenous people over time. In the past, cultural activities, hunting, fishing, trapping, and plant gathering for food and medicines were centred around/near the Assiniboine River and its tributaries.

Although access permissions have changed over time, these activities continue currently. In their 2021 BP6/BP7 report, the MMF indicate that eight participants reported that fishing occurs in the area, including walleye, pike, carp, mariah, sturgeon, and catfish.

The potential for disturbances to these activities, or the loss of access and resources that support these activities, are issues typically shared by Indigenous communities when new transmission lines are planned for an area.

For this reason, Manitoba Hydro engaged with potentially affected communities to understand concerns and relevant mitigation to reduce those impacts.

7.17 Heritage sites / objects

Heritage sites / objects were characterized for the regional assessment area by considering locations of previously recorded archaeological sites, registered century farms and a compiled list of municipally, provincially, and federally designated sites. A review of historic trails and parishes was conducted, and a list of known cemeteries was compiled by the project archeologist.

The following sections provide a summary of heritage sites / objects in the heritage study area (Map 1 in Appendix F). More detail is provided in the heritage technical report (Appendix F).

7.17.1 Cultural setting

The cultural chronology for Manitoba is based on technological innovations and historical happenings. It comprises two major time periods: pre-European contact and historic. These are further divided into early, middle and late sub-periods. The pre-European contact period dates from *ca.* 300-12,000 years ago, while the historic period dates from after *ca.* 1700 (ca. 300 years ago to present), when Europeans and fur traders entered the area.

7.17.2 Pre-European contact period

7.17.2.1 Early pre-European contact period (paleo) *ca*. 6,500-10,000 years ago

According to the archaeological record, the area surrounding Portage la Prairie has been continually occupied since the middle pre-European contact period (*ca*. 2,500-6,500 years ago); however, it is likely that the area has been occupied since glacial Lake Agassiz receded about *ca*.10,000 years ago. The peoples who would have occupied this area were bison hunters, who followed the herds into the area from the south and the west (Pettipas and Buchner 1983).

7.17.2.2 Middle pre-European contact period (intensive diversification) *ca*. 2,500-6,500 years ago

Several important cultural adaptations occurred within the middle pre-European contact period (Wright 1995), including the appearance of notched or stemmed projectile points, end scrapers, ground stone adzes and other cutting implements. The appearance of new style projectile points and the introduction of the atlatl (a spear extender, which provided leverage to the spear thus increasing the velocity and accuracy of the projectile) suggest adaptive technological changes for procuring food resources. Raw materials used by the middle pre-European contact period people became much more diverse, including the appearance and use of native copper which was used for making tools and adornments (Pettipas 1984). The peoples using such tools are considered by archaeologists to be mainly hunters and fishers who subsisted on a seasonally diverse diet of large and small game, fish, and local plants (Wright 1995).

7.17.2.3 Late pre-European contact period (woodland) *ca*. 300-2,500 years ago

The introduction of native clay pottery and adoption of the bow and arrow marks the differentiation between the late pre-European contact (ca. 300-2,500 years ago) and middle pre-European contact periods. This period is also referred to as woodland, which has shown to have first developed in eastern North America before moving westward. In Manitoba, the woodland period is further divided into two periods, initial (*ca*. 2,500 years ago) and terminal (*ca*. 1,000 years ago), which is based on vessel construction and stylistic attributes.

The terminal Woodland tradition contains several important pottery types that represent local variations that made them distinctive. Although pottery construction is believed to use similar techniques, there are signature differences within this tradition. Lithic tools associated with the terminal Woodland sites include small

triangular and side-notched projectile points, stone drills and smoking pipes (Wright 1972).

The late pre-European contact cultures were also characterized by burying their dead in linear or circular mounds (Syms 1978) and agricultural activities ((Malainey 2020), (Syms and Halwas 2019)).

7.17.3 Historic period (1700-1940)

The historic period dates from when European and Canadian fur traders and explorers entered the area to trade goods for furs that could be exported to Europe. Indigenous oral histories were now augmented with primary records, including subjective materials (letters, diaries), statistical records (post inventory records, employee payrolls), maps and photographs.

7.17.3.1 Early historic period (1700-1821)

The arrival of Europeans into the Portage la Prairie area began during the early 18th century with the exploration of new fur trade routes. During this early period, traders were sent inland to cultivate trading relationships with local First Nation groups, while using established Indigenous travel routes (Thistle 1986). Indigenous individuals and groups acted as traders and middlemen and likely benefited from the increased competition between the Hudson's Bay Company and the Montréal-based independents, who were generally referred to as "les Canadians." In 1779, the Montréal traders formed an organization to reduce expenses and ease the rivalry between traders, which became the North West Company (NWC) (Ray and Heinenreich 1976). With the establishment of the fur trade, furs were traded for items of European manufacture, such as kettles, muskets, hatchets, and beads. Gradually, European trade goods filtered into the local Indigenous groups and traditional products such as clay pottery and lithic tools were replaced by copper pots and metal implements.

In 1738, La Vérendrye and his sons established Fort la Reine on the Assiniboine River near present day Portage la Prairie (Burpee 1927). The fur trading post served as the base of operations for much exploration north and west and was chosen in part to intercept the trade of the Indigenous traders crossing the portage to Lake Manitoba en route to the English posts on Hudson Bay. From the fort, explorers made their way to Lac des Prairies (Lake Manitoba) and Lake Winnipegosis, Lake Winnipeg, the Saskatchewan River, and the Missouri River. Abandoned in 1749, the fort was reconstructed in 1751 and burnt down a year later (Goldsborough 2019).

In 1794, the Hudson Bay Company (HBC) established a fur trade post on the Assiniboine River close to the original Fort la Reine site. The HBC operated at Portage la Prairie until around 1821, the time of the amalgamation of the company with the NWC.

While most major fur trade posts were located strategically on waterways, overland access was just as important. An extensive network of cart trails and overland transportation routes that criss-crossed the southern prairies, connecting various trade posts and communities supports the importance of overland access was established.

7.17.3.2 Middle historic period (1821-1870)

As trade routes became established throughout the interior, European goods such as ceramics, copper pots, glass bottles, metal nails and tools became more conspicuous in the regional cultural inventory. This incremental change in the availability of European trade goods is reflected in the archaeological record.

The coalition of the HBC and the NWC in 1821 ended over 25 years of fierce competition between the two establishments and created a fur trading monopoly that covered one quarter of North America. This amalgamation also resulted in a tendency for some bands to congregate near a specific post, causing a more sedentary life way.

In 1832, the Portage la Prairie fort was re-established to replace Brandon House (1793-1811), located east of Brandon, along the Assiniboine River. It acted as a guard house to monitor the trade of Indigenous hunters from the Pembina and Turtle Mountain areas. By 1834, the Portage la Prairie fort appears to have been closed. By the middle of the 19th century, the Métis had become essential partners in the fur trade acting as interpreters, guides, messengers, transporters, traders, and suppliers (Kermoal 2021).

Permanent settlement in Portage la Prairie began after 1851, when the Reverend William Cockran established a mission there (Barkwell 2013). By the late 1860s the parish river-lot survey system was expanded from the Red River Settlement up the Assiniboine River as far as Portage la Prairie (Historic Resources Branch 2021).

7.17.3.3 Late historic period (1870-1940)

Throughout the late historic period, even after the establishment of reserves by the treaty process, Indigenous peoples maintained traditional land use and the seasonal round of activities of hunting and fishing. Despite maintaining aspects of traditional

land use, by this time material culture was almost entirely Euro-Canadian. Settlements and populations grew and oriented to a trading post-mission complex

The two major trails in the study area were the Carlson Trail that ran east-west approximately 900 miles from Fort Garry (Winnipeg) to Upper Fort des Prairies (Edmonton) and the Yellow Quill Trail that ran west to Saskatchewan toward the headwaters of the Missouri River (Barker 1971). The Carlton Trail was the primary trail used by the Métis as they moved westward from the Red River following events of 1870 (Kermoal 2021). Several unnamed minor trails can also be found within the study area. By the 1890s the cart trails had been replaced by the railway.

7.17.4 Heritage sites

Ancient land use practices can be observed within the archaeological record. In relation to cultural ecology, archaeologists examine how past cultures lived on certain landscapes or in a specific environment at a past time (Cromley 1994). Within this landscape, certain features and areas contain tangible evidence of past people. Heritage sites / objects were characterized for the study area based on the locations of previously recorded, archaeological sites, registered century farms and a compiled list of municipally and provincially designated sites. A search of historic trails and parish buildings as well as list of known cemeteries was also compiled.

The archaeological record provides physical and documented evidence of cultural occupations that have occurred over millennia. The Province of Manitoba maintains archaeological site information in an archaeological site inventory database.

A review of existing registered archaeological sites in the study area was undertaken. A request was sent to the Manitoba's Historic Resources Branch to review the archaeological site inventory for registered sites within the study area. The archaeological sites identified in the study area include 14 registered sites. The documented archaeological sites (Table 7-4) reveal a human occupation of the area dating back to the Middle Pre-European Contact period (*ca.* 2,500-6,500 years ago).

Table 7-4: Heritage sites recorded for the study area (Map 1; Appendix F)

Borden No.	Site Type	Period	Description
DlLn-001	Campsite fur trade post	Historic	Historic artifacts
DlLn-002	Isolated find	Pre-European contact	Grooved maul

Table 7-4: Heritage sites recorded for the study area (Map 1; Appendix F)

Borden No.	Site Type	Period	Description
DlLn-06	Campsite	Woodland	Prairie side-notched projectile point
DlLn-010	Isolated find	Pre-European contact	Hammerstone
DlLn-011	Campsite	Woodland	Besant and plains side-notched points
DlLn-012	Campsite	Pre-European contact historic	No information provided
DlLn-013	Isolated find	Pre-European contact	Hammerstone
DlLn-014	Burial	Historic	Burials found during construction
DlLn-015	Burial	Historic	Graves
DlLn-016	Uninterpreted	Historic	Mid/Late 19th century to modern materials
DlLn-017	Burial	Historic Sioux	Graves
DlLo-Y1	Uninterpreted	Archaic, Woodland, Historic	Archaic and Woodland projectile points; cannonballs
DlLo-014	Campsite	Pre-European contact Historic	Side-notched projectile point, historic ceramics, and glass
DlLo-Y1	Uninterpreted	Pre-European contact	Four hammerstones

In the study area, two centennial farms (Table 7-5) have been recorded.

Table 7-5: Centennial farms in the study area (Map 1; Appendix F)

Centennial farm	Original date	Legal description
Sissons Family Farm	1869	Parish Lot 55
Brydon Family Farm	1872	SW 4-12-7W

All federally, provincially and municipally designated sites relate to land use during the late historic period and consist of historic structures including churches, residences, and public buildings.

In the study area, 10 plaques for designated buildings have been recorded (Table 7-6). There are four recognized active cemeteries in the study area (Table 7-7). There is the potential for active and/or abandoned graveyards or burials to be present within the study area. There are two major historic trails in the study area (Table 7-8).

Table 7-6: Designated buildings in the study area (Map 1; Appendix F)

Plaque ID	Building name	Designation
F128	Portage la Prairie Public Building	National Historic Site of Canada
F8460	Portage la Prairie Armoury	Federal Heritage Building
P119	Portage la Prairie Indian Residential School	Provincial Heritage Site National Historic Site of Canada
P112	St. Mary's la Prairie Anglican Church	Provincial Heritage Site
P094	Portage la Prairie Land Titles Building	Provincial Heritage Site
M285	McCowan House	Municipal Heritage Site
M038	Portage la Prairie Dominion Post Office	Municipal Heritage Site
M257	Canadian Pacific Railway Station	Municipal Heritage Site
M352	Hill's Drug Store	Municipal Heritage Site
M260	Taylor House	Municipal Heritage Site

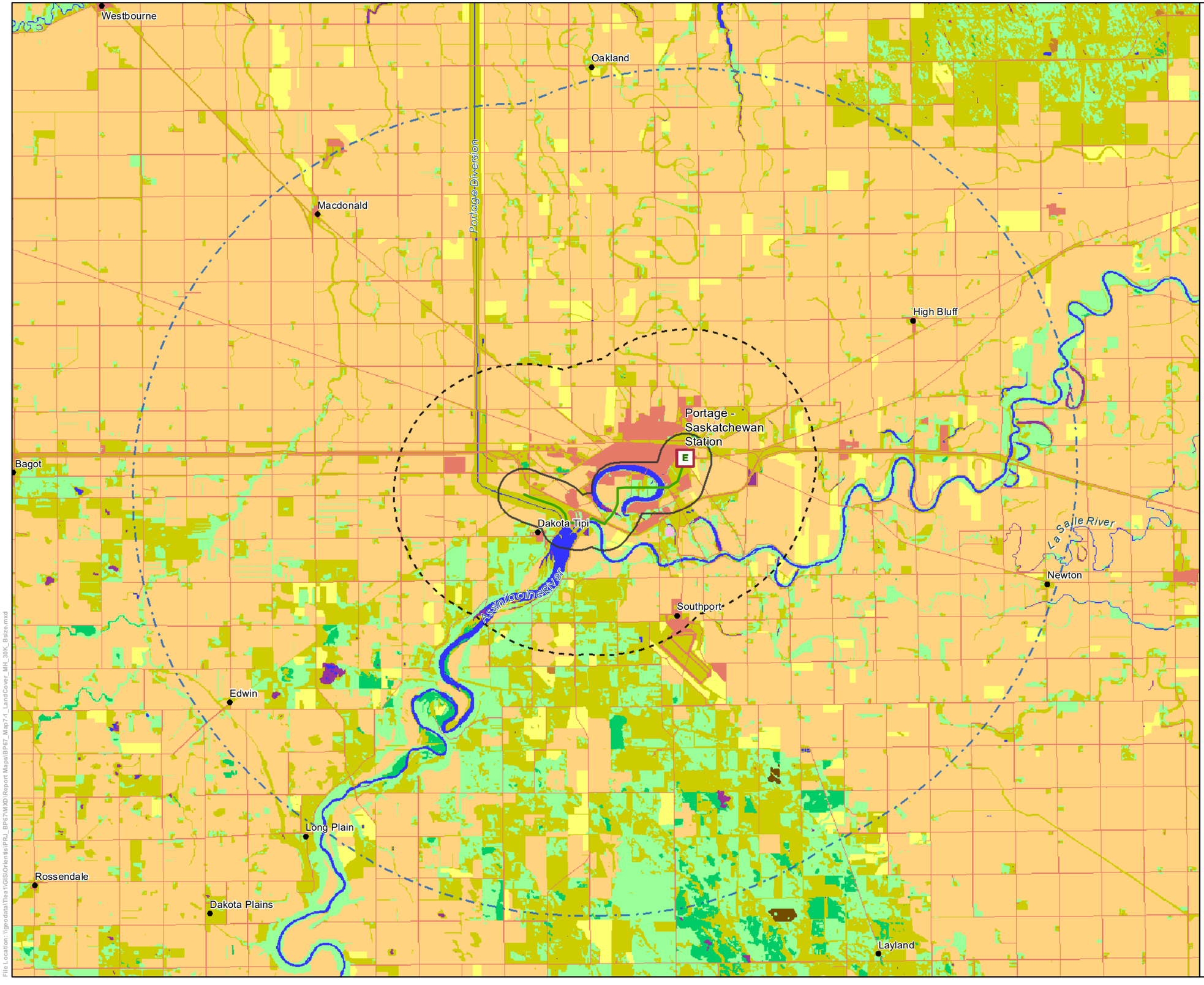
Table 7-7: Recognized cemeteries in the study area (Map 1; Appendix F)

Cemetery	Legal Description
Dakota Tipi Cemetery	RL-25-PP
Hillside Memorial Cemetery	RL-23-PP
Old Sioux Village and Cemetery	11-07W
St. Mary’s Anglican Church Cemetery	11-06W

Table 7-8: Major trails in the study area (Map 1; Appendix F)

Historic trail	Legal description
Carlton Trail	RL-42-PP, RL-44-PP, RL-45-PP, RL-46-PP, RL-47-PP, RL-49-PP through RL-54-PP, follows 1A,
Yellow Quill Trail	RL-22-PP, RL-23-PP, RL-49-PP through RL-55-PP

Additionally, at least 66 Parish Buildings located in the study area, most of which are located along the historic trails.



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Assessment Area Buffers

- 1 km
- 5 km
- 15 km

Assessment Area Buffers

- Agricultural Cropland
- Bare Rock, Gravel and Sand
- Cultural Features
- Decidious Forest
- Forage Crops
- Forest Cutover
- Marsh and Fens
- Mixedwood Forest
- Open Decidious Forest
- Range and Grassland
- Treed and Open Bogs
- Water

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 2 4 Kilometre
0 2 4 Mile

1:140,000

Land Cover

Map 7-1

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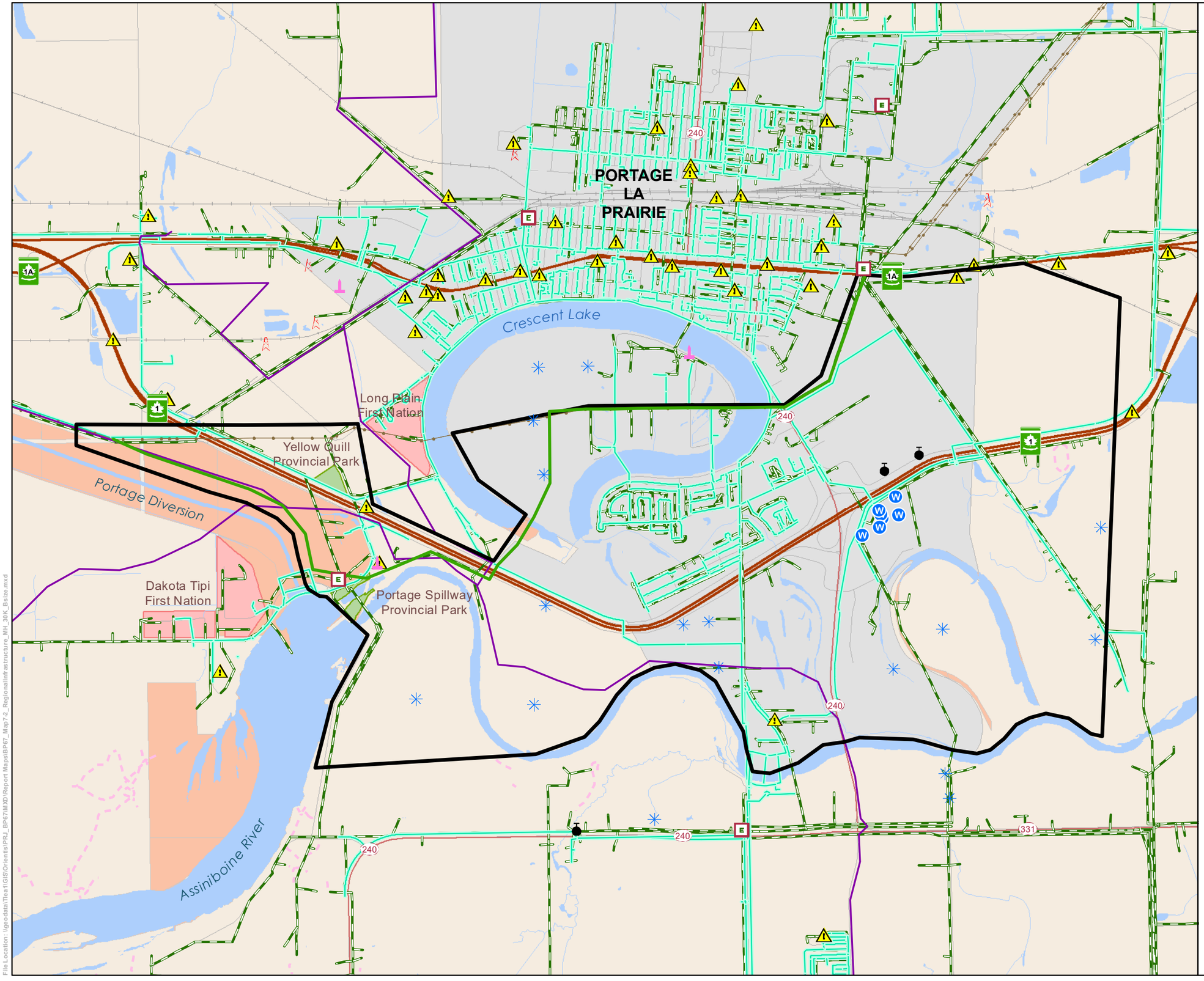

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)
- BP6/7 Final Preferred Route

Existing Infrastructure

- Electrical Station
- Impacted Site
- Communication Tower
- Wastewater Treatment Site
- Irrigation Pivot
- Pipeline
- Monument
- Snowmobile Shelter
- Snowmobile Trail
- Transmission Line
- Existing Gas Line
- Distribution Line
- Railway
- Trail
- TransCanada Highway
- Provincial Road
- Municipal Road

Landbase

- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 0.5 1 Kilometre
0 0.25 0.5 Mile

1:30,000

Regional Infrastructure

Map 7-2

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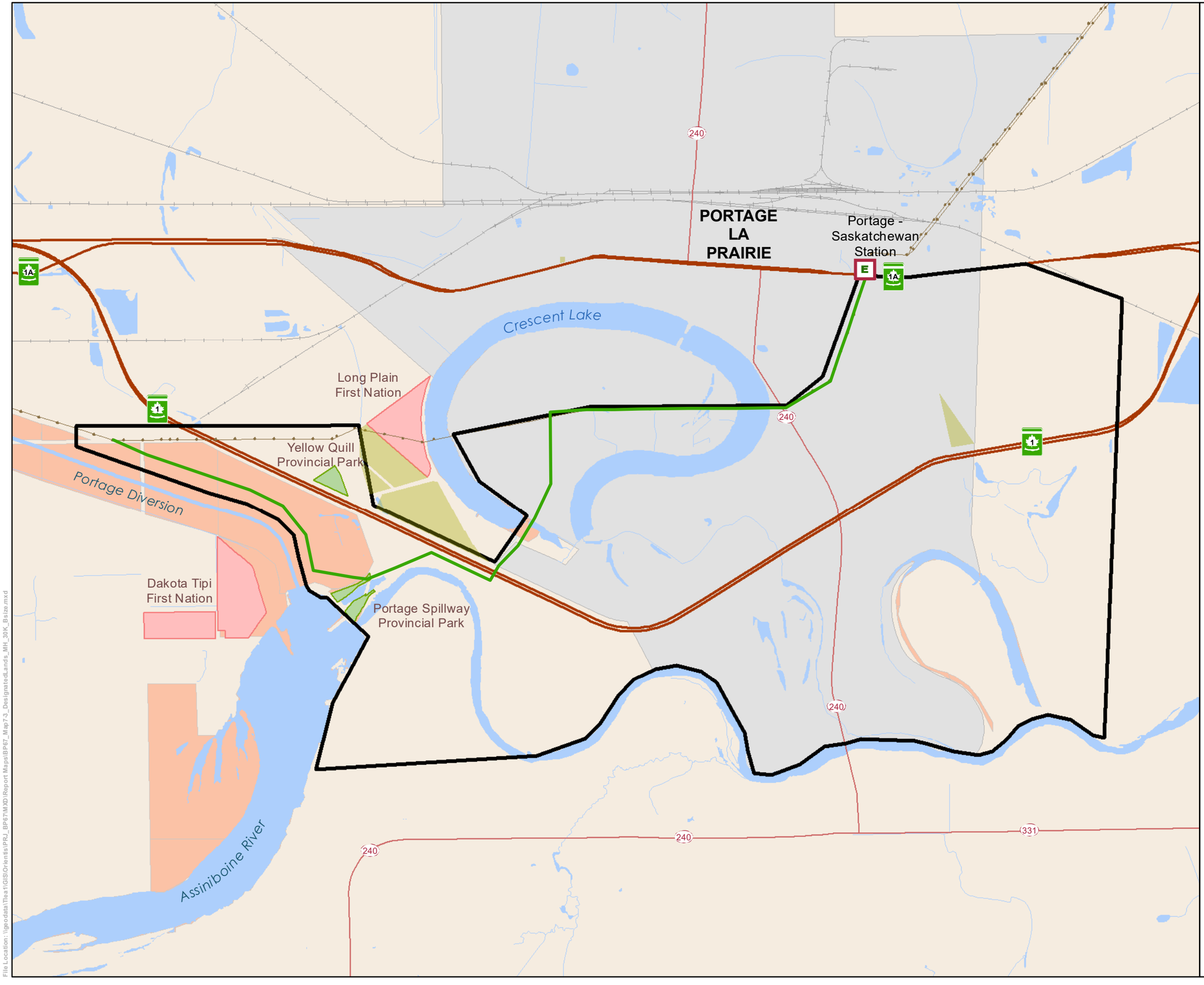


Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Route Planning Area

- Route Planning Area (area for rerouting BP6/BP7)

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Treaty Land Entitlement
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

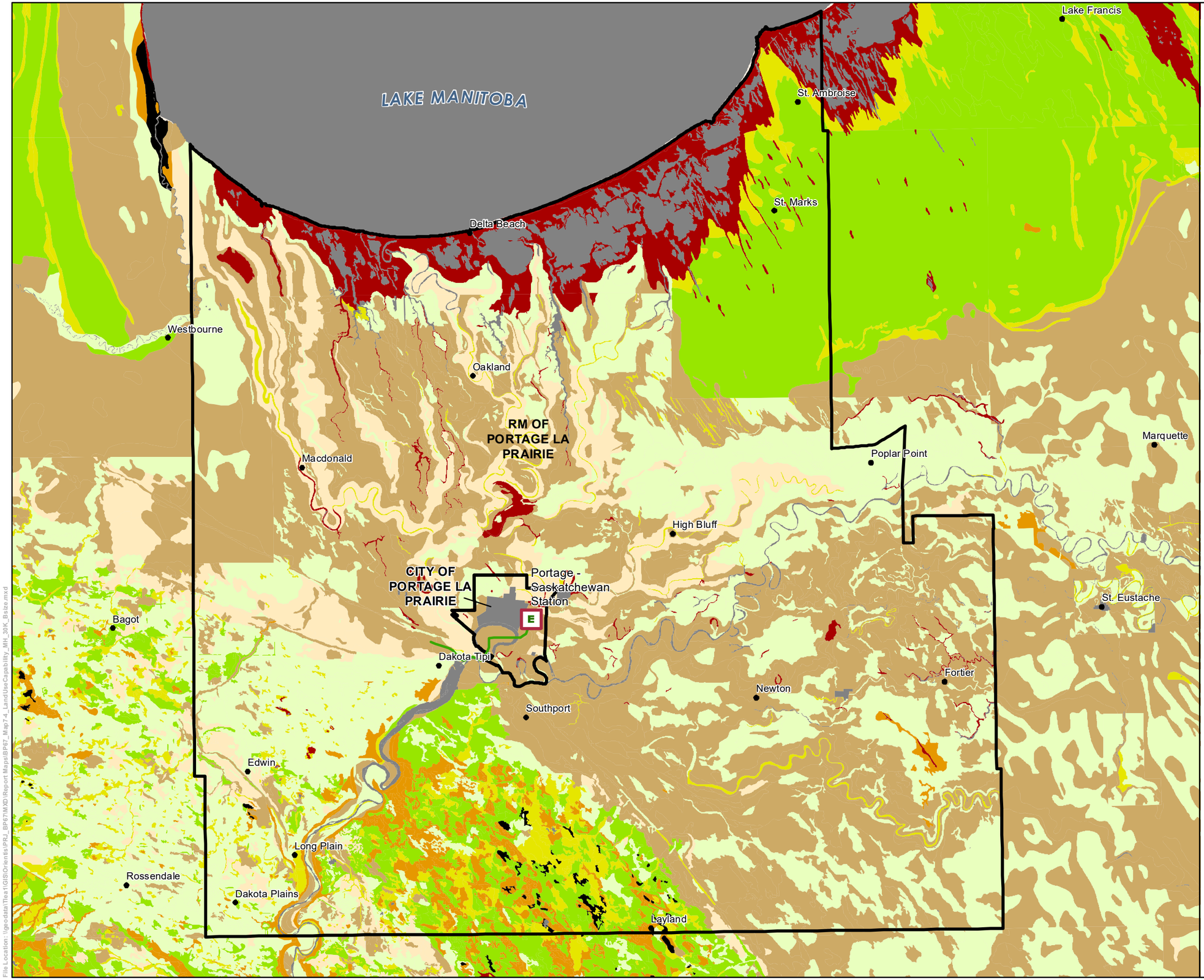
0 0.5 1 Kilometre
0 0.25 0.5 Mile

1:30,000

Designated Lands

Map 7-3

File Location: \\geodata\Tlea1\GIS\Orients\PRJ_BP67\MXD\Report Maps\BP67_Map7-3_DesignatedLands_MH_30K_Bsize.mxd



Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Land Use Capability

- Class 1
- Class 2
- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Organic
- Unclassified

Regional Assessment Area

- RM of Portage la Prairie

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 2 4 Kilometre
0 2 4 Mile

1:225,000

Land Use Capability

Map 7-4

File Location: \\gedata\Tea11GIS\Orientis\PRJ_BP6/7MXD\Report Maps\BP6/7_Map7-4_LandUseCapability_MH_30K_Bsize.mxd

8.0 Environmental assessment

8.1 Fish and fish habitat

Generally, transmission line development has limited potential to affect aquatic habitat. This valued component is included to address the crossing of Crescent Lake and riparian habitat adjacent to the Assiniboine River. Aquatic resources could also be negatively affected by spills, accidents or herbicide application for vegetation control

Dakota Tipi First Nation has shared that the community has a long history of harvesting fish from the Portage diversion spillway. The MMF has identified the Assiniboine River as an area used by Métis citizens for fishing for walleye, pike, carp, mariah, sturgeon and catfish (Appendix C).

This assessment of fish and fish habitat focuses on surface-water quality and fish and fish habitat with attention given to species of conservation concern.

8.1.1 Significance thresholds

8.1.1.1 Fisheries Act (1985)

The federal *Fisheries Act (1985)* provides the basis for the protection of fish habitat. This is done through Fisheries and Oceans Canada's Fisheries Protection Policy Statement (Fisheries and Oceans Canada 2019), which explains the fish and fish habitat protection provisions of the Act and outlines how the department will implement these provisions.

The Act prohibits the harmful alteration, disruption or destruction of fish habitat and the deposit of deleterious substances.

8.1.1.2 Species at Risk Act (2002)

The federal *Species at Risk Act (2002)* provides the basis for the protection of species at risk. 'Endangered,' 'Threatened,' and 'Species of Special Concern' fish species protected federally by the Act are listed in Schedule 1. The purpose of the Act is to protect wildlife species at risk and their critical habitat.

8.1.1.3 Endangered Species Act (1998)

Endangered species are protected provincially under the *Endangered Species Act (1998)*. The purposes of this Act are:

a) to ensure the protection and to enhance the survival of endangered and threatened species in the province
b) to enable the reintroduction of extirpated species into the province
c) to designate species as endangered, threatened, extinct or extirpated.

The Threatened, Endangered and Extirpated Species Regulation (M.R. 25/98) lists plants and wildlife considered threatened, endangered and extirpated in the province. The mapleleaf (*Quadrula quadrula*) has been classified as Endangered under this regulation.

8.1.1.4 The Canadian Council of the Ministers of the Environment (1999) and The Water Protection Act (2005)

Surface-water quality is managed through federal guidelines and provincial standards, objectives and guidelines. The Canadian Council of the Ministers of the Environment maintains guidelines for the protection of aquatic life for many water quality parameters. These guidelines are generally accepted in environmental assessment to mitigate project activities such that the guidelines (Canadian Council of Ministers of the Environment 2001) are not exceeded, where it is considered technically and economically feasible to do so. The water quality of watercourses in Manitoba is protected under *The Water Protection Act (2005)* through the Manitoba Water Quality Standards, Objectives, and Guidelines (Manitoba Water Stewardship 2011).

8.1.1.5 Summary

A significant adverse residual environmental effect on fish and fish habitat is defined as one that results in the harmful alteration, disruption or destruction of fish habitat. Significant adverse effects may include:

- Permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use sensitive habitats, including spawning grounds, nursery, rearing, or food supply areas, or as a migration corridor, in order to carry out one or more of their life processes
- Fish mortality (including eggs) or reductions in fish health at a level that reduces the productivity of a fishery, particularly species at risk
- Water quality parameters not returning to within the limits of natural variation of baseline conditions or exceeding CCME Guidelines for the Protection of Aquatic Life (Canadian Council of Ministers of the Environment 2001) and Manitoba Water Quality Standards (Manitoba Water Stewardship 2011).

The thresholds are regulatory-based requirements and derived from guidance provided by Fisheries and Oceans Canada related to the federal *Fisheries Act (1985)* and *Species at Risk Act (2002)*.

8.1.2 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas. Valued component specific details are described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area for the Assiniboine River extends 100 m upstream and 300 m downstream from the closest point of the transmission line centreline to the river (Map 8-1), and 30 m upbank from the high water mark (HWM). For the two Crescent Lake crossings, the local assessment area extends 100 m in either direction of the centreline and 30 m up bank from the HWM (Map 8-1). The 30 m distance is listed in Table A-1 of the Canada Energy Regulator Filing Manual (Canada Energy Regulator 2020) and is recommended as an acceptable distance to protect the riparian area and to buffer effects that construction could have on fish and fish habitat (Alberta Environment and Sustainable Resource Development 2012).

The local assessment area represents the area where direct effects on fish and fish habitat are likely to be most pronounced or identifiable.

The Government of Manitoba does not provide guidance on the spatial study area boundaries related to transmission line construction. Therefore, the boundaries for the project were derived from the Alberta Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body (Alberta Environment 2001); (Alberta Environment and Sustainable Resource Development 2013). The Code of Practice guidelines establish an expected zone of impact for watercourse crossings. The zone of impact is the area of direct disturbance at the watercourse crossing site (i.e., the project development area) plus the area where 90% of the sediment potentially generated during construction would be expected to be deposited.

Regional assessment area encompasses the boundaries of the Central Assiniboine River sub-watershed (Map 8-1). The sub-watershed based regional assessment area boundary was selected to encompass regional aquatic health.

The regional assessment area is the area where any cumulative environmental effects for fish and fish habitat relevant to the project are likely to occur. This includes portions of a watercourse or waterbody where the zone of influence of other projects within the watershed could interact with the project or where population effects could be seen.

8.1.3 Effects pathways

There are two main pathways that can lead to affects to fish and fish habitat:

- Change in fish habitat
- Change in fish mortality or health

The final preferred route will create one overhead line water crossing (across Crescent Lake) and one area of riparian clearing along the Assiniboine River.

8.1.3.1 Change in fish habitat

Vegetation clearing

One crossing of Crescent Lake is along the existing right-of-way; therefore, there is no new vegetation clearing required. The other crossing is along a road through a wetland area (Map 8-1) that will require minimal clearing.

Along the Assiniboine River, the edge of the right-of-way is greater than 30 m from the edge of the water (Figure 8-1); therefore there should be minimal potential impact to fish and fish habitat.

The right-of-way is cleared to accommodate the transmission line. Trees and understory vegetation are cleared to allow for the safe and reliable operation of the transmission line. Clearing requirements may also require selective clearing of danger trees beyond the right-of-way.

Clearing of riparian vegetation, particularly the tree canopy that overhangs watercourses, could reduce cover for fish, reduce shade, which moderates water temperature, and reduce habitat for insects, which can be a food source for fish (Manitoba Water Stewardship 2021); (Manitoba Riparian Health 2015). Increases in water temperature can diminish egg survival in species with lower thermal thresholds, as well as increasing fungal growth on eggs of summer spawning species (Carter 2005). Increases in water temperature can encourage the microbial breakdown of organic matter, leading to a depletion of dissolved oxygen in the watercourse, which is essential for sustaining aquatic life.

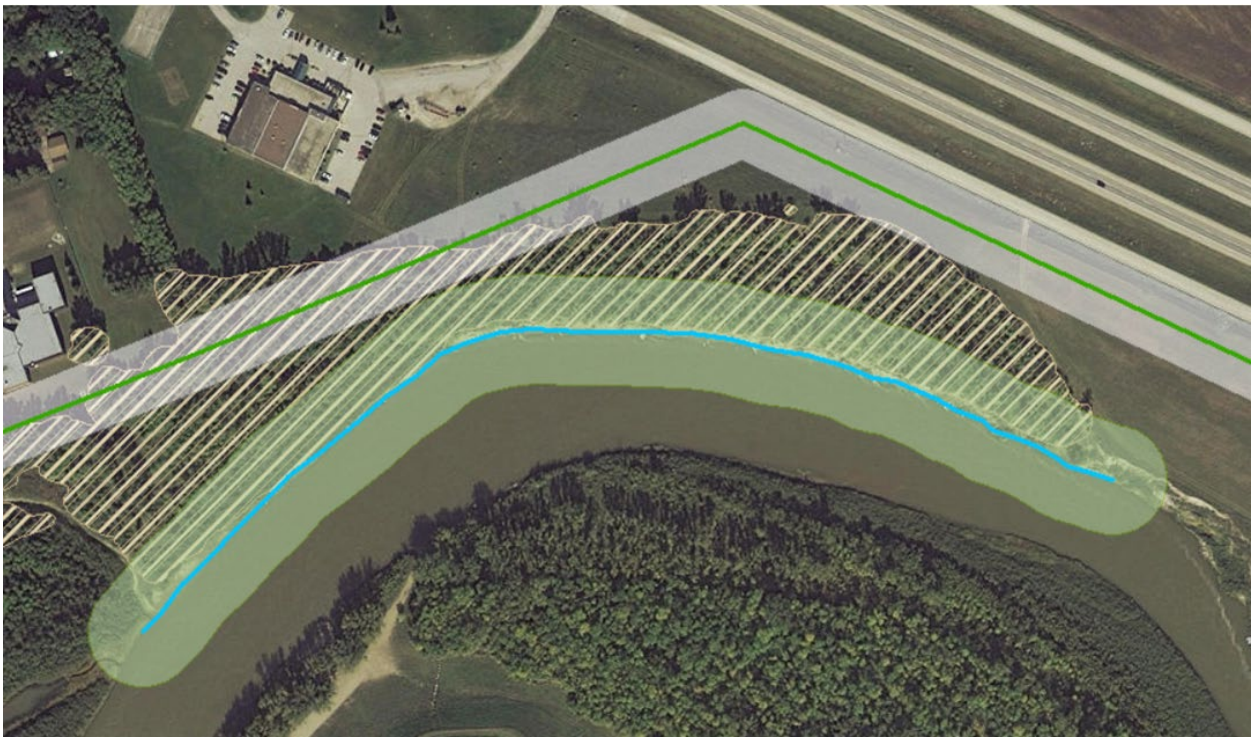


Figure 8-1: Riparian area along the Assiniboine River[2].

Low order stream communities in deciduous woodlands are energetically dependent upon litter materials (e.g. leaves and branches) contributed by riparian vegetation (Vannote, et al. 1980); (Benfield and Webster 1985); (Malmqvist and Oberle n.d.). Changes in litter inputs can have effects on invertebrate abundance, and in turn decrease food availability for fish. The potential effects of tree clearing will decrease with increasing stream size. As stream size increases, the reduced importance of terrestrial organic input coincides with enhanced importance of primary production within the waterbody and organic transport from upstream (Vannote, et al. 1980). As the Assiniboine River is quite large, the input of terrestrial organic matter would not be important.

The loss of riparian vegetation can also increase erosion and sedimentation, resulting in a change in substrate composition, and altering food supply through turbidity-related reductions in algae and aquatic insect production (Studinksi, et al. 2012).

[2] A 30 m buffer was placed around the edge of the water. The hatched area shows required forested area.

Increased siltation can also damage spawning grounds for species that require cobble substrate for spawning (Fudge, Wautier and Palace 2008). Increased turbidity can decrease light transmission through the water column, decreasing in-water vegetation growth, which is habitat for young fish.

High sediment concentrations may cause fish mortality as a result of heavy gill abrasion ((Herbert and Merkins 1961); (Robertson, et al. 2006). At lower suspended sediment concentrations, the effects could include subtle behavioral changes in fish, such as avoidance reactions. These reactions could lead to higher energy expenditures by individual fish and affect territorial responses in some species (Newcombe and Jensen 1996); (Robertson, et al. 2006)). At higher sublethal concentrations, the introduction of fine suspended sediment, such as silts and clays that increase turbidity, could induce effects such as reduced feeding efficiency, sense of smell in fish, decreased visual acuity and predator/prey interactions (Newcombe and Jensen 1996). Silts and clay from erosion can carry contaminants such as pesticides into watercourses increasing fish exposure and causing harm to fish (increased mortality, reduced physiological function in adult fish and reduced egg survival (Levasseur, et al. 2006).

Increased sedimentation could also change the availability of invertebrates needed as food sources for fish (Suttle, et al. 2004); (Ramezani, et al. 2014). The reduced food source for fish due to sedimentation can affect fish mortality and health by reducing their growth (Harvey, White and Nakamoto 2009); (Sullivan and Watzin 2010); (Kemp, et al. 2011).

Herbicide treatment, during operations, in areas close to water could result in accidental (through spills) or unintentional (through aerial drift or runoff) entry into watercourses. Once in a waterbody, herbicides can reduce photosynthesis or other processes in primary producers (e.g., algae, macrophytes), thereby reducing biomass and distribution.

Vehicle / equipment use

Machinery operating near watercourses can also create ruts and compact soils, especially in saturated, floodplain areas next to watercourses. Compacted soils can channelize water flow, leading to less infiltration and greater surface erosion (erosion effects discussed above).

Petroleum products such as gasoline and diesel fuels, oil, lubricants and hydraulic fluids can leak from machinery, be released through maintenance and refuelling activities, and be released through accidental spills. If these situations occur close to a

watercourse, these deleterious substances can enter a watercourse and directly or indirectly affect aquatic organisms (including fish).

Effects from deleterious substances entering the watercourse can range from lethal to sub-lethal, depending on the volume, concentration and substance in question. Many hydrocarbon products are also persistent and will remain in sediments for long periods of time and accumulate in higher organisms in the aquatic food web.

During the operational phase of the project, effects relate to herbicides entering the watercourse from vegetation management activities. Vegetation management within the right-of-way is required for public and employee safety, as well as the reliable operation of the line. The right-of-way will be maintained on an ongoing basis throughout the life cycle of operation. The use of herbicides, if not applied according to label and pesticide use permit instructions, could lead to release of contaminants to adjacent waterways.

8.1.3.2 Change in fish mortality or health

Vegetation management

During operation and maintenance, the primary activity that could interact with fish and fish habitat is vegetation management within the transmission line right-of-way.

Riparian vegetation management and potential use of herbicides to control noxious or invasive riparian vegetation species could affect fish health and mortality if the chemicals were sprayed, rinsed or carried by sediment into a watercourse. The pH of watercourses may also be altered if contaminated sediments are washed into the watercourse. A change in watercourse pH can affect fish mortality and health.

8.1.3.3 Decommissioning

Project decommissioning will likely have a positive overall effect. Should the project be decommissioned, the right-of-way would be allowed to revegetate, which would improve fish habitat overall. The effects of riparian clearing would be reversed and the site would return to a somewhat natural state.

8.1.4 Species at risk

Threats to species at risk include increased siltation and decreased water quality. Without adequate mitigation the above changes to fish habitat could lead to these effects. In Manitoba mapleleaf are threatened by habitat loss and degradation and the effects of invasive species, particularly zebra mussel (COSEWIC 2016). Habitat changes associated with zebra mussels and modifications to the banks of the

Assiniboine River (e.g., rip-rap and dikes) that alter the flow hydrology of these rivers are also threats (COSEWIC 2016).

Bigmouth buffalo are secure in Manitoba, however, major threats include loss of / access to spawning / rearing habitat, habitat fragmentation (Fisheries and Oceans Canada 2019), (COSEWIC 2009).

Potential threats to the chestnut lamprey include destruction of spawning habitat through soil erosion and siltation; eutrophication through runoff of fertilizers; pesticide and herbicide pollution ((Lanteigne 1991) in (COSEWIC 2010)); and dams, locks, and stream crossings that inhibit its spawning migration (Government of Manitoba 2002).

8.1.5 Mitigation measures

Selection of the final preferred route took a balanced approach to minimize overall project effects. In addition to routing, standard industry practices and avoidance measures, along with project-specific mitigation as summarized in Chapter 9.0 will be implemented during project construction and operation. This section highlights the key mitigation measures to be implemented during construction and operation to limit effects to riparian areas and riparian habitat.

Application of proven and effective mitigation measures will be implemented as part of the project to avoid or minimize the environmental effects on fish and fish habitat. Project-specific mitigation measures with respect to aquatic resources will be outlined in detail in the construction environmental protection plan, which will form part of the construction contract. Mitigation will include, but not be limited to:

- Designating of a buffer zone (30 m from OHWM minimum) around all waterbodies, which limits riparian vegetation removal to trees and tall shrubs (Figure 8-2)
- Designating machine-free zones (7 m OHWM minimum) in riparian areas
- Marking sensitive areas prior to construction, and clearing
- Clearing of tree species in the riparian area, leaving shrub, forbs and grasses to colonize the riparian area
- Maintaining or promoting the growth of shrub species in riparian areas
- Keeping root systems intact during tree removal (thereby not disturbing the soil)
- Implementing erosion and sediment control measures where required for sensitive sites
- Training work crews in spill prevention

- Ensuring all petroleum and allied products will be handled in compliance with the requirements of Manitoba Regulation 188/2001
- Storing petroleum and other products more than 100m from the ordinary highwater mark of watercourses
- Ensuring machinery is in good working order and free of leaks
- Having emergency spill kits on site
- Using only licensed applicators when herbicides are used
- Siting marshalling yards and borrow sites at least 30 m[3] from watercourses to avoid interaction with fish and fish habitat.

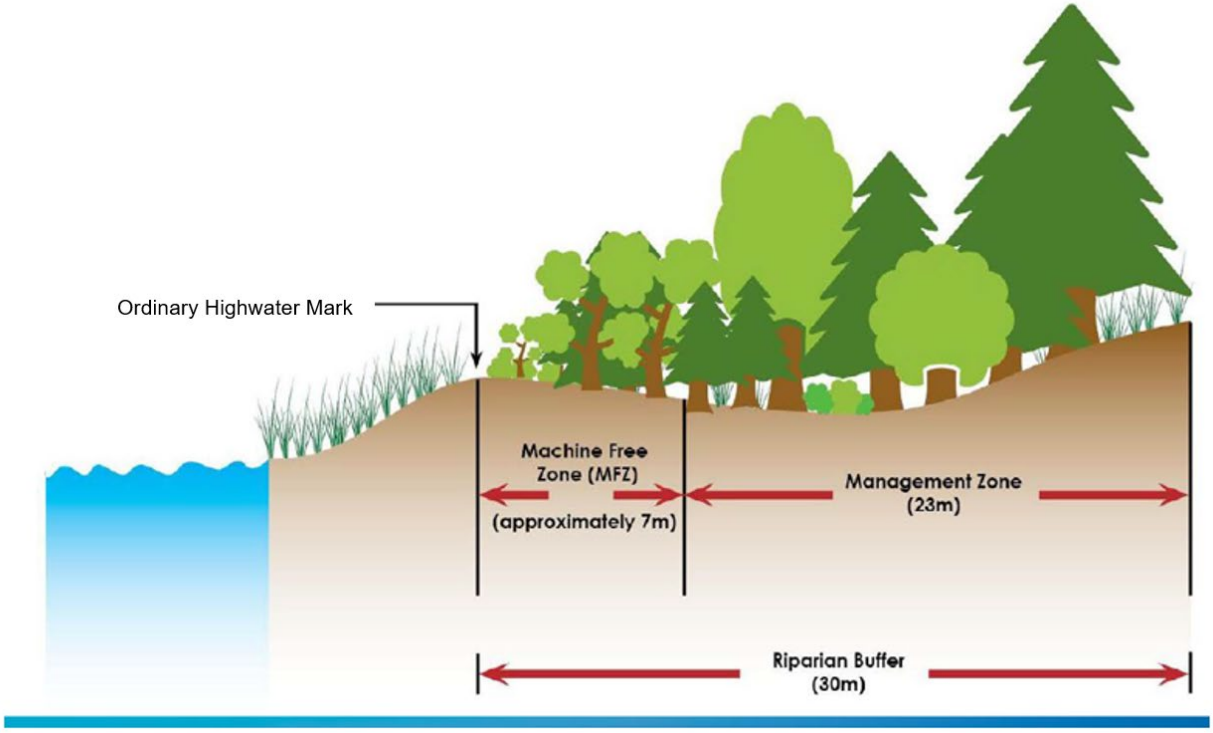


Figure 8-2: Riparian buffers and machine free zones

[3] A 30 m setback from a watercourse is recommended as an acceptable distance to protect the riparian vegetation area and buffer overland effects that construction could have on fish and fish habitat (Canada Energy Regulator 2020).

8.1.6 Characterizing residual effects

Table 6-3 describes the factors used to characterize the interactions among the project and fish and fish habitat.

Existing land use in the local assessment area can be characterized as disturbed because in many areas it is dominated by agricultural development. Activities associated with this land use can increase suspended sediments and sediment in the bedload of adjacent watercourses.

Fish, particularly priority species, could potentially have life processes affected by increased sedimentation, particularly sensitive early life stages.

With the implementation of mitigation measures, such as leaving a 30 m vegetated buffer, project-related construction activities are not expected to increase sedimentation within the watercourses.

Along the Assiniboine River, clearing required will be greater than 30 m from the water's edge (Figure 8-1) which will minimize impacts. The expected change in riparian vegetation is minimal because equivalent riparian vegetation was abundant all along the river, upstream and downstream of the project.

This assessment considers residual effects on fish and fish habitat after mitigation is implemented. There will be no harmful alteration, disruption or destruction of fish habitat. There is no net change in fish habitat availability because similar habitat is available within and beyond the local assessment area. For change in fish and fish habitat, the residual environmental effects have been characterized as follows:

- Direction: Adverse
- Magnitude: Small
- Geographic extent: Local
- Duration: Long term
- Frequency: Regular
- Reversibility: Permanent

Due to the small area of riparian vegetation clearing along the Assiniboine River, the use of the existing crossing of Crescent Lake, and well tested mitigation measures, the residual effects for fish and fish habitat are not anticipated to be significant.

8.1.7 Follow-up and monitoring

Due to limited project interactions and well-established mitigation measures, monitoring related to fish and fish habitat concerns is not proposed for the project. If significant damage is observed, remediation efforts will be implemented, and a

monitoring plan developed to address concerns at each site. Protections for fish and fish habitat will be implemented as part of the environmental protection program.

8.1.8 Cumulative effects

Table 6-5 lists the interactions between current and future projects/activities and fish and fish habitat. Three of these have potential interactions including agriculture, the upgrades to the water treatment facility and the Crescent Lake Causeway. Ongoing agriculture has the potential for inputs into the adjacent waterbodies including the Assiniboine River, decreasing water quality. However, these inputs have been ongoing for decades or more and therefore would be considered part of the baseline conditions.

The upgrades to the water treatment facility should improve water quality overall as part of the upgrades include improved nutrient removal.

The Crescent Lake Causeway will alter habitat in Crescent Lake and may also temporarily increase sedimentation. This could act cumulatively with transmission line construction as they are both under construction at the same time. However, with mitigation potential sedimentation will be minimal and short term.

8.1.9 Sensitivity to future climate change scenarios

Effects of climate change on fish and fish habitat are expected to relate to the anticipated increase in temperature and associated extreme weather events (e.g., flooding). Resulting effects on fish and fish habitat in the regional assessment area may result in substantial change, from increases in maximum water temperatures that could exceed the lethal threshold for some species to species shifts. Subtle changes in flow and temperature will alter thresholds of susceptibility; however, the predicted climate change scenarios would not change the significance determinations for fish and fish habitat, as they are not anticipated to measurably increase the magnitude of Project-related effects on fish habitat availability or fish health and mortality.

8.2 Vegetation

8.2.1 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas (Map 8-2). Valued component specific details are described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area is 1 kilometer from either side of the project centreline (Map 8-2). This buffer is consistent with that used in previous assessments and with the wildlife and wildlife habitat assessment (Section 8.3).

It represents the area where indirect or secondary effects of construction and operation and maintenance are likely to be most pronounced or identifiable.

Regional assessment area: The regional assessment area is defined as 15 kilometers from either side of the project centreline (Map 8-2). This area considered large enough to appropriately characterize regional vegetation and land use patterns.

It encompasses the area where project-specific environmental effects overlap with those of past, present, and reasonably foreseeable future projects and activities. It is used to provide regional context and is therefore generally the area for which the project's contribution to cumulative effects is assessed.

8.2.2 Significance thresholds

An overall determination of significance is made for the project's residual effects and the cumulative residual effects on vegetation after mitigation measures are implemented. There are no specific provincial or federal regulations that set thresholds for determining the significance of environmental effects on vegetation within the regional assessment area.

Significance was determined using qualitative and quantitative approaches, through professional judgment and previous experience assessing project effects on natural vegetation.

Significant effects on natural vegetation are those that meet any of the following criteria:

- An effect that threatens the long-term persistence or viability, including effects that are contrary to, or inconsistent with, federal (including recovery strategies and critical habitat) and provincial management objectives in the regional assessment area of:
  - native vegetation cover classes
  - rare plant species (including species at risk)
  - traditional use plant species

8.2.3 Effects pathway

There are four main pathways that can lead to affects to vegetation in the project area:

- Change to native vegetation
- Change in invasive / non-native species
- Change in rare plant species (including species at risk) abundance / distribution
- Change in traditional plant species abundance / distribution

8.2.3.1 Change to native vegetation

As outlined in Table 7-2 the project is predicted to interact with vegetation during the project construction activities of right of way clearing and marshalling yards. The project is predicted to interact with natural vegetation during operation and maintenance activities of inspection patrols, and vegetation management.

The loss of natural vegetation and habitat in the region was identified as a concern within both the Indigenous and public engagement processes.

The loss of natural vegetation is a concern for maintaining biodiversity and wildlife habitat. Changes in plant community structure (e.g., loss of trees or shrubs) can also affect plant community composition and wildlife habitat suitability.

Most of the project footprint is located in previously developed lands; therefore, potential effects to natural vegetation and native vegetation cover classes are limited; however, effects to vegetation will occur during the clearing activities as part of construction, and during vegetation management activities once the project is in place. In addition, vegetation effects can occur from soil compaction or dust during operation of vehicles or equipment.

Clearing within the right-of-way will remove all treed vegetation, contributing to potential direct mortality and habitat loss. A total of 5.1 hectares will be cleared including natural areas near Crescent Lake and the north shore of the Assiniboine River. Forested lands will be converted to shrubland or grasslands. Classification for other portions of the project footprint (e.g. shrubland, grassland, pasture) will not be changed as a result of the project.

8.2.3.2 Change in invasive/non-native species

Invasive plant species are a subset of weedy plant species that require control or eradication based on provincial or federal legislation. These species are of concern because they can cause economic losses, damage to native plant communities, or human illness or injury (Royer and Dickinson 1999).

Clearing can create soil disturbance, which can lead to colonization by invasive/non-native weedy species that can outcompete native plant species and cause changes in vegetation distribution. Tower installation and stringing conductors also have the potential to change vegetation distribution and for the spread of non-native/invasive plant species.

During construction, the establishment and use of materials and equipment have the potential to spread non-native/invasive plants, create changes to vegetation distribution and loss of wetland vegetation.

Soil compaction that results from the presence of the equipment may affect natural vegetation through direct mortality of native plants, which may allow for the colonization of non-native/invasive species. Increased vehicle traffic, the associated soil compaction and the potential soil contamination from spills/debris may cause direct mortality of natural vegetation, allowing for the colonization of non-native/invasive plant species and changes in vegetation distribution.

Project activities associated with operation and maintenance including project presence, maintenance of infrastructure, vegetation management, and decommissioning will potentially interact with natural vegetation. The presence of the Project has the potential for the spread of non-native/invasive plants. Vegetation management, which may include mowing, cutting and/or use of herbicides, may cause changes in vegetation distribution. Vegetation maintenance along the right-of-way may act as a barrier for the spread of native prairie plants from one side of the right-of-way to the other. Frequent mowing and cutting may affect slower growing native vegetation species and allow for the establishment of fast-growing non-native/invasive plant species. Use of herbicides may also allow for fast-growing invasive plants to outcompete native plants. Herbicides may get into adjacent ditches and wetlands, which could cause direct mortality and loss of wetland vegetation.

Project decommissioning at future date, would have a similar effect on vegetation as tower construction and stringing of conductors, including the potential to change vegetation distribution and for the spread of non-native/invasive plant species.

8.2.3.3 Change in rare plant species (including SAR) abundance / distribution

Rare plant species are vulnerable to disturbance and are protected by provincial and federal legislation. Threats to rare plant species include trampling, invasive plant species encroachment, soil compaction from vehicle use, and habitat loss (Henderson 2011). Loss of native vegetation areas is correlated with increases in the number of endangered species (Kerr and Deguise 2004) and is considered the greatest threat to endangered species in Canada (Venter, et al. 2006).

Some rare plants were identified in the study area. Construction of the transmission line could change the abundance and distribution of rare plant species as a result of right-of-way clearing, vehicle / heavy equipment use, tower construction or vegetation management. Clearing within the right-of-way to remove treed vegetation and ongoing maintenance activities may result in the loss of some rare plants. Heavy equipment and vehicle use on access trails and temporary workspaces could remove or crush rare plant species or affect them through soil compaction and rutting. Tower construction requires the removal of vegetation at tower footprints and at foundation excavations at some locations. Vegetation management activities such as herbicide application or mowing could kill or remove rare plants. However, since most of the project development area is in previously developed lands, potential effects to rare plants is limited.

8.2.3.4 Change in traditional plant species abundance / distribution

Long Plain First Nation has identified the potential for their four Sacred Medicines (Sage, Cedar, Sweetgrass and Tobacco) to be in abundance in some areas of the project, which could be affected by project activities (Appendix C). Dakota Tipi First Nation had shared concerns that the line placement may reduce medicinal vegetation such as sage, sweet grass, cedar, Seneca root and bear root in the study area. With announcement of the preferred route, Dakota Tipi First Nation shared that the route avoids most plant gathering areas but that willow harvesting near the Assiniboine River might be affected by the project. The MMF identified one potential plant gathering area to the south of the Portage diversion, which should not be affected by the line being located on the north side of the Portage diversion.

8.2.4 Mitigation

Selection of the final preferred route took a balanced approach to minimize overall project effects. In addition to routing, standard industry practices and avoidance measures, along with project-specific mitigation as summarized in Chapter 9.0 will be implemented during project construction and operation. This section highlights the key mitigation measures to be implemented during construction and operation to limit effects to vegetation.

Application of proven and effective mitigation measures will be implemented as part of the project to avoid or minimize the environmental effects on vegetation. Project-specific mitigation measures with respect to vegetation will be outlined in detail in the construction environmental protection plan, which will form part of the construction contract. Mitigation will include, but not be limited to:

- Limiting the extent of clearing in important habitats
- Flagging off environmentally sensitive areas prior to site clearing and construction
- Limiting project-related activity outside of the project footprint
- Using designated roadways and access roads
- Cleaning equipment before moving from locations with identified invasive weed infestation
- Maintaining vehicles and equipment in designated areas located at least 100m from the ordinary high-water mark of a waterbody, riparian area or wetland
- Performing daily inspections for fuel, oil and fluid leaks on vehicles, equipment and machinery and shutting down and repairing any leaks found
- Protecting plant species at risk and critical habitat in accordance with provincial and federal legislation and provincial and federal guidelines.
- Applying a 10 m buffer to mapped species of conservation concern within the project development area. Setbacks and buffers along the right-of-way will be clearly identified by signage or flagging prior to construction, and signage or flagging will be maintained during construction to alert crews to the presence of the setback or buffer.
- Siting towers to avoid confirmed locations of species of conservation concern, where possible
- Contacting Manitoba Agriculture and Resource Development if avoidance of listed rare plant species is not possible, to determine the most appropriate mitigation action
- Delineating natural low-growing shrub and grass vegetated buffer areas of 30 m or greater around wetlands and riparian areas
- Ensuring windrows of grubbed materials will be piled at least 15 m from standing timber
- Ensuring trees will not be felled into waterbodies
- Flagging danger trees for removal using methods that do not damage soils and adjacent vegetation
- Ensuring contractor erosion protection and sediment control plans will be developed prior to construction and updated annually
- Ensuring all equipment arrives at the right-of-way or project site clean and free of soil or vegetation debris
- Following the biosecurity management plan to prevent the spread of invasive weeds

- Including objectives for restoration of natural conditions, erosion protection, sediment control, non-native and invasive plant species management in the rehabilitation plans
- Conducting weed control along access roads and trails, marshalling yards and borrow sites in accordance with a rehabilitation and weed management plan
- Using methods such as hand cutting, mechanical cutting or winter shearing to clear the transmission line right-of-way and other sites. If herbicides are required to control vegetation growth, such as noxious/invasive weeds during construction, all applicable permits and provincial regulations (*The Noxious Weeds Act*) will be followed.

Long Plain First Nation has recommended additional mitigation measures including: *"Long Plain would like to see an effort made to harvest any sacred medicines that may be disturbed during the project in accordance with our spiritual protocols"* and *"Also, if a rough count of large vegetation removals (trees and native brush etc.) exists we would like to see an effort made to either relocate or plant-new vegetation in accordance with our beliefs that we should live lightly on Mother Nature, take only what we need and replace what we take whenever possible"* (Appendix C).

Manitoba Hydro will work with Long Plain First Nation to discuss the feasibility of these mitigation measures.

8.2.5 Characterizing residual effects

Table 6-3 describes the factors used to characterize the interactions among the project and vegetation.

Given the application of the above-described mitigation measures, the effects of the Project in terms of the vegetation are summarized as follows:

- Direction: Adverse
- Magnitude: Negligible
- Geographic extent: Local
- Duration: Moderate Term
- Frequency: Infrequent
- Reversibility: Reversible

In conclusion, due to the small area of vegetation clearing, the use of the existing right of way and previously cleared areas for most of the route, the residual effects for vegetation are not anticipated to be significant.

8.2.6 Follow up and monitoring

Due to limited project interactions and well-established vegetation protections and mitigation measures, natural vegetation monitoring is not proposed for the project. If significant natural vegetation damage is observed, remediation efforts will be implemented, and a monitoring plan developed to address concerns at each site. Protections for natural vegetation will be implemented as part of the environmental protection program. The environmental protection program is a framework for the implementation, management, monitoring and evaluation of protection activities in keeping with environmental effects identified in environmental assessments, regulatory requirements and public expectation. It prescribes measures and practices to avoid and reduce adverse environmental effects on vegetation.

8.2.7 Cumulative effects

Table 6-5 lists the interactions between current and future projects/activities and vegetation. Three of these have potential interactions including agriculture, Portage area capacity enhancement project and the Crescent Lake Causeway.

Ongoing agriculture has the potential for further vegetation clearing; however, this activity has been ongoing for decades and would be considered part of the baseline conditions.

The Portage area capacity enhancement project may result in some vegetation clearing to accommodate a new transmission line project. However, this loss of vegetation likely to be minimal.

The Crescent Lake Causeway will temporarily remove vegetation around Crescent Lake. This could act cumulatively with transmission line construction as they are both under construction at the same time. However, with mitigation, loss of vegetation will be minimal and short term.

8.2.8 Sensitivity to future climate scenarios

Projected climate change will not change the significance determinations for vegetation because the projected changes are not expected to measurably increase the magnitude of Project effects on native vegetation, invasive species introduction, rare or traditional use plant species. Abundance and distribution of native cover classes, rare plants and traditional use plants will likely change, but the project is anticipated to affect a small portion. Some invasive plant species may increase in abundance and established native cover will help reduce spread.

8.3 Wildlife and wildlife habitat

8.3.1 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas (Map 8-2). Valued component specific details are described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area is defined as 1 kilometer from either side of the project centreline (Map 8-2). Benitez-lopez et al. (Benitez-lopez, Alkemade and Verweij 2010) reported that most songbirds and waterbirds have lower abundances within 1 km of infrastructure.

It represents the area where indirect or secondary effects of construction and operation and maintenance are likely to be most pronounced or identifiable.

Regional assessment area: The regional assessment area is defined as 15 kilometers from either side of the project centreline (Map 8-2). It encompasses the home ranges or dispersal distances of the most wide-ranging species in this assessment, including white-tailed deer (89 km^2 (Fisher, et al. 2013) and red-sided garter snake (18 km dispersal (Gregory and Stewart 1975).

It encompasses the area where project-specific environmental effects overlap with those of past, present, and reasonably foreseeable future projects and activities. It is used to provide regional context and is therefore generally the area where the project's contribution to cumulative effects is assessed.

8.3.2 Significance thresholds

An overall determination of significance is made for the project's residual effects and the cumulative residual effects on wildlife and wildlife habitat after mitigation measures are implemented. There are no provincial or federal regulations that set thresholds for determining the significance of environmental effects on wildlife and wildlife habitat found within the regional assessment area.

Significance was determined using qualitative and quantitative approaches, through professional judgment and previous experience assessing effects on wildlife and wildlife habitat.

Significant effects on wildlife and wildlife habitat are those that meet any of the following criteria (based on (Lynch-Stewart 2004)):

- Threaten the long-term persistence or viability of wildlife populations, including any effects that would lead to species extinction, extirpation or up-listing to special concern, threatened or endangered status
- Diminish the potential or prolong threats to species recovery, such as effects that are contrary to or inconsistent with the goals, objectives or activities of federal recovery strategies and action plans
- Diminish the capacity of critical habitat to provide for the recovery and survival of wildlife at risk

8.3.3 Effects pathway

The MMF expressed concerns (Appendix C) that the portion of the existing right-of-way has been rehabilitated over time and that the new line could disturb wildlife that have returned to the area:

"Though there was an existing transmission line, the area was naturalized again to a certain degree and will be disturbed again in the construction of the line"

Peguis First Nation expressed concerns with specific species on Crescent Island including salamanders, frogs and deer.

Long Plain First Nation also expressed concerns with Crescent Island being a nesting and staging area for geese.

As well, Dakota Tipi First Nation shared concerns that the line placement may reduce populations of whitetail deer, porcupine and rabbits.

During public engagement concerns were expressed for wildlife during the construction and operation of the project. Concerns were raised about the potential to disturb nesting and migrating birds, including rare birds such as the Eastern peewee (*Contopus virens).* Concerns were also expressed regarding the potential for bird collisions with the transmission wires as birds move between Crescent Lake and surrounding waterways. The ongoing decline of natural habitat for wildlife in the region was also identified.

Three main pathways were considered, that can lead to affects to wildlife and wildlife habitat, including species of conservation concern:

- Change in habitat availability
- Change in mortality risk
- Change in disturbance/annoyance

8.3.3.1 Change in habitat availability

The project is proposed within a developed environment where much of the land has been modified for agriculture, transportation, and exurban development. Much of the original natural vegetation and wildlife habitat has been converted to other land uses.

Right-of-way clearing is the primary construction activity that may result in a direct and measurable change in wildlife habitat because it involves clearing in treed / forested areas and grubbing at transmission tower sites.

Prior to construction, a 38 m wide right-of-way will be cleared in treed / forested areas. This will convert those areas to open habitat that will eventually be recolonized by grasses, forbs, and shrubs.

Some wildlife habitat will be altered along the north shore of the Assiniboine River and Crescent Lake. These somewhat natural habitats are already limited in availability in the project assessment areas.

Since a portion of the old route will not be re-used, including one crossing of Crescent Lake, these areas will be left to naturalize, providing some wildlife habitat.

The effects of change in habitat availability apply to both construction and operation phases of the project. In addition to direct habitat effects, project-related sensory disturbance such as mobilization, vehicle/equipment use, right of way clearing, marshalling yards, transmission tower construction, implodes, and helicopter use may result in the temporary displacement of mammals and birds. Wildlife, including some species of conservation concern, may also avoid otherwise suitable habitat during construction or inspection patrols and vegetation management during operation. Sensory disturbance could affect wildlife and wildlife habitat during all but one construction stage; no effects are anticipated due to project wrap up and leaving the site. Decommissioning of the project at a future date would also cause sensory disturbance.

8.3.3.2 Change in mortality risk

<u>Construction</u>

Wildlife mortality could increase due to collisions with construction vehicles. These could be mammals, birds, and amphibians, and include species of conservation concern. Wildlife mortality pathways also include nest mortality during clearing.

Behavioural changes related to increased activity, noise and nighttime illumination from construction may cause an indirect increase in mortality risk due to disturbance to wildlife, resulting in behavioural changes and increased chance of predation. Small mammals or birds may move from cover (behavioural change) because of disturbance from noise and vibration, putting them at greater risk of predation and mortality from exposure (Habib, Bayne and Boutin 2007).

Construction activities may also displace wildlife species into areas adjacent to the project that may contain lesser quality habitats depending on a species' habitat requirements and dispersal abilities. This displacement may result in increased energy expenditure potentially reducing an individual's survival and reproduction (Powlesland 2009).

Operation and maintenance

Collisions with transmission lines are among the top causes of human-related bird mortality in Canada (Calvert, et al. 2013). The degree of risk is influenced by several factors relating to transmission line design, location, and mitigation, as well as physical characteristics of the bird (species, size), and flight behaviour (flocking, aerial courtship displays); (Avian Power Line Interaction Committee 2012). Larger-bodied species can have difficulty performing evasive manoeuvres to avoid transmission lines and structures (Bevanger 1998).

The project has the potential to increase bird-wire strikes; particularly where the transmission line is in or adjacent to wetlands (Crescent Lake) or rivers (Assiniboine River) that concentrate large-bodied birds such as geese and ducks.

Transmission lines in areas that concentrate birds, particularly those located between roosting (i.e., resting), foraging, or breeding sites can have higher collision risk for birds (Avian Power Line Interaction Committee 2012). In these areas, waterbirds, especially ducks and geese, are particularly vulnerable to collisions due to their daily movement patterns, which peak during low light periods around sunrise and sunset.

Bird-wire interactions are most associated with the shield wires, a narrow wire that runs above the conductors and serves to dissipate the effects of lightning strikes on transmission equipment (Scott, Roberts and Cadbury 1972); (Faanes 1987) (Savereno, et al. 1996).

A portion of the old route will not be re-used, including one crossing of Crescent Lake. There will still be two crossings of Crescent Lake (Map 8-1). The new crossing of Crescent Lake is along a road right-of-way in an area where there is little to no standing water. This area would not be considered high quality waterfowl habitat and

likely not along a travel route. Overall, there could be a decreased risk of bird-wire collisions due to the change in location of crossing Crescent Lake.

The route parallels the Assiniboine River (Map 8-1) for several hundred meters. This could introduce an increased risk of bird-wire collisions. However, there will be riparian vegetation left intact. This should limit collisions as waterfowl will have to clear the trees and therefore the transmission line as well.

Another pathway for increased mortality could be through nest mortality by equipment used during periodic maintenance of right-of-way vegetation.

The physical presence of the transmission line and vegetation management inspection activities may have minor nuisance effects causing altered movements of wildlife near and across the right-of-way during operation.

8.3.3.3 Change in disturbance/annoyance

Disturbance / annoyance during construction and operation may reduce the effectiveness of existing or remaining habitat for wildlife. This may occur through sensory disturbances (e.g., noise, light) causing temporary displacement of some wildlife from otherwise suitable habitat. Such activity may be associated with right-of-way clearing, mobilizing staff and equipment, transmission tower construction and vegetation maintenance.

8.3.4 Mitigation

Selection of the final preferred route took a balanced approach to minimize overall project effects. In addition to routing, standard industry practices and avoidance measures, along with project-specific mitigation as summarized in Chapter 9.0 will be implemented during project construction and operation. This section highlights the key mitigation measures to be implemented during construction and operation to limit effects to wildlife and wildlife habitat, including species of conservation concern.

Application of proven and effective mitigation measures will be implemented as part of the project to avoid or minimize the environmental effects on wildlife and wildlife habitat. Project-specific mitigation measures with respect to wildlife will be outlined in detail in the construction environmental protection plan, which will form part of the construction contract. Mitigation will include, but not be limited to:

- Conducting clearing activity outside the sensitive timing window for wildlife, including species of conservation concern (Appendix I)
    - If some clearing is required during the sensitive timing window period, carrying out pre-construction nest searches in areas having potential to

support birds and if nests are found, appropriate buffers recommended by federal or provincial setback guidelines will be applied;

- Establishing setbacks and buffers (Appendix I) around migratory bird nests or mammal dens
- Installing bird diverters at designated environmentally sensitive sites, including Crescent Lake and near the Assiniboine River and Portage Diversion to reduce the potential for bird collisions with wires
- Keeping litter and garbage contained
- Limiting the extent of clearing in important habitats, when feasible
- Flagging off environmentally sensitive areas prior to site clearing and construction
- Limiting project-related activity outside of the project development area
- Using designated roadways and access roads.
- Cleaning equipment before moving from locations with identified invasive weed infestation
- Maintaining vehicles and equipment in designated areas located at least 100 m from the ordinary high-water mark of a waterbody, riparian area or wetland
- Performing daily inspections for fuel, oil and fluid leaks on vehicles, equipment and machinery and shutting down and repairing any leaks found
- Hunting and harvesting of wildlife or possession of firearms by project staff will not be permitted while working on project sites

8.3.5 Characterizing residual effects

Table 6-3 describes the factors used to characterize the interactions among the project and wildlife and wildlife habitat.

Given the application of the above-described mitigation measures, the effects of the project in terms of the wildlife and wildlife habitat are summarized as follows:

- Direction: Adverse
- Magnitude: Negligible
- Geographic extent: Local
- Duration: Moderate Term
- Frequency: Infrequent
- Reversibility: Reversible

In conclusion, due to the limited change in wildlife habitat availability and mortality risk, use of previously disturbed areas for part of the route, and consideration of

sensitive wildlife timings windows and buffers, the residual effects for wildlife and wildlife habitat are not anticipated to be significant.

8.3.6 Follow up and monitoring

Due to limited project interactions and well-established wildlife and wildlife habitat protections and mitigation measures, wildlife monitoring is not proposed for the project. If significant wildlife habitat damage is observed, remediation efforts will be implemented, and a monitoring plan developed to address concerns at each site. Protections for wildlife habitat will be implemented as part of the environmental protection program.

The environmental protection program is a framework for implementation, management, monitoring and evaluation of protection activities in keeping with environmental effects identified in environmental assessments, regulatory requirements and public expectation. It prescribes measures and practices to avoid and reduce adverse environmental effects on wildlife habitat (e.g., wildlife reduced risk work windows, setbacks and buffers for sensitive habitat).

8.3.7 Cumulative effects

Table 6-5 lists the interactions between current and future projects/activities and wildlife and wildlife habitat. Four of these have potential interactions including agriculture, domestic resource use, Portage area capacity enhancement project, and the Crescent Lake Causeway.

Ongoing agriculture has the potential for further vegetation clearing, reducing suitable habitat for wildlife. Domestic resource use involves the harvest of wildlife. These activities have a long history and therefore would be considered part of the baseline conditions.

The Portage area capacity enhancement project may result in an additional risk of wildlife mortality, including bird-wire collisions with a new transmission line. However, with the implementation of mitigation, this risk will likely to be minimal.

The Crescent Lake Causeway will alter habitat at Crescent Lake and may also temporarily remove wildlife habitat. This could act cumulatively with transmission line construction as they are both under construction at the same time. However, with mitigation, potential wildlife habitat loss or disturbance will be minimal and short term.

8.3.8 Sensitivity to future climate change scenarios

The predicted climate change scenarios would not change the significance determinations for wildlife, as they are not anticipated to measurably increase the magnitude of effects of the Project on habitat availability, wildlife mortality or disturbance/annoyance to wildlife. Effects of future climate change scenarios on wildlife and wildlife habitat will directly relate to the anticipated increase in temperature and associated extreme weather events (e.g., flooding, fires) and may include change in habitat availability resulting from extreme weather events, reduced food availability (e.g., shifts in the seasonal timing of insect emergence, rotting of food caches due to warmer temperatures) and shifts in species ranges.

8.4 Economic opportunities

8.4.1 Summary of interactions

Effects to population, employment and economy are experienced primarily during construction, with the potential for employment opportunities and presence of the workforce in the regional assessment area. Each phase of construction will have approximately 30 workers. Potential project effects on the economy are beneficial rather than adverse.

Potential direct benefits from the Project would be associated with construction employment; however, these opportunities will be limited due to the small workforce required. There may also be opportunities for indirect benefits to communities in the vicinity of the Project (City and communities in RM of Portage la Prairie) through the provision of goods and services to the construction workforce (e.g., fuel, food). Long Plain First Nation (LPFN) has indicated that economic benefits experienced from the project are a priority. LPFN representatives indicated members want access to employment and contract opportunities throughout all project stages. LPFN is also interested in small business opportunities that may support the project directly or indirectly.

During the operations and maintenance phase there will be no employment opportunities since the existing Manitoba Hydro workforce will be used to patrol the transmission line and conduct any maintenance activities. Effects on economy during operations will therefore be negligible as no new operation or maintenance jobs will be created.

Indigenous communities expressed interest and concerns with economic opportunities related to the project. Dakota Tipi First Nation shared that: "*DTFN often*

seeks to have more involvement in economic development opportunities such as having the ability to bid on various areas of the construction sectors of such projects and being awarded such. DTFN does have some concerns with how development may impact local economic development and markets (businesses within the DTFN)" (Appendix C).

Long Plain First Nation expressed concern regarding impacts to their future economic well being due to potentially removing high quality land from Treaty Land Entitlement selection. LPFN expressed concern regarding decreased property value related to the presence of the line near their current property and concerns regarding the potential implications of the project on their future development plans.

Manitoba Hydro considered identified TLE selections it was aware of and did not route through those areas. The route also considered future development potential in the Keeshkeemaquah reserve area. The route uses a substantial portion of the existing right-of-way and road allowance, reducing the likelihood of traversing an area preferred for future development.

8.4.2 Mitigation measures

Manitoba Hydro will work with interested Indigenous communities to prepare a list of skilled labor, equipment, services and ancillary supports available for use on the project.

8.4.3 Assessment conclusion

The effects of the Project in terms economic opportunities are summarized as follows:

- Direction: Positive
- Magnitude: Small
- Geographic extent: Regional
- Duration: Medium Term
- Frequency: infrequent
- Reversibility: Reversible

In conclusion, the residual effects are assessed as being minor but positive.

8.5 Human health and safety

Human health and safety is a valued component because local changes (e.g. construction noise) resulting from the project may have health effects on residents within the local assessment area. Such effects may be manifested as increased stress or annoyance, or as changes in the physical health of some residents.

8.5.1 Significance thresholds

8.5.1.1 Electric and magnetic fields (EMF)

Health Canada recognizes the international exposure guidelines for EMF established by the International Commission on Non-Ionizing Radiation Protection, a group recognized by the World Health Organization as the international independent advisory body for non-ionizing radiation protection.

Government and international medical agencies, including Health Canada, the US National Institute of Health, and the National Institute of Environmental Health Sciences have thoroughly reviewed the available scientific information about EMF, but have not recommended regulatory standards.

8.5.1.2 Noise

Health Canada does not have noise guidelines or enforceable noise thresholds or standards and encourages consultation with provincial and municipal authorities to determine appropriate local standards or regulations for projects. Health Canada does, however, consider the following noise induced endpoints as health effects: noise-induced hearing loss, sleep disturbance, interference with speech comprehension, complaints, and change in the percentage of the population at a receptor location who become highly annoyed. Health Canada advises different assessment approaches depending on project phase, duration of noise-producing activities, and range of noise levels (Health Canada 2017).

Hearing loss impacts are not typically considered in environmental assessments because project-related sound levels rarely reach these high levels at the locations of impacted receptors. However, noise-induced hearing loss may be a concern when project activities such as blasting, pile-driving and jack hammering are expected. When considering impulsive noise, Health Canada suggests following the World Health Organization recommendation to avoid hearing loss resulting from impulsive noise exposure and that peak sound pressures not exceed 140 decibels for adults and 120 decibels for children (World Health Organization 1999).

Implosive sleeves may be used for fusing the conductors. The implodes create a flash and a loud boom similar to the sound of a 12-guage shotgun blast (about 110 decibels; (CapX2020 2012)). As this is below the level for potential hearing loss, this will not be considered further in the assessment.

Manitoba's guidelines for sound pollution specify outdoor environmental sound level objectives for residential, commercial, and industrial areas and include maximum

acceptable noise levels for the protection of human health (Manitoba Department of Mines 1977). These guidelines are applied in the assessment of human health to determine whether predicted levels of noise are above the acceptable thresholds, and to determine whether additional mitigation measures may be needed to reduce or control noise levels.

Manitoba Hydro has received Environment Act licenses for several recent projects. These licenses have included requirements for noise. In these licenses, noise nuisance means an unwanted sound, in an affected area, which is annoying, troublesome, or disagreeable to a person residing, working, or present in an affected area. The Licencee (Manitoba Hydro) shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the development, and shall take such steps as the Director may require, to eliminate or mitigate a noise nuisance.

8.5.1.3 Summary

Significant effects on human health and safety are those that meet any of the following criteria:

- EMF
  - Estimated exposure of electric or magnetic field in human tissue exceeds the International Commission on Non-Ionizing Radiation Protection or International Committee for Electromagnetic Safety reference levels.
- Noise
  - Creation of a noise nuisance
    - If five complaints have been reported by residents
    - sleep disturbance
  - Interference with speech comprehension
  - Change in the percentage of the population at a receptor location who become highly annoyed

8.5.2 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas. Valued component specific details are described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area is defined as 500 meters from either side of the project centreline (Map 8-3). It represents the area where noise and visual impacts are likely to be most pronounced or identifiable.

Regional assessment area: The boundaries of the Rural Municipality of Portage la Prairie (Map 8-4). Effects of other projects and activities occurring within the regional assessment area that have potential to act cumulatively with the project are assessed based on the regional assessment area

8.5.3 Effects pathways

There are three main pathways that can lead to effects to human health and safety:

- Change to electric and magnetic fields
- Changes to the environment (e.g. noise levels, EMF exposure) leading to stress and annoyance in the local population due to
  - perceived health effects from EMF exposure
  - noise from traffic and construction activities
  - changes in the landscape (visual quality) / changes to property values
- Accidents or other unplanned events

8.5.3.1 Change to electric and magnetic fields

Project-related EMF are only associated with the operation and maintenance phase; therefore, the construction phase is not assessed. The voltage and current carried by the transmission line will generate EMF. The EMF diminishes rapidly with distance from the transmission line. Physical buffers, such as trees and buildings, will reduce the intensity of electric fields but not magnetic fields. The effect of EMF on human receptors depends on the EMF frequency. Extremely low frequency EMF, generated by transmission lines with a frequency of 60 Hertz, have the capacity to induce electric fields in a human body but the levels are extremely small (World Health Organization 2015).

Numerous reviews of research literature on exposure to extremely low frequency EMF and possible adverse health effects have been conducted by national and international scientific and governmental agencies, including Health Canada and the World Health Organization. None of these agencies have concluded that exposure to extremely low frequency EMF is a demonstrated cause of any long-term adverse health effect. Study results are detailed in the EMF health research update report (Exponent 2015b), conducted for the recently constructed Manitoba-Minnesota transmission line.

Canadian (Manitoba Clean Environment Commission 2001) and international studies ((World Health Organization 2007); (International Agency for Research on Cancer 2002)) have concluded that there are no known adverse health consequences of exposure to extremely low frequency EMF at the levels generally found in residential and occupational environments, including proximity to electric transmission and distribution facilities. There is no conclusive evidence of any harm caused by exposures at levels normally found in Canadian living environments (Health Canada 2004).

While Manitoba Hydro is sensitive to public concerns regarding potential health effects from electric and magnetic fields, there is at present no scientific evidence to justify modification of existing practices respecting facilities for the generation, transmission and distribution of electricity.

8.5.3.2 Changes to the environment

The construction and operation of the transmission line may have effects on mental health as a result of perceived EMF exposure, noise and changes in the landscape.

Perceived EMF exposure

Several key studies conducted by the World Health Organization (WHO) and the International Agency for Research on Cancer (IARC) confirm there is no link between exposure to EMF fields and adverse human health outcomes. Despite this, there remains a perception that transmission lines pose health risks ((Furby, et al. 1988); (Devine-Wright 2013); (Cain and Nelson 2013); (Keir, Watts and Inwood 2014)).

The closer individuals live to a transmission line the greater the increase of concerns related to perceived health risks (McMahan and Meyer 1995). Several studies have assessed the link between the exposure of EMF and the perceived health risks that are thought to be associated with the presence of transmission lines ((Linder 1995); (MacGregor 1994); (Morgan, et al. 1985)). While most studies found no definitive health risk, there are often increased levels of stress and anxiety that result from the presence or siting of transmission line development.

Noise

The World Health Organization (World Health Organization 2002) defines health as *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". This implies that noise-induced annoyance may be considered an adverse effect on health (World Health Organization 2011).

Below the exposure threshold of biological damage to the ear, noise can cause potential health impacts, such as sleep disturbance and/or cause long-term high annoyance, an indicator of potential health impacts, depending on the interference of the noise with what someone is trying to do (e.g. sleep, concentrate or communicate) and the expectation of peace and quiet during such activities (e.g. in a quiet rural area or during Indigenous spiritual ceremonies; (Health Canada 2017).

As construction takes place during the day, effects to sleep, and noise guidelines for night, will not be considered in the assessment. This assessment focusses on annoyance.

Health Canada (Health Canada 2017) developed guidance for evaluating human health impacts of noise in environmental assessment. The main steps in assessing the potential health impacts of changes in noise associated with a project are the following:

1) Identify people (receptors) who may be affected by the project-related noise
2) Determine the existing (baseline) noise levels at representative receptors, by measurement or estimation
3) Predict project-related changes in noise levels for each phase of the project (construction, operation and decommissioning)
4) Compare predicted noise levels to relevant guidelines and/or standards
5) Identify and discuss the potential human health impacts associated with predicted changes in noise levels
6) Consider mitigation measures, their implementation, and any residual effects, after the measures are implemented
7) Consider community consultation and prepare a complaints-resolution plan
8) Consider the need for monitoring of noise levels.

Health Canada (Health Canada 2017) recommends, in some cases, a less extensive assessment may be warranted. If noise levels at all receptors are not expected to approach the US EPA's (US Environmental Protection Agency 1974) mitigation noise levels.

Identify people (receptors) who may be affected by the project-related noise

Noise levels from construction sites range from 90 decibels at 15 m down to less than 60 decibels at 500 m (Bonneville Power Administration 2012). Based on Health Canada guidelines (Health Canada 2017), no effects are anticipated below 60 decibels. which no effect is expected (see below for details). Based on this information a 500 m buffer was drawn around the transmission line right-of-way (Map 8-3) to determine potential receptors.

Potential receptors include over 70 homes and 50 recreational sites, as well as several picnic sites, a school and a church.

Transportation routes are not included as all construction traffic will follow existing high use highways and municipal roads. As described in the traffic section (section 7.12) construction traffic will be insignificant relative to daily public use.

Determine the existing (baseline) noise levels at representative receptors, by measurement or estimation

Health Canada (Health Canada 2017) suggests a conservative approach to estimate a reasonable worst-case scenario and assume baselines of 35 dBA for rural areas and 45 dBA for urban/suburban areas. As the proposed project is in an exurban area, an assumed estimated baseline noise level of 45 dba will be used for most areas. Driving a car on the highway with the windows open is greater than 85 dBA (Health Canada 2016). Therefore, a large portion of the local assessment area would expect noise levels in this range.

Predict project-related changes in noise levels for each phase of the project (construction, operation and decommissioning)

The largest source of noise during construction is the combined operation of machinery (i.e., bulldozers, transportation vehicles, clearing equipment, and cranes) and periodic explosive discharges by implosive sleeves during conductor stringing. Use of implosive sleeves will be limited to a short duration of time near the end of construction only. Notifications will be provided to area residents to alert them of exploding discharge noise prior to commencing this work. General construction noise will be 89 dBA at 15 m (Table 8-1) and fall to less than 60 dBA at 500 m (Bonneville Power Administration 2012).

Table 8-1: Typical noise emission rates for construction equipment

Type of equipment	Decibels at 15 metres
Implosive sleeve*	110
Road grader	85
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Crane	85
Combined equipment**	89
Helicopter	80-100

*CAPX2020 (2012)
**Thalheimer (1996) – does not include helicopters or implosive sleeves

The largest source of noise along the transmission line during operation is associated with corona discharges that result in audible noise typically heard as a hissing or crackling sound (Exponent 2015a). Corona discharges are produced at points along the transmission line conductors and are more common during foul-weather events (Exponent 2015a). Other sources of noise will be produced during maintenance activities that will be conducted using equipment including quads, snowmobiles, and possible infrequent use of helicopters.

Exponent (Exponent 2015a) modeled the electrical and acoustic environment of the Manitoba-Minnesota Transmission Project (500 kV line). During medium-fair weather conditions, maximum audible noise associated with operation of the transmission lines anywhere along the edge of the right-of-way is expected to be approximately 23 dBA (Exponent 2015a), which is below the typical ambient noise typically experienced in quiet rural locations (30-40 dBA). This is a conservative estimate as the audible noise should be lower for this project due to the lower voltage running through the conductor. During periodic foul weather conditions that may cause corona discharges, maximum audible noise at the edge of the right-of-way is expected to be 48 dBA, dissipating to 45 dBA at a location 30 m from the edge-of-right-of-way (Exponent 2015a).

Compare predicted noise levels to relevant guidelines and/or standards

For construction phases less than one year in duration, Health Canada (Health Canada 2017) has set the guideline of 62 dBA average noise level over a 24-hour period. This guideline is based on a previous study conducted by Health Canada that determined the level at which people start to find construction equipment highly annoying. Health Canada guidance including the percent highly annoyed calculation relies on ISO 1996-1:2003 (International Organization for Standardization 2003).

Health Canada uses 62 decibels when it considers effects related to widespread complaints. When project sound levels are greater than 75 dba, complaints can be expected to include strong appeals to authorities to stop noise.

Identify and discuss the potential human health impacts associated with predicted changes in noise levels

Within 500 m of the construction site, construction noise levels will be above the guideline value of 62 dBA and therefore we can expect some effects. The effects relate to nuisance effects that may cause stress (stress discussed below).

During operation, noise levels will be minimal. During inclement weather, there may be some audible noise, but it is below levels that would be considered a nuisance.

Consider mitigation measures, their implementation, and any residual effects, after the measures are implemented

Mitigation is discussed in Section 8.5.4.

Consider community consultation and prepare a complaints-resolution plan

Manitoba Hydro does extensive engagement for upcoming projects. Details of engagement for this project are covered in chapters 4.0 and 5.0. Manitoba Hydro will continue to engage interested parties, will maintain the project communication methods in place (project phone line and email) and work to resolve any issues that arise. Manitoba Hydro uses a SharePoint database to record project communications. This allows tracking of any complaints and maintains accountability.

Consider the need for monitoring of noise levels.

The project area includes both urban, rural residential and rural areas. The noise created by construction will be periodically above ambient but should not cause a level of nuisance and stress that would justify a monitoring program.

Additional stressors

Several studies have linked how power transmission lines have increased levels of stress and annoyance in relation to perceived changes in property values, aesthetic concerns, and health and safety concerns. Furby et al. (Furby, et al. 1988) found that transmission line development resulted in increased concerns about property values and implications of conventional compensation procedures. Thomas and Evans (Thomas and Evans 1996) found residents living near a transmission line reported experiencing moderately negative effects on their health and safety, property values and aesthetics. While most studies found no definitive health risk, there are often increased levels of stress and anxiety that result from the presence or siting of transmission line development.

Stress

Stress and annoyance can be caused by multiple measurable and perceived contributing factors as discussed above. Stress is thought to contribute to the development of many adverse health conditions including heart disease, stroke, high blood pressure, upper respiratory disease and poor immune response (Scneiderman,

Ironson and Siegel 2005). Exposure to stress can also contribute to behaviours such as smoking, over-consumption of alcohol and less-healthy eating habits.

In their BP6/BP7 report the MMF describe some of the fears and uncertainties that the Manitoba Métis community holds about transmission line developments in general. *"We had power lines in the back there. And we never liked to pick berries. You could always hear, and everybody always told us the people who lived in our house along there, none of them ever had any kids. It was because of the hydro lines they said, eh? So who knows whether it was or not, but all those things like that stay in mind, and when I pick berries, I didn't like picking near the hydro lines either. It was just the, they were ugly to look at. They don't represent the sacred, like, peaceful area to gather our stuff. I would never go pick by the hydro lines or hang out. And now they've got a snow route going right down the highway line, hydro lines."* This quote was drawn from a Bipole III interview but applies generally to all transmission lines. The MMF BP6/BP7 report does not indicate that there are plant gathering areas that will be traversed by the proposed BP6/BP7 project.

8.5.3.3 Accidents or other unplanned events

During construction, accidents and / or incidents may occur. The following are most likely to have community-related implications to safety: collisions, spills and leaks of hazardous materials and fire.

The operation of vehicles and heavy equipment on provincial highways, and the right-of-way could result in human collision mortality or injury. Human incidents may involve vehicle-vehicle collisions or vehicle-pedestrian collisions. During construction, the potential for these types of collisions is primarily influenced by traffic volumes.

During construction, environmentally hazardous materials such as petroleum hydrocarbons (e.g., gasoline, diesel and lubricating oils) and hydraulic fluid will be used. Spills or leaks of petroleum hydrocarbons could occur along the right-of-way, as a result of incidents involving heavy equipment, vehicles that contain fuel, oil and lubricants (e.g., excavators and cranes). This could contaminate the air, soil or water and affect the safety of people in the area.

There is also potential for fires during the construction phase, which could be a safety risk for the public.

8.5.4 Mitigation

8.5.4.1 Electric and magnetic fields

Although no mitigation is required, Manitoba Hydro continues to undertake the following actions regarding EMF concerns:

- Designing the transmission line to meet international standards and guidelines set forth by the International Commission on Non-Ionizing Radiation Protection. These guidelines have been adopted by Health Canada and the World Health Organization
- Monitoring of worldwide research programs on electric and magnetic fields for its large-scale projects
- Maintaining communications and provision of technical information to interested parties, including the public and agencies responsible for public and occupational health and the environment

8.5.4.2 Stress and annoyance

To mitigate stress and annoyance caused by real and perceived environmental effects, the route selection process considered several factors, including existing land uses, feedback provided during project engagement and the presence of existing infrastructure. The following measures will be implemented to mitigate the effects of stress and annoyance:

- Manitoba Hydro will enter into easement agreements with private landowners whose land is crossed by the transmission line. The information provided to landowners during this process is expected to alleviate concerns related to project uncertainty
- The final detailed project design will consider standards for setbacks and overhead clearance, including CSA standards such as CAN/CSA-C22.3 No. 1-10 “Overhead Systems” and CAN/CSA 22.3 No. 60826-10 “Design Criteria for Overhead Transmission Lines”
- Manitoba Hydro will continue to share up to date information regarding project activities and timelines and to work to resolve concerns
- Mitigation measures identified in Section 8.7 to reduce adverse effects on visual quality, and associated stress and annoyance related to changes in viewscapes

The following mitigation measures will reduce adverse effects on stress and annoyance related to construction activities:

- Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations.
- Mud, dust and vehicle emissions will be managed in a manner that considers the safe and continuous public activities near construction sites where applicable.
- Noisy construction activities where noise and vibration may cause disturbance and stress in built-up areas will be limited to daylight hours.
- A communication protocol will be developed to notify affected parties of blasting operations and conductor splicing. Affected parties may include the RCMP, municipalities, landowners and resource users.

Mitigating blasting noise (Health Canada 2017).

Noise due to implosions has unique characteristics. Therefore, Health Canada holds the view that for blasting during short-term construction (< 1 year), limits on the number of blasts should be implemented irrespective of other noise levels due to background sources or construction activities.

Manitoba Hydro will combine blasts to minimize the overall number of blasts.

General mitigation measures for noise (Health Canada 2017)

- Regularly train workers and contractors to use equipment in ways that minimize noise
- Provide notification to the public ahead of implodes related to conductor stringing with contact information
- Ensure that site managers periodically check the site, nearby residences and other sensitive receptors for noise problems so that solutions can be quickly applied
- Include in tenders, employment contracts, subcontractor agreements and work method statements, clauses that assure the minimization of noise and compliance with directions from management to minimize noise
- Avoid the use of radios and stereos outdoors and the overuse of public address systems where neighbours can be affected
- Avoid shouting and minimize talking loudly and slamming vehicle doors
- Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours and other relevant practices (e.g. minimizing the use of engine brakes and periods of engine idling)

8.5.4.3 Safety

The public will be made aware of construction activities though the public engagement process and through the provision of appropriate signage. Standard safety procedures, designated truck routes and signage will also be in place to mitigate potential effects of project traffic.

During construction, the right-of-way will be considered an active construction site. Therefore, access will be limited to only those individuals required to be there and not members of the general public. Standard workplace health and safety measures, including appropriate signage will be applied to work sites.

Construction traffic will be limited to daytime hours. All heavy equipment will be kept within construction areas and traffic signs and barricades will be installed and monitored. All traffic laws and by-laws obeyed. Construction zones and intermittent lane closures can be expected during the construction period on roads / trails / sidewalks adjacent to work activities. Full closures would be in effect for short periods of time during stringing, where the wire crosses overtop roads / sidewalks / trails.

Manitoba Hydro maintains procedures that will include a plan for preventing and combating fires. A fire prevention plan will be implemented and adhered to by Manitoba Hydro and its contractors consisting of fire prevention measures and incident response procedures to address public safety.

8.5.5 Characterizing residual effects

Potential effects to health include electric and magnetic fields, stress and annoyance, decrease in the consumption of subsistence foods and traditional medicines, and safety issues. Given the application of the above-described mitigation measures the effects of the Project in terms of health are summarized as follows:

- Direction: Adverse
- Magnitude: Small
- Geographic extent: Local
- Duration: Medium-term
- Frequency: Regular
- Reversibility: Reversible

Due to the short duration of construction and the well tested mitigation measures, the project should not cause nuisance effects that would increase stress levels that would cause residual health effects; therefore, the residual effects for human health and safety are not anticipated to be significant.

8.5.6 Follow-up and monitoring

Construction monitoring is proposed for an Indigenous monitor. This monitor may consider human health effects of construction during their monitoring. There is no other follow-up monitoring required for the assessment of potential human health risk. In terms of health concerns related to EMF, Manitoba Hydro will continue to monitor studies and make information available to the public.

8.5.7 Cumulative Effects

None of the project listed in Table 6-4 will produce EMF, therefore there will be no overlap. However, several of them may have overlapping construction periods or continue after construction is complete, extending the length of time construction noise is prevalent in the area. This could increase stress and annoyance leading to potential health implications. However, all projects listed (other than the truck and travel center) are greater than 500 m away. The noise and visual intrusion receptors will be different, other than transient receptors.

Increased construction traffic could increase safety risks.

8.6 Parks and recreation

Parks and recreation were selected as a valued component because of regulatory considerations and its importance to communities, property owners, resource users (e.g., hunters and trappers, commercial operators and the general public), and other interested parties.

The transmission line will intersect residential areas and areas used for commercial (e.g., agriculture) and non-commercial (e.g., fishing and recreation) land use. Agriculture, due to its importance in the regional assessment area as a land use, is addressed separately (Section 8.8).

Parks and recreation includes the following topic areas:

- Crown land, designated lands and protected areas
- Recreation and tourism: trails (hiking, snowmobile, all-terrain vehicles [ATVs]), waysides/picnic sites, campgrounds, golf courses, recreational facilities, lodges, attractions/museums and tourism sites, canoeing/navigation

The transmission line routing process considered potential effects on parks and recreation as discussed in Section 3.3.

8.6.1 Significance thresholds

A residual effect on parks and recreation is considered significant if:

- unless addressed through compensation, it widely disrupts, restricts or degrades present recreational use of the area to a point where activities cannot continue at or near baseline levels
- the route crosses an area of crown land that has a designated purpose statement / mandate and that goal or mandate could not be achieved
- any part of the project should contravene any of the legislation described below

Manitoba Parks and Resource Protection (MRPP) staff shared concerns about segments that could affect Yellow Quill Park:

"clearing of the trees in the right-of-way, if a line were to be developed here would be considered by MPRP staff to be a significant impact to the park. The park is heavily used by residents and managed through an agreement with the rural municipality"

8.6.1.1 The Provincial Parks Act

Administered by the Parks and Protected Spaces Branch of Manitoba Conservation and Climate, *The Provincial Parks Act* (C.C.S.M. c. P20) was established to protect natural lands and the quality of life; manage existing and future provincial parks so representative examples of natural and cultural heritage are conserved; and allow economic opportunities to contribute to the protection of the province's natural regions.

The Act provides for the designation and management of provincial parks as part of a system plan. The system plan sets out proposed boundaries, classifications and land use categories of provincial parks.

Provincial park classifications include wilderness park, natural park, recreation park or heritage park. Land in provincial parks is categorized into one or more of the following land use categories: wilderness, backcountry, resource management, recreational development, heritage or access.

The Yellow Quill Provincial Park and Portage Spillway Provincial Park occur within the local assessment area. They are both recreational parks. According to the management plan, Yellow Quill Provincial Park will continue to serve as an off-leash dog park for residents of Portage la Prairie and the surrounding area (Manitoba Sustainable Development 2017). According to the management plan, Portage Spillway Provincial Park will be managed to provide a basic, seasonal site for picnicking and fishing access (Manitoba Conservation and Water Stewardship 2013).

8.6.1.2 The Planning Act and Provincial Planning Regulation

Administered in cooperation with Manitoba Municipal Government and the associated municipal councils, *The Planning Act* provides a framework for land use planning strategies at the provincial, regional and local scale.

Requirements of the Act and its regulations do not apply to the Crown or Crown agencies. Manitoba Hydro notes that, as a Crown Corporation, they are not directly subject to the legislative provisions and are generally exempt from them in terms of development planning. However, land use planning is considered during development of the project primarily during the routing process.

8.6.2 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas. Valued component specific details are described below:

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area is defined as 500 m on either side of the centreline (Map 8-3). This covers an area where effects on parks and recreation are likely to be most prevalent due to noise or visual intrusion.

Regional assessment area: The regional assessment area includes the boundaries of the Rural Municipality of Portage la Prairie (Map 8-4). Effects of other projects and activities occurring within the regional assessment area that have potential to act cumulatively with the project are assessed based on the regional assessment area.

8.6.3 Effects pathways

There are two main pathways that can lead to effects to parks and recreation:

- Change in access to recreational areas
- Changes to the environment (e.g. noise levels, visual intrusion) leading to:
  - A decrease in the ecological integrity of a provincial park
  - Disruption / intrusion to recreational activities, sites and areas

8.6.3.1 Change in access to recreational areas

Land clearing and construction may physically interfere with recreational activities or disrupt recreationalists from accessing preferred areas if there is construction occurring near these areas.

8.6.3.2 Changes to the environment

Project interactions that can affect parks and recreation use include the potential for adversely affecting established recreational activities and visual aesthetic values. The presence of construction equipment or the noise generated during construction and the presence of the line during operation may alter a recreational user's quality of experience. This may cause people to avoid these activities or reduce overall enjoyment.

The final preferred route avoids both provincial parks. There is no direct impact on these; however, it does run within 500 m and therefore there could be nuisance effects due to noise and visual intrusion.

There is potential for visual quality and noise concerns for recreational venues along the project development area, such as baseball diamonds, tennis courts or golf course (Map 8-3).

The Assiniboine River is a scheduled water under the *Canadian Navigation Protection Act*. The proposed project does not affect navigation, but, as it runs parallel to the river for several hundred meters and there will be some riparian vegetation clearing, it may affect a user's experience while navigating the river.

8.6.4 Mitigation measures

During transmission line routing, areas of least preference were identified and considered when developing alternate routes. Areas considered for avoidance included provincial parks, campgrounds, picnic areas and recreational sites/trails (e.g., golf courses, skiing areas). Mitigation measures of potential project effects on designated lands, protected areas, recreational activities and access include the following:

- Clearing and disturbance will be limited to defined rights-of-way and associated access routes
- Existing access roads will be used where available.
- Canadian Standard Association stream crossing clearance guidelines will be adhered to for the construction, operation and maintenance of the transmission lines.

8.6.5 Characterizing residual effects

Potential effects to parks and recreation relate primarily to nuisance effects (noise and visual intrusion). Based on this, a buffer of 500 m was placed around the project footprint as this is where both noise and visual impacts will be most pronounced.

Map 8-3 shows all recreational sites within 500 m of the project. There are over 50 sites shown including tennis courts, baseball diamonds and soccer fields.

During the construction phase, the presence of workers and equipment in the local assessment area will generate noise, dust and a visual presence. This may detract from the recreational experience causing tourists/recreational users to reduce or stop their use of areas near work sites during periods of construction activity. In addition, access to some areas will be restricted at times by the nature of the work undertaken or for safety reasons (e.g., during use of implosives for conductor stringing).

Recreational activities such as walking, biking, tennis or golf or cross-country skiing may be disturbed during construction, but this disruption is expected to be temporary and short term.

With the adoption of mitigation measures, the project will be constructed to limit possible disturbance and disruption to recreational uses and users. In consideration of mitigation measures, the project will have a low disturbance effect on recreational areas and activities. Disturbance or disruption will be temporary and short term during the construction period.

Project operation and maintenance has the potential to affect recreational users through noise generation, disturbance and changes in visual quality. A portion of the line follows the existing corridor and therefore the presence of the line has been part of the landscape for years. Therefore, the potential effects are limited.

Table 6-3 describes the factors used to characterize the interactions among the Project and aquatic resources.

- Direction: Adverse
- Magnitude: Small
- Geographic extent: Local
- Duration: Long term
- Frequency: Regular
- Reversibility: Permanent

With the implementation of mitigation measures, residual effects from the project on parks and recreation are anticipated to be low magnitude. The socio-economic context for the residual effects across the local assessment area is dependent upon

location within the project development area. Designated and is of moderate resilience as designated lands, protected areas and recreation can accommodate some change in the land base. There are numerous recreational opportunities available across the landscape and as such the area is likely adaptable to some change in land use. Effects will be short to medium term and continuous and occur during the construction and operation and maintenance phases.

The routing process avoided provincial parks and other Crown land parcels. Due to the location of the project, within an exurban area, the project should not cause nuisance effects that would decrease the use and enjoyment or increase stress levels that would cause residual health effects. The residual effects for human health and safety are not anticipated to be significant.

8.6.6 Follow up and monitoring

Manitoba Hydro's practice is to develop project-specific environmental protection plans where mitigation measures are stipulated for construction, operation and maintenance activities. These measures are regularly reviewed for their effectiveness as part of a process of adaptive management in project monitoring and follow-up.

Manitoba Hydro has provided and will continue to provide project information to relevant agencies and organizations as required and requested.

Potential follow-up related to parks and recreation may involve flagging environmentally sensitive sites and through construction inspection. Inspection will determine whether the item or activity is in conformance with mitigation requirements.

8.6.7 Cumulative effects

Several projects listed in Table 6-4 may have overlapping construction periods or continue after construction is complete, extending the length of time construction noise is prevalent in the area. This could increase noise and/or visual intrusion. However, all projects listed (other than the truck and travel center) are greater than 500 m away therefore, the receptors will be different than those of the proposed project. . The noise and visual intrusion receptors will be different.

8.7 Property value, residential development and visual quality

Property value and residential development were selected as valued components because of the importance to communities and property owners. Property value and residential development considers land tenure and property ownership, residential

development, proposed residential development (i.e., private subdivisions), and private property value.

Visual quality is a valued component because the transmission line and its associated infrastructure and vegetation clearing have the potential to change the visual quality of the landscape from viewpoints important to residents, First Nations and Métis, recreationalists, tourists and interested parties. An adverse change in the visual landscape can contribute to stress and annoyance; for example, due to the perception that aesthetic quality, recreation values, or property values will be affected.

8.7.1 Significance thresholds

A residual effect on property value or proposed development is considered significant if, unless addressed through compensation, it widely disrupts, restricts or degrades property values or development potential.

The thresholds for assessing the significance of effects on visual quality, defined below, consider the effect of the project within the planning context and intended management vision for the area, as well as the degree of change from current baseline conditions.

The significance of visual effects depends primarily on the anticipated magnitude of the visual alteration created by the project and the visual sensitivity of the landscape, including the anticipated viewer response to the visual alteration.

A residual effect is considered significant if the following three conditions occur:

- The average visual landscape character changes from relatively undisturbed to disturbed
- The closest towers at high value viewpoints are moderately to highly prominent
- Visual quality is an important planning objective by government authorities

The Portage la Prairie development plan (Portage la Prairie Planning District 2018) outlines several common general goals related to visual quality. These include the promotion of development that enhances the aesthetic quality and visual cohesion of residential of commercial developments. The plan recognizes that urban parks and recreation environments have a significant role in defining the character and quality of a community and are experienced by the visual and physical linkages that permit people to interact and move through space.

8.7.2 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas. Valued component specific details are described below. The following areas are based on guidelines for visual assessment ((Palmer 2016); (Driscoll, et al. 1976); (Sullivan, et al. 2014)). As the potential effects to property values and residential development relate to the presence of the towers and visibility, the assessment areas are treated the same for both.

Project development area: Footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area corresponds to lands with a potential foreground (0-500 m; Map 8-3) or midground view of the transmission line corridor, 5 km on either side of the final preferred route (Map 8-2).

Regional assessment area: The regional assessment area corresponds to the areas with a potential view of the line, to the maximum extent of visibility, which includes areas within 15 km of the final preferred route; Map 8-2).

8.7.3 Effects pathways

8.7.3.1 Property values and residential development

The assessment of change in property focuses on three effects:

- Change in private property value
- Nuisance effects on residences
- Conflict with land development potential

Private Property Values

The physical presence of transmission line infrastructure could affect the value of residential property near the right-of-way. Factors that can influence property values include change in aesthetics; real or perceived nuisances and health risks; real or perceived change in the use and enjoyment of the property; and distance from the property to the transmission line.

The literature is inconclusive on whether transmission lines affect property values. Some studies show a small, negative effect on property values immediately after construction that diminish over time and distance ((Cowger, Bottemiller and Cahill 1996); (Jackson and Pitts 2010.); (Headwaters Economics 2012)).

In a review of transmission line effects on housing prices, Bottemiller and Wolverton (Bottemiller and Wolverton 2013) found a small, negative effect occurring when rights-of-way abut single-family homes. Effects on property values were more substantive for higher priced homes and negligible for average priced homes.

While transmission line easements were found to have a consistent small negative effect on the value of adjacent affected properties, the statistical significance of this finding has varied (Elliot Grover & Co. Ltd. 2008).

Effects on property value varied depending on the location and visibility of transmission towers to properties ((Colwell 1990); (Cowger, Bottemiller and Cahill 1996); (Bottemiller, Cahill and Cowger 2000); (Elliot Grover & Co. Ltd. 2008); (Chalmers and Voorvart 2009); (Jackson and Pitts 2010.)). Other studies have found no evidence that proximity to, or visibility of, high voltage transmission lines affect property values (Elliot Grover & Co. Ltd. 2008).

Since 2000, Manitoba Hydro has conducted an annual property value-monitoring program in the Birds Hill and Lister Rapids areas in the Rural Municipalities of East and West. St. Paul. The monitoring program was initiated in response to property owner concerns regarding the construction of the Dorsey-St. Vital 230 kV transmission line within an existing right-of-way. Real estate transactions for developed single-family residential properties within the monitoring area were tracked from January 1, 1992 to December 31, 2013 (Manitoba Hydro 2014). The monitoring area was divided into:

- Adjacent – properties located immediately next to the transmission right-of-way without any other properties located in between
- Nearby – properties located between the adjacent property and the next property line
- Other – all other property located within the project development area

The 2014 monitoring report noted that housing prices have fluctuated within range of adjacent, nearby and other properties (Manitoba Hydro 2014).

The findings of an econometric analysis conducted for Manitoba Hydro by Prairie Research Associates (PRA) on the effect of transmission lines on residential property values were consistent with the existing literature. PRA found mixed evidence that transmission lines affect property values. Evidence that pointed to a negative effect suggests that any effect is small and diminishes rapidly as distance to the transmission line increases. While the analysis indicates a small, negative correlation between transmission line proximity and assessed value, no such negative correlation occurs regarding sales price (Prairie Research Associates 2015).

Nuisance effects on residents

Potential effects during transmission line construction include noise disturbance, vibration, dust, damage to property, and interference with roads and community infrastructure.

Noise sources within the project development area will be typical of construction activities for transmission lines (detailed noise levels are described in Section 8.5.1.2). There are 17 residences within 100 m (only 1 along the new portion of the line) and 54 within 400 m (31 along the new portion of the line). Potential effects include disturbance and annoyance to community residents because of heavy equipment operated nearby. For splicing conductors, Manitoba Hydro may use implosive sleeves to join the conductors together. When used, the sound produced constitutes a short very loud bang.

During operation, a transmission line emits audible noise when electrical energy within the conductor interacts with the air surrounding the conductor surface.

The Province of Manitoba's Guidelines for Sound Pollution (Manitoba Department of Mines 1977) in residential areas indicates a maximum desirable sound level objective of 55 dBA (day) and 45 dBA (night). The higher sound levels generated during construction will be transient as equipment is moved along the right-of-way; therefore, nearby residents will not be affected for prolonged periods. Noise levels during the night will also remain unchanged from the existing conditions, as construction activities related to the assembly and installation of towers will only occur during the day.

Development potential

The development of a cleared right-of-way for a transmission line could reduce development potential due to the fragmentation of lots. The transmission line could also result in less interest in wanting to buy a lot or build a residence near the line, thus lowering the development potential of land or land nearby. These changes could influence development in localized areas adjacent to the project or potentially affect the location of future developments within the local assessment area.

8.7.3.2 Visual quality

The assessment of change in visual quality focuses on:

- Changes to the visual landscape

Vegetation clearing and the construction of project infrastructure, including transmission line towers and conductor wires will create or add to human-caused disturbance at identified viewpoints.

Based on a review of the literature for visual quality, and transmission line visibility (Palmer 2016); (Driscoll, et al. 1976); (Sullivan, et al. 2014)) a 500 m buffer was placed around the centerline. This was considered the area where the transmission towers would be in the foreground view and therefore most intrusive.

The transmission line will be within 500 m of over 70 homes and 50 recreational sites, as well as several picnic sites, a school and a church (Map 8-3).

The aesthetic value of the landscape can vary according to its scenic elements and the perception of the landscape by viewers. Landscapes have scenic value, which may be altered by changes brought on by the project and other future developments.

During construction, crews will move along the transmission line right-of-way completing each component / activity sequentially. Construction activities include: clearing the right-of-way (i.e., removal of vegetation), establishing marshalling yards, drilling foundations, installing towers, stringing conductors and construction site rehabilitation and decommissioning. These activities are expected to result in disturbance to the existing visual landscape by their presence.

Project components will become more visible to varying and different degrees from one location to the next as construction progresses from clearing for the right-of-way, to tower installation and stringing conductors. The effects of the project on visual quality recognizes that there will be increasing levels of alteration to viewsheds from the visibility of the towers and conductors and contrast with the landscape during project construction, but focuses on the final alteration (i.e., during operations and maintenance) when all project components are constructed and operational.

Indigenous communities also shared concerns with the presence of the line affecting the experience of traditional harvesting and important sites. These concerns related to both the visual disturbance of the line and the perceived effects of EMF on medicinal plants. In their report, the MMF expressed that: “Through the survey conducted for this study [MMTP], the Métis respondents reported that they would avoid transmission lines for future harvesting” (Manitoba Métis Federation 2021).

The presence of short-term and intermittent construction activities during this phase of the project is unlikely to affect visual quality, except where the right-of-way or workspace is visible. However, the towers will be visible, once they are erected, from locations outside the right-of-way.

8.7.4 Mitigation measures

8.7.4.1 Property values and residential development

Transmission line routing considered the occurrence of homes within the right-of-way, proximity to homes and the number of proposed subdivisions potentially affected.

During construction, Manitoba Hydro plans to notify landowners, Indigenous communities and interested parties prior to construction start and will share information about planned construction activities.

On a case-by-case basis, a voluntary purchase can be considered for residences where the proximity of the transmission line on new right-of-way is within 75 m of the residence (i.e., to the nearest part of the line such as the conductor/crossarm) at 100% of all reasonable and related relocation costs.

For private land parcels occurring within the project development area that need access for right-of-way purposes, Manitoba Hydro will obtain and easementpay lease payments for easements over private property based on current land values.

The effect of project activities can be reduced through scheduling and logistics planning (e.g., use of implosives during daytime hours during the week). Mitigation measures of potential project effects on property and residential development include the following:

- Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations
- Mud, dust and vehicle emissions will be managed in a manner that considers the safe and continuous public activities near construction sites
- Noisy construction activities where noise and vibration may cause disturbance and stress in built-up areas will follow local noise by-laws
- A communication protocol will be developed to notify affected parties of blasting operations and conductor splicing (if required)
- Construction, operation and maintenance personnel will undertake activities in such a way to avoid affecting neighbouring properties, structures or operations. In the unlikely event that a landowner incurs damages, they are subject to compensation through Manitoba Hydro's existing compensation policies

8.7.4.2 Visual quality

Visual quality considerations were factored into route selection. In addition to routing considerations, it is recognized that decisions around tower siting/placement could substantially mitigate the visual changes.

Manitoba Hydro has or will use the following mitigation measures to enhance visual screening and reduce visual contrast of the project:

- The transmission line has been routed to consider populated areas, proximity of residences and parks.
- Apart from reflective bird diverters at areas of high bird-wire collision potential, non-reflective galvanized tower materials are used which reduce the visual contrast with background.
- Approved clearing boundaries will be clearly delineated by flagging prior to clearing or equipment will be guided using global positioning systems to keep clearing activities within the project footprint.

Manitoba Hydro will continue to work with a range of interested parties (residents, interested parties, and provincial government agencies as applicable) in development of the proposed transmission lines, including tower placement within the right-of-way, and scheduling of construction activities with the goal to reduce any potential visual or other interactions.

8.7.5 Characterizing residual effects

8.7.5.1 Property values and residential development

The maximum noise level generated during the construction phase from combined construction equipment is anticipated to be 90 dBA at 15 m from noise sources; implosive sleeves (if used) will generate instantaneous discharges expected to generate 110 dBA during splicing of conductors. At 500 m from noise sources within the project development area, construction activities are anticipated to generate les than 62 dBA (below levels expected to cause nuisance effects), exclusive of implosives used for tower stringing activities.

There are over 70 residences within 500 m of the right-of-way. These residences will experience noise generated by construction activities. Noise levels during the night will remain unchanged from the existing conditions, because construction activities related to the assembly and installation of towers will only occur during the day.

Project operation and maintenance has the potential to affect residents and property owners through visual aesthetic changes and noise generation. Residual effects are

expected to be associated with changes in visual quality on residences due to the visibility of the transmission line once it is operational.

The transmission line will generate audible noise at the edge of the transmission line right-of-way at all locations (Exponent 2015a). The audible noise generated by the operation of the transmission in fair-weather conditions would be comparable to a bedroom at night (24 dBA) and quieter than a library (35 dBA) (Exponent 2015a).

Homes within 500 m of the right-of-way will also experience a change in the visual landscape (except those that are along the existing right-of-way, which accounts for over 1/3 of the line; (Map 8-3)). Homes within 500 m of the right-of-way generally have a treed yard and will therefore have visual barriers.

Research is inconclusive as to whether the presence or proximity to transmission lines adversely affects real estate values. Effects that have been observed tend to diminish with distance from the transmission line and disappear with time.

By adopting mitigation measures, the project will be constructed to limit possible disturbance and annoyance to residents and interference with residential development.

Given the low number of residences located near the proposed transmission line right-of-way, in consideration of mitigation measures, the project will have a low to moderate nuisance or disturbance effect on residences or other receptors.

Nuisance or disturbance will be short term over the construction period as equipment is moved along the right-of-way. Therefore, nearby residents will not be affected for prolonged periods.

8.7.5.2 Visual Quality

The local assessment area consists of urban, suburban, industrial and agricultural landscapes.

The final preferred route runs adjacent to several recreational areas including tennis courts, picnic shelters, baseball diamonds and soccer fields (Map 8-3; Figure 8-3; Figure 8-4). These all occur along the existing portion of the line, so there is no change to the visual landscape. The route crosses the highway and runs parallel for over 500 m. The area is developed so the change in landscape will be negligible.

Figure 8-3: Tennis courts within 50 m of the transmission line (blue line)

Figure 8-4: Baseball diamonds and soccer fields adjacent to the transmission line (blue line)

Summary

With the implementation of mitigation measures, residual effects from the project on property values, residential development and visual quality are low to moderate magnitude.

Effects will be long term, continuous and occur during the construction and operation and maintenance phases.

Table 6-3 describes the factors used to characterize the interactions among the Project and property values, residential development and visual quality.

- Direction: Adverse
- Magnitude: Moderate
- Geographic extent: Local
- Duration: Long term
- Frequency: Continuous

- Reversibility: Permanent

Due to the low number of residences (1 within 100 m) close to the line and proposed developments within the right-of-way, the residual effects to property value and proposed developments are not anticipated to be significant.

The exurban setting of the project and the mitigation applied through routing means new towers will not alter the average visual landscape character of the area therefore the residual effects to visual quality are not anticipated to be significant

8.7.6 Follow up and monitoring

Manitoba Hydro's practice is to develop project-specific environmental protection plans where mitigation measures are stipulated for construction, operation and maintenance activities. These measures are regularly reviewed for their effectiveness as part of a process of adaptive management in project monitoring and follow-up.

Manitoba Hydro has provided and will continue to provide project information to relevant agencies and organizations as required and requested.

Potential follow-up related to property value proposed development and visual quality will be through construction inspection. Inspection will determine whether the item or activity is in conformance with mitigation requirements.

8.7.7 Cumulative effects

Several projects listed in Table 6-4 may interact with this project. The truck and travel center and the southwest development project are within 500 m of this project and will therefore increase the overall change in the visual landscape. However, as the average visual landscape character is already disturbed, the overall change is minimal.

8.8 Agriculture

Agriculture was selected as a valued component because of its importance to landowners, agricultural producers, the local community and the economy of the area. Agriculture considers loss of land, inconvenience, effects on livestock and biosecurity.

8.8.1 Significance thresholds

A residual effect on agriculture is considered significant if it:

- results in a loss of agricultural land or degradation of soil quality such that existing agricultural production cannot continue at current levels for extended periods of time (beyond the construction phase) or cannot be adequately compensated
- results in interference with or disruption that restricts agricultural operations and activities such that existing agricultural operations and activities cannot continue at current levels for extended periods of time (beyond construction phase) or cannot be adequately compensated

8.8.2 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local and regional assessment areas. Valued component specific details are described below.

Project development area: footprint of the proposed project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances.

Local assessment area: The local assessment area is defined as 1 kmLocal assessment area: 500 m on either side of the centreline (Map 8-2) This covers an area where effects on agriculture are likely to be most prevalent.

Regional assessment area: The regional assessment area includes the boundaries of the Rural Municipality of Portage la Prairie (Map 8-4). The RM represents the region that encompasses the communities within which changes in socioeconomic parameters attributable to project effects on agriculture might occur.

Effects of other projects and activities occurring within the regional assessment area that have potential to act cumulatively with the project are assessed based on the regional assessment area.

8.8.3 Effects pathways

Transmission lines can have several effects on agricultural operations. The consequences to farm operations and management and potential changes to the land itself can result in increased costs, inconvenience, nuisance and increased effort for operators. Transmission towers and lines can cause effects on the following agricultural operations:

- Loss of land from production due to the transmission line structures

- Inconvenience, nuisance and increased production costs associated with operating farming equipment, aerial spraying and crop production around structures
- Compromised biosecurity for cropping lands and livestock operations

8.8.3.1 Loss of land from production

The presence of transmission line structures will permanently remove the land under the structure area from production while the remainder of the right-of-way can be still be farmed. Approximately 18% of the project development area is under annual production. The project is anticipated to result in approximately two more steel lattice towers and approximately 3 more heavy angle towers on agricultural lands. The tower footprint for the steel lattice towers will range from 5.4m to 7.6m in width and the tower footprint for the angle structure is 10m x 10 m. Total agricultural area lost is estimated to be approximately 416 m^2 (Table 8-2). The number of towers and tower types in the table below do not represent final engineered alignments and are intended to estimation purposes only.

Table 8-2: Agricultural land lost due to tower footprints

Tower type	Footprint	Area lost	Number of towers	Total agricultural area lost
Steel lattice towers	7.6 m x 7.6 m	58 m	2	116 m^2
Heavy angle towers	10 m x 10 m	100 m	3	300 m^2
Total area lost				416 m^2 (0.1 ac)

Manitoba Hydro considers land use impacts during tower placement and works to place towers in a manner that limits disruption to farming activities while meeting infrastructure requirements. Some of these measures may include placing towers on the edge of farmable parcels, within road allowances where possible and working with landowners to limit disturbance to operations. Although tower footprints will result in an area of land removed from production, due to the small size of the project, small footprint of the towers and careful placement considerations, the loss of land from production is anticipated to be low.

In addition, Manitoba Hydro's compensation policy (i.e., the structure impact portion) takes into consideration the lost production underneath and directly adjacent to the towers situated on agricultural land for directly affected landowners.

Construction activities during the growing season, or spring and fall periods when agricultural producers are conducting field operations such as field preparation, nutrient application and field cleanup will result in the temporary loss of use of affected lands. It is assumed that these temporary losses will extend to the entire right-of-way within fields where construction activities are occurring.

Transmission line construction is scheduled for the winter of 2022/23. Based on this schedule, temporary loss of land during construction will not be an issue. However, if the schedule is altered and construction occurs during the spring / summer seasons, this would affect no more than one growing season as construction is scheduled for four months.

8.8.3.2 Inconvenience, nuisance and costs from structures

Farming around towers presents several challenges. Crop production is reduced within the immediate vicinity of the tower due to overlap around each structure (PAMI 2015); there are increased costs associated with the time it takes to farm around transmission towers, the application of seed, fertilizer and chemicals in the area of overlap around each structure, and decreased weed control around the towers.

Previous studies have found that approximately 70% of the costs of structures to farmers were the result of the non-productive area or area lost for production around the tower (Gustafson, et al. 1980); the other 30% of the costs were the result of lost time, crop damage and increased input costs from double coverage (W. S. Scott 1981).

For those property owners directly affected, landowners will be eligible for compensation. The structure impact portion of the compensation policy accounts for reduced productivity in an area of overlap around each structure; the additional time required to maneuver farm machinery around each structure; double application of seed, fertilizer and chemicals in the area of overlap around each structure; and additional weed control around each structure.

8.8.3.3 Biosecurity

Other Project-related interactions with effects on agricultural activities during construction and operations maintenance activities could relate to compromised biosecurity. Biosecurity refers to a series of management practices and processes

designed to reduce the risk of introducing and spreading disease agents (pathogens). The primary concern would be with external biosecurity that focuses on keeping disease agents from getting out and into other farms. The Project has potential for biosecurity concerns due to the transmission line being in an agricultural area.

To protect the biosecurity of livestock and cultivated areas, Manitoba Hydro has developed an agricultural biosecurity policy to ensure the implementation of biosecurity protocols on their projects. Manitoba Hydro and contractors will follow the biosecurity policy.

8.8.4 Mitigation measures

Measures used to mitigate effects to agriculture during Project construction and operation/maintenance includes the following:

- Implementation of Manitoba Hydro Landowner Compensation Program
- Implementation of the Manitoba Hydro Biosecurity Policy and Standard Operating Procedures (Manitoba hydro 2021)

8.8.5 Characterizing residual effects

Given the application of the above-described mitigation measures the effects of the Project in terms of agriculture are summarized as follows:

- Direction: Adverse
- Magnitude: Small
- Geographic extent: Project Footprint
- Duration: Long term
- Frequency: Regular/continuous
- Reversibility: Permanent

With the implementation of mitigation measures, residual effects from the project on agriculture are anticipated to be of low magnitude.

8.8.6 Follow up and monitoring

Manitoba Hydro's practice is to develop project-specific environmental protection plans where mitigation measures are stipulated for construction, operation and maintenance activities. These measures are regularly reviewed for their effectiveness as part of a process of adaptive management in project monitoring and follow-up.

Manitoba Hydro has provided and will continue to provide project information to relevant agencies and organizations as required and requested.

Potential follow-up related to agriculture may involve flagging environmentally sensitive sites and through construction inspection. Inspection will determine whether the item or activity is in conformance with mitigation requirements.

8.8.7 Cumulative effects

Several projects listed in Table 6-5 may interact with the residual effects of this project. The southeast development Phase I project, organics resource management facility and the Portage area capacity enhancement projects are (or will be) on agricultural land and therefore there will be a cumulative loss of productive agricultural land in the area. The Portage area capacity enhancement project includes a transmission line through agricultural land and will therefore also have similar nuisance effects and biosecurity risks.

8.9 Traditional practices, culture and heritage

8.9.1 Introduction

As described in the Indigenous Engagement Process (IEP; Chapter 5.0), Manitoba Hydro engaged eight First Nations, the MMF and the PUIPC, see Section 5.3 for a summary of discussion. Manitoba Hydro also supported Indigenous Community and Assessment Coordinator (ICAC) positions and Indigenous knowledge input for Long Plain First Nation, Dakota Tipi First Nation and the MMF. This section incorporates the ICAC submissions and feedback from virtual meetings with Manitoba Hydro's understanding of effects. It is clearly indicated when words come directly from the ICAC submissions. The full ICAC studies are included in Appendix C.

Based on experience from past projects, feedback provided in submissions from ICACs, existing literature and interests and concerns identified during virtual meetings with Indigenous communities, Manitoba Hydro identified four valued components that are directly related to matters considered important to rights-bearing communities and are of cultural importance. Manitoba Hydro then asked the three ICACs to review this chapter and provide feedback on the valued components and assessment of effects to those valued components.

The four valued components related to traditional practices, culture and heritage and their pathways of effects identified for this project include:

1. Traditional harvesting (e.g. hunting, fishing, trapping, plant gathering)
    - Changes to available lands in which to harvest
    - Changes to access to those lands

- Changes to knowledge of where and how to harvest

2. Important sites (e.g. cultural, spiritual, historical, heritage, sacred, identified TLE opportunities)
    - Changes to available lands which have important sites
    - Changes to access to those lands
    - Changes to knowledge of those sites
3. Heritage sites / objects
    - Changes to heritage sites / objects
4. Culture
    - Changes to traditional harvesting experience
    - Changes to the experience of important sites

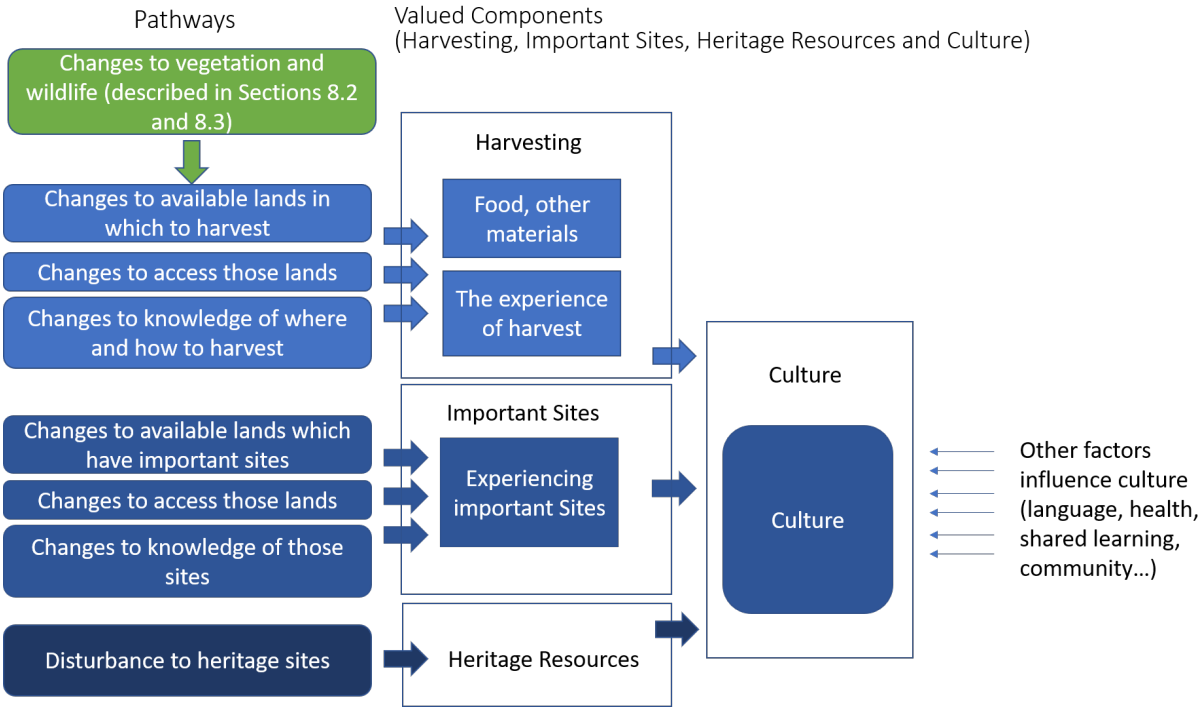


Figure 8-5: Pathways of effects to valued components of importance to Indigenous communities

In the report submitted by the MMF, it is stated that: "*Based on our initial review of the Project Scoping Document for the Manitoba Minnesota Transmission Line Project, we felt that it did not adequately describe the valued components (valued components) necessary to fully identify potential environmental effects to Métis rights, claims and interests… We decided that "Harvesting" and "Available Lands" would be measurable, have available information and potentially be affected by the Project*." (Appendix C).

Manitoba Hydro has included traditional "*Harvesting*" as a valued component in this chapter. The MMF have also put forward "*Available lands*" as a valued component. Manitoba Hydro understands "*Available lands*" to potentially be a pathway of effect to Traditional Harvesting and Important Sites because changes in available lands lead to changes in how traditional harvesting and important sites are experienced, which can lead to effects to culture. For this reason, Manitoba Hydro has included "*Available lands*" as a pathway of effect rather than a distinct valued component to both Traditional Harvesting and Important Sites and has also considered its effect to Culture.

In a letter to Manitoba Hydro, Dakota Tipi First Nation identified concerns, which are encompassed in the selected valued components, including: "*DTFN has concerns with respect to the land area alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce medicinal vegetation in such areas (sage, sweet grass, cedar, Seneca root, bear root, etc.). This also includes concerns that the line placement areas may be on a former or traditional burial ground or site (such as tobacco flag or tie placement areas). DTFN has concerns with respect to the wildlife population alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce wildlife population such as whitetail deer, porcupines, and rabbits which are a source for food and traditional use.*" (Appendix C). In their routing brief, Dakota Tipi First Nation identified impacts to culture and heritage findings as their primary concern (Appendix C). Dakota Tipi First Nation indicated that because the project is located within a pre-disturbed area, likely harvesting activities are limited, and interaction with the project are likely limited to the banks of the Assiniboine River. It is Manitoba Hydro's understanding that the concerns expressed by Dakota Tipi First Nation are included in the selected four valued components of importance to Indigenous communities, and other valued components such as fish and fish habitat, wildlife and vegetation.

Long Plain First Nation expressed concerns of heritage and medicinal plants within their Long Plain Reserve No. 6 borders, which would not be affected by the project. Otherwise, their report states that: "*Long Plain is happy to be a part of these discussions and is grateful there is a consultation process with the potentially affected First Nations in the region.*

We are also however reluctant to (and are not in a position to) grant a corporation 'carte blanche' authority for any future infrastructure conflicts that may arise, and they have in the past. The reality is after hundreds of years of socio-economic, spiritual and legal disparity, we simply do not know for certain if these plans are over for instance, a

familial or community burial plot from the 1790's. Perhaps it goes through the old lodging grounds of the regions most respected Medicine Man from an even earlier time which would no doubt be in abundance of our 4 Sacred Medicines (Sage, Cedar, Sweetgrass and Tobacco). Such a plot would no doubt have old ceremonial grounds that would still be respected and protected no matter how old they are, as such sites are identified and do exist within our Long Plain Reserve No. 6 borders today.

I am sure you can see our need to keep communication open and honest so that if and when matters like the examples presented here arise, proper consultation and due diligence can be performed.

That being said, the purposed route is not currently in any conflict therefor should have no adverse effect on current traditional practices and culture of the LPFN Community, outside of perhaps the disturbance of wildlife habitats or migration routes that some families still rely on today as a source of food." (Appendix C).

8.9.2 Overview

This section first describes the spatial boundaries for each valued component of importance to Indigenous communities. It then describes the pathways of effects, mitigation measures, characterization of residual effects, severity of effects, and follow-up and monitoring for each valued component of importance to Indigenous communities.

8.9.3 Spatial boundaries

The spatial boundaries for the environmental assessment consist of the project development area, local assessment area and regional assessment areas. The project development area encompasses the footprint of the project including the transmission line right-of-way, any additional areas such as borrow pits or marshalling yards and access road allowances. The local assessment area represents the area where indirect or secondary effects of construction and operation and maintenance are likely to be most pronounced or identifiable. The regional assessment area encompasses the area where project-specific environmental effects overlap with those of past, present, and reasonably foreseeable future projects and activities. The project development area remains the same for each of the four valued components in this chapter. The local assessment area and regional assessment area remain the same for three of the four valued components. These are described below.

8.9.3.1 Traditional harvesting, important sites and culture

For traditional harvesting, important sites and culture, the local assessment area includes all components of the project development area plus a 2 km buffer surrounding each component to accommodate for the distance at which implodes can be heard during construction activities, which could affect the experience of traditional harvesting, important sites and culture within that 2 km buffer. This local assessment area encompasses the most inclusive biophysical local assessment area. The regional assessment area follows the regional assessment area described for the wildlife and wildlife habitat assessment because it is the most inclusive biophysical assessment boundary and includes all components of the project development area and local assessment area and a 15 km buffer around all components of the project development area.

8.9.3.2 Heritage sites / objects

For heritage sites / objects, the local assessment area includes the project development area plus a 500 m buffer surrounding each component of the project development area. A 500 m buffer was chosen as there is a potential for discrepancies between the precise locations of heritage sites / objects including cart trails, parish buildings and archaeological sites and the location initially recorded in the provincial heritage database. The exact location of Fort la Reine is still unknown. The area has high potential for heritage sites / objects, the lack of recorded archaeological sites does not do that justice. The regional assessment area includes the project development area plus a 1 km buffer surrounding each component of the project development area.

The regional assessment area includes the project development area plus a 1 km buffer surrounding each component of the project development area.

8.9.4 Effects to traditional harvesting

This valued component includes traditional harvesting practices such as hunting, fishing, trapping and plant gathering. First, sections from the ICAC submissions are shared to provide insight on the traditional harvesting practices in the study area.

The MMF report states that: "*the presence of 80 existing features near the BP6/BP7 project area, from past studies that were not focused on this project specifically, is evidence of the potential for impact to the Métis way of life from the BP6/BP7 project. Today, Métis have Constitutionally protected rights to harvest, and any impact on these rights needs to be adequately and appropriately assessed and, if necessary, accommodated and mitigated for*."

In their routing brief, Dakota Tipi First Nation expressed that "*There is no hunting being done in these areas because we're in an urban setting. There is no fishing being done except at the designated area. (see map C;* Appendix C*); Traditional activities occur in the Project area as indicated as D, E and F on the map.*" (Appendix C). Dakota Tipi First Nation expressed concerns over traditional harvesting in their letter: "*DTFN has concerns with respect to the land area alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce medicinal vegetation in such areas (sage, sweet grass, cedar, Seneca root, bear root, etc.); DTFN has concern with respect to the wildlife population alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce wildlife populations such as whitetail deer, porcupines, and rabbits which are a source for food and traditional use*." (Appendix C).

8.9.4.1 Pathways of effects

The pathways of effect to traditional harvesting include:

i. Changes to available lands for harvesting
ii. Changes to access to those lands
iii. Changes to knowledge of where and how to harvest

<u>Changes to available lands in which to harvest</u>

Changes in available lands for traditional harvesting refers to a change in the amount of land and more specifically in the amount of contiguous land available for traditional harvesting. Since the project is in an exurban area and on pre-disturbed land, available lands used for traditional harvesting practices are limited. The MMF has identified potential harvesting activities as follows:

"*We have assessed our data and prepared a map in Figure 5 which summarizes previously collected land use, occupancy, and ecological knowledge features in the BP6/BP7 project area. There were ten citizens who had previously mapped some of their knowledge in the area. Collectively these participants recorded over 80 features in the areas overlapping or immediately surrounding the proposed routes. The Métis Knowledge near the BP6/BP7 project routes has been summarized in the following categories:*

•*Reported change to water quality (1participant)*

•*Fishing –walleye, pike, carp, mariah, sturgeon, catfish (8 participants)*

•*Hunting –grouse, waterfowl, turkey, deer (5 participants)*

•*Ecological knowledge –deer birthing area, plant gathering, deer hunting (1participant)*

•*Historic trapping (3 participants)"* (Appendix C).

In the MMF report, information from their Manitoba-Minnesota Transmission Project (MMTP) Métis Land Use and Occupancy Study was included and states that: "*The report goes on to explain how important unoccupied land is to the Manitoba Métis as it represents areas where they have access to exercise their Métis rights that does not require permission. On all other land types, the exercise of Métis rights can be restricted from time to time under certain circumstances. The study pointed out that the Manitoba Minnesota Transmission Project would result in a further reduction of the Manitoba Métis Community's ability to access unoccupied Crown land*" and specified that "*The Manitoba Métis Community would have the same concerns with the potential for loss of access to Unoccupied Crown Land with the BP6/BP7 projects and would request that route selection take in to account the objective to maintain as much contiguous Unoccupied Crown Land as possible*."

Dakota Tipi First Nation has identified the Assiniboine River as an area for willow harvesting. Since most of the project is in pre-disturbed lands, potential effects to natural vegetation are limited. However, clearing of the right-of-way will occur near Crescent Lake and the north shore of the Assiniboine River, which might overlap with willow picking around the Assiniboine River. The MMF also shared concerns about using the existing right-of-way*: "Though there was an existing transmission line, the area was naturalized again to a certain degree and will be disturbed again in the construction of the line. Manitoba Hydro should also examine and address the cumulative effects of this transmission line development on the Manitoba Métis community*."

Changes to access to those lands

Changes to the accessibility of lands for traditional harvesting has been identified as a concern to some Indigenous communities. Clearing of the right-of-way can cause changes in the accessibility of areas used for traditional harvesting, as can the creation of new temporary and permanent access routes for construction, operations and maintenance activities.

Changes to knowledge of where and how to harvest

Any change in the ability, experience or resources to practice traditional harvesting can result in changes to an individual's or community's collective knowledge of where

and how to harvest. This can lead to changes to an individual or community's connection to the land and to culture, which is further described in the culture valued component.

8.9.4.2 Mitigation

The primary mitigation measure for reducing adverse effects to traditional harvesting practices is the routing process. The routing methodology considers values from multiple perspectives and community groups. Accordingly, the final preferred route is often a balance of those perspectives. Manitoba Hydro included Indigenous community concerns at each stage of routing and included DTFN, LPFN and MMF ICAC representatives within key route decision-making meetings. During the route preference determination stage MMF representatives indicated their preference for Route A rather than Route D, the route selected by the Community team. Acknowledging this distinction, and that the MMF may have specific concerns that require further mitigation, Manitoba Hydro intends to collaborate further with the MMF to discuss relevant, site specific mitigation and monitoring measures at this location.

Manitoba Hydro understands concerns related to Route D related to the vegetation present adjacent the Assiniboine River. Sections 8.1.5 and 8.2.4 describe mitigation measures aimed at protecting fish and fish habitat and vegetation. Manitoba Hydro considered traditional harvesting sites identified by communities in the IEP and in the ICAC submissions during the routing process to avoid these to the extent feasible. The routing process resulted in the elimination of routing a portion of the line across LPFN lands and having the majority of the transmission line to be routed in an exurban area or on pre-disturbed lands where hunting, fishing, trapping and plant gathering are not as commonly practiced when compared to an area with less development. Manitoba Hydro has also routed a portion of the line from the Portage-Saskatchewan Station to the centre of Crescent Island on the existing right-of-way of the original BP6/BP7 line, meaning that no additional impacts to traditional harvesting practices will occur for this portion of the line. Following construction there will be no restrictions on access to traditional use sites or areas within the project easement on Crown lands. Crown lands occupied by the project development area will remain available for traditional harvesting practices after active construction is complete.

As most of the transmission line is routed in an exurban area and/or on pre-disturbed land, changes in the distribution, abundance and health of resources for traditional harvesting is minimal. For measures identified to mitigate potential adverse effects on

natural vegetation, which could impact plant harvesting, see Section 8.2.4. In addition, Indigenous communities will be given opportunities to identify sensitive sites to help inform the environmental protection program for the project. For maintenance of the right-of-way, an integrated vegetation management program will be developed in which Manitoba Hydro will consider non-chemical vegetation management for areas of traditional plant harvesting. For measures identified to mitigate potential adverse effects on wildlife and wildlife habitat, which could impact hunting and trapping see Section 8.3.4. For measures identified to mitigate potential adverse effects on fish and fish habitat which could impact fishing, see Section 8.1.5.

As mentioned above, there will be no change in restrictions to access traditional harvesting areas within the project development area once construction activities are over, meaning that accessibility of traditional harvesting practices will be like those experienced before this project. During construction activities, information signs and warning markers will be used to identify active construction sites.

In their report, Long Plain First Nation expressed that: "*Long Plain First Nation would like to see an effort made to harvest any sacred medicines that may be disturbed during the project in accordance with our spiritual protocols.*" Manitoba Hydro will further discuss this mitigation measure with Long Plain First Nation and develop a plan for the community to harvest sacred medicines identified in the project area.

Recommendation 9 of the MMF report states that: "*The MMF should be engaged by Manitoba Hydro in the mitigation planning process for BP6/BP7. This would focus on mitigations to address the baseline data that is mapped during Métis Knowledge and land use interviews*." The ICACs for the project were asked to share their community's recommendations for mitigation measures to include in the environmental assessment. As well, Manitoba Hydro will continue to work with Indigenous communities to develop appropriate mitigation measures in addition to its standard mitigation measures if required to include in the environmental protection program to reduce adverse effects to traditional harvesting.

8.9.4.3 Characterizing residual effects

Given that the project is routed primarily on exurban and pre-disturbed land and that the above-described mitigation measures are in place, the effects of the project on traditional harvesting practices are as follows:

- Direction: Adverse
- Magnitude: Minor
- Geographic extent: Local

- Duration: Short-Term
- Frequency: Intermittent
- Reversibility: Permanent

The unique nature of traditional harvesting practice makes it inappropriate to determine whether any effects are significant or not significant. A full description of effects to harvesting as a result of the project are provided within each ICAC submission. Manitoba Hydro understands the severity of the residual effects to vary between communities but overall, the project has low impacts due to its presence within a relatively urbanized location. Manitoba Hydro will continue to work with communities to mitigate any adverse effects.

8.9.4.4 Follow up and monitoring

Protections for natural vegetation and wildlife will be implemented as part of the environmental protection program. The environmental protection program is a framework for implementation, management, monitoring and evaluation of protection activities in keeping with environmental effects identified in environmental assessments, regulatory requirements and public expectations. The environmental protection program prescribes measures and practices to avoid and reduce adverse environmental effects on wetlands habitat (e.g., wildlife reduced risk work windows, setbacks and buffers for sensitive habitat).

The MMF report includes concerns shared in the Bipole III Métis Land Occupancy and Use Study about the administration of monitoring programs: "*Several participants in this study suggested that there was an opportunity for Métis citizens to support with 'boots on the ground' monitoring. There were concerns with monitoring programs that are led by people who do not know the area well as described in this quote from a participant:*

> *"And that's how it should be, like some guy sitting in the office in Winnipeg, at Portage and Main, should [not] be making the calls about what's happening right here in our backyard. There should be somebody locally, no matter if there's one from each town, one each district, but there should be somebody there doing the monitoring."*

The *MMF used the study results to identify Environmentally Sensitive Sites (ESS) that required protection during construction, operation, and maintenance of the Bipole III. Additional mitigation, offsetting, or accommodation measures for the ESS were recommended.*

Manitoba Hydro engaged the MMF to discuss these concerns and adjust its Environmental Protection Plans (EPP) based on this input in a series of collaborative workshops, meetings, and communications with the MMF. The MMF would request a similar process be undertaken for the BP6/BP7 process." (Appendix C).

As requested by the MMF, Manitoba Hydro will work with Indigenous communities to develop and adjust the EPP and environmental management plan to implement appropriate mitigation measures and monitoring plans for traditional harvesting practices.

Recommendation 13 of the MMF report states: "*Métis citizens should be included in any environmental monitoring programs for the Project. The MMF has invested in capacity building and is in the process of providing training to Métis citizens on environmental monitoring techniques that are relevant to this and other future transmission line projects (e.g., surface water quality, wetland health, wildlife, species at risk).*"

Manitoba Hydro will engage Indigenous communities in monitoring of the Project whether it be through field tours offered to community members during construction of the Project or through Indigenous monitoring. Manitoba Hydro will further discuss monitoring options with Indigenous communities to identify the preferred and most meaningful option.

8.9.5 Effects to important sites

This valued component includes important sites to Indigenous communities such as sites of cultural, historical and spiritual importance, heritage sites, sacred sites and other sites such as Treaty Land Entitlement opportunities. These include tangible and intangible sites identified by Indigenous communities during the IEP and in the ICAC submissions.

8.9.5.1 Pathways of effects

The pathways of effects to important sites include:

i. changes to available lands, which have important sites
ii. changes to access those lands
iii. changes to knowledge of those sites

<u>Changes to available lands, which have important sites</u>

The project can result in changes to available lands, which have important sites. Crescent Island was identified as a sensitive area by several communities due to

cultural and heritage concerns especially in relation to discovered and undiscovered burials. Peguis First Nation also identified Crescent Island as an important area for families and children in foster care.

In their report, Long Plain First Nation expressed concerns over important sites: "*The reality is after hundreds of years of socio-economic, spiritual and legal disparity, we simply do not know for certain if these plans are over for instance, a familial or community burial plot from the 1790's. Perhaps it goes through the old lodging grounds of the regions most respected Medicine Man from an even earlier time which would no doubt be in abundance of our 4 Sacred Medicines (Sage, Cedar, Sweetgrass and Tobacco). Such a plot would no doubt have old ceremonial grounds that would still be respected and protected no matter how old they are, as such sites are identified and do exist within our Long Plain Reserve No. 6 borders today*."

Long Plain First Nation representatives also expressed concerns about projects that may impact their ability to access land for Treaty Land Entitlement selections. Preserving land parcels for current and future use is a high priority for LPFN. LPFN discussed aspects of future development planning initiatives with Manitoba Hydro and highlighted both the economic and land protection value of maintaining properties for future TLE.

In a letter to Manitoba Hydro, Dakota Tipi First Nation shared concerns regarding important sites including: "*This also includes concerns that the line placement areas may be on a former or traditional burial ground or site (such as tobacco flag or tie placement areas).*" (Appendix C). In the routing brief, Dakota Tipi First Nation identified several important sites along the line including burials, mounds and tipi rings, and stressed the need for Manitoba Hydro to be diligent in its pre-construction heritage surveys and monitoring of construction activities (Appendix C).

Changes to access to those lands

Clearing of the right-of-way can cause changes in the accessibility of important sites, as can the creation of new temporary and permanent access routes for construction, operations and maintenance activities. Such activities can increase access to important sites by both traditional users and others.

Changes to knowledge of those sites

Disturbance of important sites may result from construction activities, including loss or disturbance to site contents and site contexts through clearing and disposal of trees, brush or topsoil removal, compaction, vehicle traffic, grading for access roads, and tower construction. Ground disturbance can affect important sites and areas

especially if these sites are linked to cultural or heritage sites / objects, including burials. Vandalism or alteration of cultural sites is a potential concern if the project creates new human access opportunities. Such changes to important sites can result in changes to knowledge of important sites, which can lead to changes to culture, which is further described in the culture valued component.

8.9.5.2 Mitigation

The primary mitigation measure for reducing adverse effects to important sites is the routing process. Manitoba Hydro considered important sites identified by communities in the ICAC submissions and in the IEP during the routing process to avoid these sites to the extent feasible. Manitoba Hydro has routed a portion of the line from the Portage-Saskatchewan Station to the centre of Crescent Island on the existing right-of-way from the original BP6/BP7 line, meaning that no additional impacts to important sites will occur for this portion of the line. Pre-construction heritage surveys and identification of sensitive sites in the EPP are ways in which adverse effects to important sites will be further mitigated. A Culture and Heritage Resources Protection Plan (CHRPP; Appendix H) that describes the protocols to follow if potential culture or heritage sites /objects are discovered will also be developed and implemented. Indigenous Cultural Awareness Training will be provided for all workers involved in construction, operation and maintenance activities which will include training on the CHRPP.

As mentioned above, there will be no changes inn access to important sites within the project development area once construction activities are over. Following construction, the accessibility of important sites will not be diminished. During construction activities, information signs and warning markers will be used to identify active construction sites.

Sensory disturbances from construction activities are expected to be short-term and notifications will be sent to communities prior to implode use. Manitoba Hydro will continue to work with Indigenous communities to better understand the effects of a transmission line on the experience of important sites to determine additional mitigation measures if required.

In their report, Long Plain First Nation suggested an additional mitigation measure: "*In regard to any spiritual lodgings or landmarks, we would like the opportunity to consult with local Elders and knowledge-keepers on proper protocol if such an issue were to arise. There are many constructs we use on our spiritual journey through this world including but not limited to, Arbours, Ceremonial Lodges, Rock Paintings and formations etc.*" If any spiritual lodgings or landmarks are found within the project

area, Manitoba Hydro will engage with Indigenous communities and provide opportunities to consult with local Elders and knowledge-keepers to find appropriate mitigation measures.

8.9.5.3 Characterizing residual effects

Given that the project is routed primarily on exurban and pre-disturbed land and that the above-described mitigation measures are in place, the effects of the project on important sites are as follows:

- Direction: Adverse
- Magnitude: Minor
- Geographic extent: Local
- Duration: Short-Term
- Frequency: Intermittent
- Reversibility: Permanent

The unique nature of important sites makes it inappropriate to determine whether any effect is significant or not significant. Therefore, such conclusion will not be made. Manitoba Hydro anticipates the severity of the residual effects to vary between communities and therefore will continue to work with communities to mitigate any adverse effects.

8.9.5.4 Follow up and monitoring

Manitoba Hydro will engage Indigenous communities in monitoring of the Project. Manitoba Hydro will further discuss monitoring options with Indigenous communities to identify the preferred option.

8.9.6 Effects to heritage sites / objects

This valued component includes heritage sites / objects identified by the Province of Manitoba's Heritage Resources Branch. The following describes and summarizes a preliminary screening of the effects of BP6/BP7 on heritage sites / objects. As defined in *The Heritage Resources Act* (Government of Manitoba 1986), heritage resources include, "a heritage site, a heritage object, and any work or assembly of works of nature or of human endeavor that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof."

The Province of Manitoba, through the Historic Resources Branch of Sport, Culture and Heritage screens development projects for their impact on heritage resources. If

the potential to adversely affect heritage sites / objects in a project area is identified, further investigation as a Heritage Resource Impact Assessment is usually required.

An evaluation of the project development area identified documented heritage sites / objects and the potential for heritage sites / objects. With the potential loss or damage of heritage sites / objects through the construction of transmission lines, it is recommended that a Heritage Resource Impact Assessment occur.

A Heritage Resource Impact Assessment is defined in *Managing Our Heritage Resources Impact Assessment* (Government of Manitoba 1990) as a "*written evaluation of the effect that a proposed development project may have upon heritage resource is or human remains at a site. The assessment outlines the project, describes the cultural and natural context of the development, identifies the impact of the project, and recommends ways to avoid or lessen its impact on heritage resources or human remains.*"

Summary of current status

The results of the heritage inventory review showed three registered archaeological sites within 500 meters of the final preferred route. The three sites or portions of the sites have been disturbed through construction of the contemporary Yellow Quill Trail and the Portage Diversion (1965-1970); (Table 8-3).

Table 8-3: Registered archaeological sites within 500 metres of the project

Borden No.	Site Type	Period	Description
DlLn-001	Campsite Fur trade post	Historic Fort la Reine	Historic artifacts
DlLn-006	Campsite	Woodland	Prairie side-notched projectile point
DlLn-010	Isolated find	Pre-European contact	Hammerstone

Two of the three sites date to the Pre-European Contact Period. Site DlLn-010 was recorded as an isolated find based on the collection of a single hammerstone while DlLn-006 was recorded as a campsite with a surface collected projectile point. Site DlLn-001 was registered to recognize the location of Fort la Reine (1738-1752). While no physical evidence of the Fort has been documented, a stone cairn and plaque

have been erected by the Historic Sites and Monuments Board of Canada to commemorate the site.

There are three additional plaques recorded within 500 metres of the right-of-way. The plaques were designated to commemorate noteworthy individuals and historic locations, which include Canada's ninth Prime Minister, the Rt. Hon. Arthur Meighen; Wilfred Vopni, who originated Vopni press; and Fort La Reine (Table 8-4).

Table 8-4: Designated buildings and plaques within 500 metres of the project

Plaque ID	Site Name	Designation
P758	Meighen, Rt. Hon. Arthur	National Historic Site of Canada
P2492	Vopni Pocket Park, Memory of Vopni Press Ltd.	City of Portage
P2595	Fort La Reine	National Historic Site of Canada

A review of archival and parish maps indicates that at least 16 buildings once stood within 500 metres of the final preferred route. In addition to the parish buildings, 11 cart trails crisscross the final preferred route including the Carlton Trail and Yellow Quill Trail.

8.9.6.1 Effect pathways

The main pathway that can lead to effects to heritage sites / objects is:

- Changes to heritage sites / objects

There is potential for the project to interact with unknown heritage sites / objects during transmission line construction activities that involve disturbing the ground surface; primarily during construction of the right-of-way, installation of tower foundations, erection of towers and activities such as mobilizing equipment, developing and using access routes, marshalling yards, and conducting geotechnical testing. Furthermore, removal of vegetation may create unstable soil conditions that could result in the displacement of exposed heritage sites / objects.

The operation and maintenance phase also has the potential to disturb previously unknown sites; additional vegetation clearing in areas previously not disturbed by

construction that may be required for maintenance of tower sites have the potential to expose unknown heritage sites / objects.

8.9.6.2 Mitigation

Archaeological sites are non-renewable heritage. Once disturbed there is a loss of tangible evidence of the past. In general, avoidance measures to protect heritage sites / objects is the preferred approach. Steps taken by qualified archaeologists in advance of development to identify and protect heritage sites / objects is essential.

Potential effects can be avoided through implementation of effective mitigation measures including general environmental protection measures, beneficial management practices, standard operating procedures and environmental protection plans. It is standard practice for Manitoba Hydro to implement a CHRPP (Appendix H) as mitigation. Mitigation measures will include the following:

- Project personnel will be made aware of the potential for finding heritage sites / objects in the project footprint.
- Any archaeological finds discovered during the site preparation and construction will be left in their original position until the project archaeologist is contacted and provides instruction.
- Construction activities will be carried out within established buffer zones for heritage sites / objects as approved by the project archaeologist and Historic Resources Branch.
- Environmental protection measures for heritage sites / objects will be reviewed with the contractor and employees prior to the commencement of any construction activities.
- Orientation of project staff working in construction areas will include heritage awareness and training including the nature of heritage sites / objects and management of any heritage sites / objects encountered.
- Orientation information will include typical heritage materials and reporting procedures.
- The contractor will report heritage materials immediately to the construction supervisor and will cease construction activities in the immediate vicinity until the project archaeologist is contacted and prescribes instruction.
- The CHRPP will be adhered to during the preconstruction and construction activities.

8.9.6.3 Characterizing residual effects

Archaeological site data is managed and protected by the Historic Resources Branch. The number of documented sites potentially affected by the project is determined by mapping registered site locations and comparing the project footprint using Geographic Information System (GIS). The results of this qualitative review determined that there are three recorded heritage sites within 500 metres of the Final Preferred Route including historic Fort La Reine. The original placement and extent of the site has never been determined and therefore unidentified archaeological remains of the fort may be encountered during project construction.

Possible effects to potential heritage sites / objects were determined by reviewing archival maps, photos, LiDAR, and mapping potential locations (e.g., types of landforms, nearness to documented heritage sites / objects, proximity water) and comparing the project footprint using GIS. While much of the project area has been impacted previously through settlement, agriculture and moderate and large-scale development, the area is culturally rich and the potential for heritage sites / objects is high.

8.9.6.4 Follow up and monitoring

Manitoba Hydro will be conducting a Heritage Resource Impact Assessment along the final preferred route where new tower locations are to be constructed to determine nature, extent, and significance of any heritage sites including implementing recommendations from the Historic Resources Branch including deep testing, where required.

8.9.6.5 Cumulative effects

Lands cleared of standing vegetation for development, conversion to agriculture, cropping, and land drainage have acted cumulatively in the past to affect heritage sites / objects either by partially disturbing or completely removing the site. Most of these activities was primarily done before heritage legislation was enacted to manage and protect archaeological resources.

A key success factor in terms of mitigation of potential cumulative effects is monitoring, internal coordination and reporting to regulatory agencies such as Manitoba Conservation and Climate and the Historic Resources Branch. Active monitoring of project potential effects on heritage sites / objects will occur during construction, and any effects will be addressed through implementation of the

mitigation measures documented in the project specific construction environmental protection plan and the CHRPP. In addition, other proponents in the project area are also responsible for reporting project activities to Manitoba Conservation and Climate and the Historic Resources Branch, and these regulators can inform Manitoba Hydro if it appears that there are unanticipated adverse cumulative effects occurring. The Historic Resources Branch also reviews land-based developments through the heritage resource impact assessment program as mandated by the *Heritage Resources Act*. Therefore, additional mitigation for cumulative effects is addressed by the provincial regulators as they determine whether future projects will require heritage investigations.

The future projects proposed within the project footprint and the local assessment area are primarily located on lands that have already been altered by agricultural and development activities.

As indicated previously, for all its projects, Manitoba Hydro actively manages effects during construction to further avoid sites or salvage sites if required. Given this, the direction for the cumulative environmental effect within the project is neutral, the magnitude is negligible, and the geographic extent is the local assessment area. The duration is short term, the frequency would be a single event; however, any changes in heritage sites / objects are irreversible. The ecological context is a mix of disturbed and undisturbed lands. With the requirements to report and coordinate with regulators responsible for all projects in the area, the direction of the cumulative environment effect for the contribution from the project to the overall cumulative environmental effect is predicted to remain neutral. The magnitude will remain negligible, and the geographic extent in the local assessment area.

The assessment recognizes that there is a potential for unrecorded heritage sites / objects to be inadvertently exposed during either construction or operation and maintenance. The construction environmental protection plan and the CHRPP will provide a detailed plan for follow up and monitoring of known and discovered heritage sites / objects during the construction phase.

Sensitivity to climate change

According to the climate change information and scenarios presented in Section 8.11.1, temperature and precipitation are expected to increase in the future. While there is uncertainty in predictions several decades into the future, increased precipitation and temperature may serve to expose heritage sites / objects through changes in erosion patterns. This may provide opportunities to identify and salvage new sites but may increase the risks of losing sites adjacent to large water bodies.

Project specific monitoring will identify and manage any resources that are uncovered. In general, future climate change is not anticipated to alter the prediction that the changes of heritage sites / objects will not be significant as a result of the project. Development of the project will not create pathways to change previously recorded heritage sites / objects. Mitigation and environmental protection measures will lessen the potential for disturbance to previously unrecorded heritage sites / objects. If future climate change affects the project footprint or local assessment area of the project after its life cycle, any heritage sites / objects will have been adequately mitigated.

8.9.7 Effects on culture

Changes to the three other valued components of importance to Indigenous communities, which include traditional harvesting, important sites and heritage sites / objects can result in effects to culture. Several other factors can also affect culture such as language, health, shared learning, community and other.

For this project, the pathways of effects to culture have been identified as:

i. effects to spiritual connection/connection with the land
ii. changes to the experience of traditional harvesting
iii. changes to the experience of important sites

Impacts to culture are not necessarily linked to the size of a project. They may include changes to the way of life, the system of knowledge, values, beliefs, and behaviour, and the way that this information is passed down between generations. Culture is reflected and embedded in practices, knowledge, views, the built and natural environment, and the relationships between people and their natural environment. Effects to these tangible and intangible values are community-specific. Given the unique and context-specific nature of culture, this chapter has been provided to Dakota Tipi First Nation, Long Plain First Nation and the MMF for review prior to submission. Their updates have been included in this filing.

8.9.7.1 Pathways of effects

<u>Effects to spiritual connection / connection with the land</u>

Clearing prior to construction of a transmission line has been described on past projects as an activity that can desecrate the spirits of the trees and the forest, which can in turn affect the spiritual connection one has to the land. Other construction

activities such as movement of equipment and use of new and existing access routes that cause damage to plants and the installation and presence of towers can affect one's connection to the land.

Construction activities including clearing, use of heavy machinery and tower foundation installations that have the potential to disturb culture and heritage findings also have the potential to adversely affect the spiritual connection an individual or community might have to the land.

Changes in the land that cause changes to the knowledge of where and how to harvest or of important sites can also cause adverse effects to an individual or community's connection to the land.

Changes to traditional harvesting experience

Changes in available lands for traditional harvesting, access to those lands and knowledge of where and how to harvest can result in changes to the overall experience of traditional harvesting. Changes in the experience of traditional harvesting can then result in changes to culture.

Sensory disturbances during construction, operations and maintenance activities can cause adverse effects to the traditional harvesting experience. It has also been expressed on past projects that the presence of a transmission line can diminish the value or quality of plants used for sustenance or medicine and that the presence of the line itself can diminish the traditional harvesting experience. Such adverse effects to the experience of traditional harvesting can result in effects to culture.

As an example, the MMF shared survey responses from the Bipole III Land and Occupancy Studies, which included concerns over transmission line impacts to the experience of traditional harvesting: "*Through the survey conducted for this study, the Métis respondents reported that they would avoid transmission lines for future harvesting*."

The MMF report also includes information from the MMTP Métis Land and Occupancy Use Study, which describe transmission line effects to the experience of harvesting as: "*Through the survey conducted for this study, the Métis respondents reported that they would avoid transmission lines for future harvesting. They also said that they felt their access to lands for their harvesting would be affected*."

Changes to the experience of important sites

Changes to available lands with important sites, changes to access to those lands and changes in knowledge of important sites can adversely affect the experience of important sites, which can result in effects to culture.

Construction, operation and maintenance activities can cause sensory disturbances, which can diminish the experience of important sites. For example, construction noises or the aesthetic disturbance of the line can impede the ability to practice traditional ceremony and the experience of traditional ceremony. There may be an increase in workers around important sites during construction activities and during operation and maintenance, which can also diminish the experience of important sites. Similarly, an increase in human access opportunities to important sites can result in adverse effects to the experience of important sites. The presence of the line and the beliefs and concerns associated with it can have adverse effects on the experience of important sites and some individuals may chose to no longer frequent these sites. Such changes in the experience of important sites can cause adverse effects to culture.

8.9.7.2 Mitigation

It has been shared by some Indigenous communities on past projects that having the ability to organize traditional ceremonies and make traditional offerings on the Project are ways that the spirits that are being affected by the project can be acknowledged and respected, which can help to mitigate adverse effects to one's connection to the land and culture. Manitoba Hydro will provide Indigenous communities with opportunities to host traditional ceremonies and to offer prayers and make traditional offerings. An opening ceremony and a closing ceremony will be organized in collaboration with interested Indigenous communities on the project.

Having Indigenous community members or monitors present during construction activities can help to mitigate adverse effects to culture. As well, the transmission line has been routed in collaboration with ICACs to consider potential interaction with traditional harvesting and important sites that Indigenous communities have identified. Manitoba Hydro will continue to work with Indigenous communities to further mitigate effects to culture.

8.9.7.3 Follow up and monitoring

As mentioned earlier, Manitoba Hydro will engage Indigenous communities in monitoring of the Project whether it be through field tours offered to community members during construction of the Project or through Indigenous monitoring

positions. As mentioned earlier, Manitoba Hydro will engage Indigenous communities in monitoring of the Project. Having Indigenous community members present during construction will help to ensure the Project is constructed in a way that respects Indigenous culture. Having Indigenous community members present during construction will help the Project be constructed in a way that respects Indigenous culture. Manitoba Hydro will also engage Indigenous communities to assist in organizing ceremonies and offerings on the Project.

This chapter was reviewed by Indigenous Community and Assessment Coordinators. Their feedback was considered and adjustments to the chapter were made in response.

8.10 Cumulative effects

The project is in a region of southern Manitoba where the original native ecology has been substantially affected by more than one hundred years of human development. This change has been dominated by conversion of native prairie to agricultural lands, accompanied by urban and rural settlements, public infrastructure, and various other land uses. As a result, there has been a gradual displacement of natural features. Any remaining natural features are highly valued, including the intact aspen-oak forest on Crescent Island and the mature cottonwood forest observed in the vicinity of the Assiniboine River.

Many of the proposed future projects planned in the area (Table 6-4) will be built upon this previously disturbed environment, converting agricultural lands to industrial, utility or transportation infrastructure. Small pockets of remaining intact vegetation may also be impacted.

Construction related effects on vegetation as a result of BP6/BP7 (Section 8.2) include clearing, the potential to spread non-native/invasive plants and loss of wetland vegetation. These are also likely to occur on other foreseeable future projects, including the Crescent lake causeway and Manitoba Hydro's planned Portage Area Capacity Enhancement 230 kV transmission line project.

First Nation representatives in the area have indicated that riparian areas are important for gathering willow, an important traditional plant. Recognizing the importance of these remaining pockets of intact natural vegetation along the Assiniboine River and Crescent Lake, residual effects related to vegetation loss along these waterways will act cumulatively with riparian habitat loss of these future projects. Manitoba Hydro is the proponent for the PACE transmission project and proposes the following cumulative mitigation measure:

- Value the natural perspective during preference determination process at high level (>5%) for the PACE transmission project.

Figure 8-6. Example of vegetation by segment 11, near the Assiniboine River

Any impacts to riparian habitat have potential to increase erosion to adjacent waterbodies, reduce cover and potentially impact fish habitat. With the mitigation measures in place it is unlikely that changes occurring to riparian vegetation as a result of the project will affect fish habitat. The Crescent Lake Causeway will alter habitat in Crescent Lake and may also temporarily increase sedimentation. This could act cumulatively with planned future transmission line construction as they are both under construction at the same time; however, the risk of erosion related to BP6/BP7 is very low with mitigation in place. Manitoba Hydro undertakes a full suite of riparian protection mitigation measures when constructing transmission lines near water and

will consider river crossings in this region to align with areas of low potential impact (areas with already impacted riparian habitat or schedule work around water crossings during frozen ground conditions).There is no further mitigation proposed to protect fish and fish habitat due to the anticipated low impact and success of mitigation.

The proposed Crescent Lake Causeway project will alter habitat at Crescent Lake and may also temporarily remove wildlife habitat. This could act cumulatively with transmission line construction as they are both under construction at the same time. Noise, traffic and road closures may create a cumulative disturbance to humans and wildlife. The BP6/BP7 routing process resulted in reusing a substantial portion of the existing right-of-way, including a portion of the final preferred route located on Crescent Island. This will reduce the amount of construction activity taking place on the island, resulting in less overlap with the causeway project.

It is anticipated that the number of bird-strikes due to collisions with transmission lines will remain low and not change from past conditions due to planned installation of bird diverters. Any bird-wire collisions that occur during project operation may act cumulatively with future planned projects. It is estimated that potential wildlife habitat loss or disturbance will be minimal and short term and therefore no further mitigation is proposed to address cumulative effects.

In working with Indigenous Coordinators on the project it is understood that cumulative effects to traditional practices, culture and heritage have extended across a broad span of time, and these effects will continue. All future projects have potential to interact with the effects of the BP6/BP7 project in that the presence of more infrastructure on the landscape may impact harvesting, important sites, and therefore culture.

The area of disturbance associated with BP6/BP7 is small in relation to other projects because of the short length of transmission line requiring a rebuild (just over 5.5 km); however, when considered cumulatively with other infrastructure on the landscape, this project contributes to the loss of available land to both harvest and access important sites. Manitoba Hydro understands that when working with Coordinators on the project this loss is considered with changes that have occurred since settlement. A photo series is provided in Figure 8-7 to show this change over time in the area of Crescent Island. Adopting this pre-disturbance condition as the historical temporal limit, key mitigation to address impacts include hosting ceremonies to pay respect to Mother Earth and supporting Indigenous monitors during construction.

Cumulative effects related to human health, parks and recreation are associated with the potential for increased noise and traffic-related effects. With the information currently available it is anticipated that their may be overlap in noise and traffic-related effects with the Truck and Travel centre planned near the Days Inn. Manitoba Hydro intends to restrict construction activities to within accepted times (after 7 am and before 10 pm) to ensure noise levels for those people who may be staying at the hotel or in nearby residences are protected from excess noise. Notifications will be provided to the hotel and local residences prior to conductor splicing activities. Other planned future projects will not occur within a close enough range to act cumulatively with the BP6/BP7 Project. Although the Crescent Lake Causeway Project is close to the Project, their construction schedules do not overlap.

The southeast development Phase I project, organics resource management facility and the Portage area capacity enhancement projects are (or will be) on agricultural land and therefore there will be a cumulative loss of productive agricultural land in the area. The potential Portage Area Capacity Enhancement project includes a transmission line through agricultural land and may therefore also have similar nuisance effects and biosecurity risks.

This project will use a substantial portion of the existing right-of-way present before the October 2019 storm. Using an existing right-of-way for a portion of the project reduces potential effects in that less land is required for a new right-of-way. The area required for next towers is primarily on developed land, less than one hectare of vegetation requiring clearing. The final route of the Project strikes a balance between competing values in the area, with full involvement from city, municipal and Indigenous community representatives. The Project will facilitate the conveyance of clean, renewable energy to an area with growing energy needs, build reliability within the Manitoba transmission system and contribute to Manitoba's economic future.

After considering Project residual effects, and the overlap with past, present and future projects, Manitoba Hydro concludes that the Project will not result in significant effects to the biophysical or human environment. Manitoba Hydro is committed to continue sharing information with landowners, Indigenous communities, the public and working with interested parties through implementation of the Environmental Protection Program.

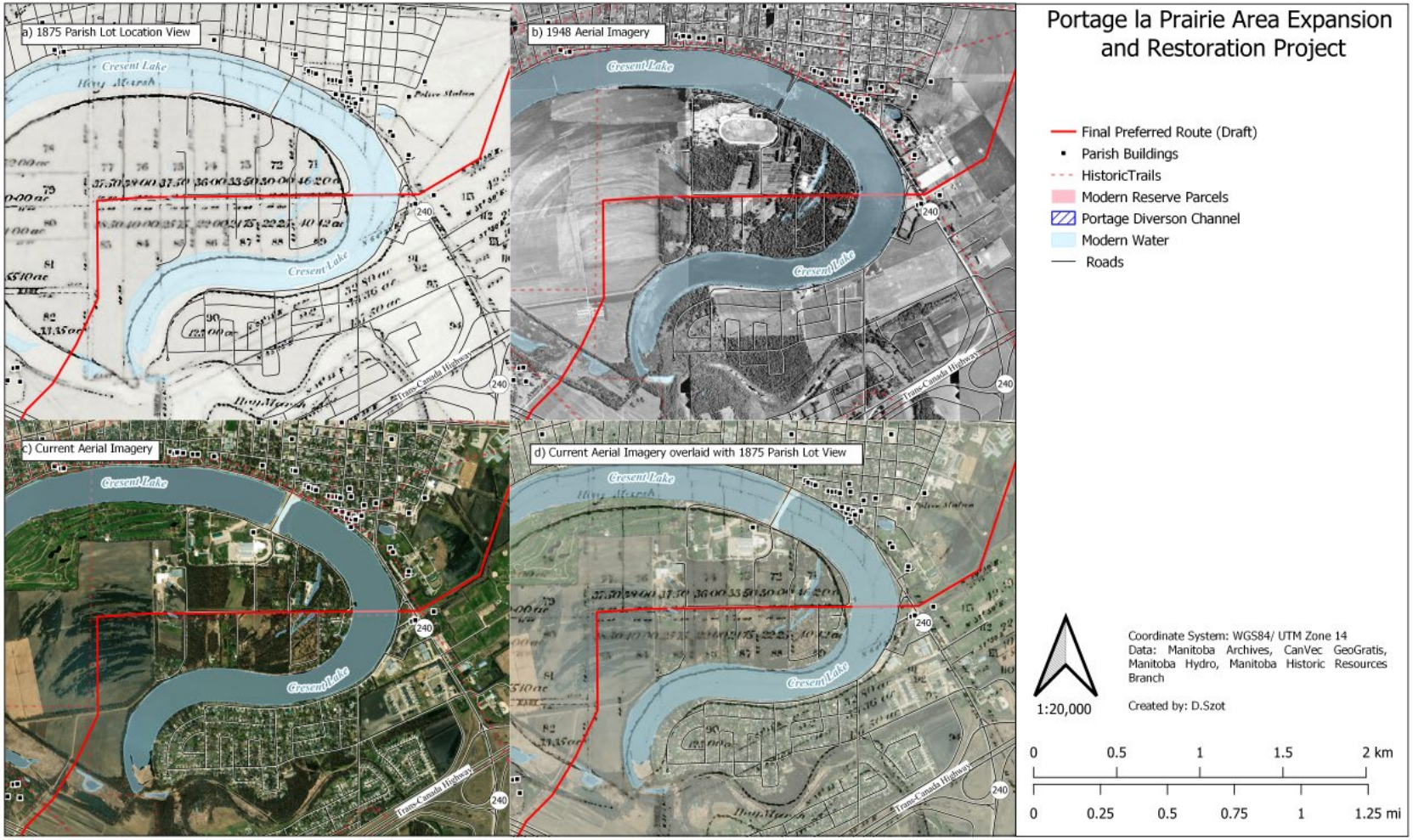


Figure 8-7: Land development change over time in Portage la Prairie

Manitoba Hydro undertook an approach to Indigenous engagement that was structured to understand concerns related to BP6/BP7 and build upon these understandings for upcoming future projects in the Portage la Prairie area. Indigenous Coordinators were supported to conduct interviews, assess effects, sit on decision making teams related to routing the project. Manitoba Hydro intends to work with Coordinators in upcoming future Manitoba Hydro projects, including the potential Portage Area Capacity Enhancement station and transmission line, to build upon understandings from this project.

- Manitoba Hydro will work with Indigenous Coordinators to apply learnings from BP6/BP7 to potential upcoming PACE projects.

8.11 Greenhouse gases and climate change

8.11.1 Climate

Climate plays an important role in multiple aspects of the project. For example, design loads are influenced by ice accumulation and wind, construction planning may use seasonal temperature patterns to favour frozen ground conditions, and conductor clearances are influenced by ambient temperature and wind conditions. Furthermore, the impact of extreme climate events, such as the wet snow event in October 2019 that resulted in damage to the existing infrastructure can result in substantial outages and financial consequences.

At a high level, this section characterizes historic climate conditions and presents projections of how climate in the area may change in the future. The information provided will become foundational for subsequent assessments of climate change impacts and resilience for transmission projects in the Portage la Prairie area.

8.11.1.1 Historic climate

Portage la Prairie is in the Portage Ecodistrict of the Lake Manitoba Plain Ecoregion, which is part of the broader Prairies Ecozone. The climate is generally characterized as subhumid, with mean annual precipitation that varies considerably year-to-year (often falling in the form of local summer storms), high evaporation, short, warm summers and long, cold winters (Smith et al., 1998).

There are nine meteorological stations operated by Environment and Climate Change Canada (ECCC) used for the assessment. Seven are in the Portage area and one at the Richardson International Airport in Winnipeg and one in Brandon are also included. These two are to complement records at Portage la Prairie and extrapolate to southern Manitoba.

Some stations have a long temporal coverage (back to 1886) but many have missing and poor-quality data that limit the suitability of these records for long term climate studies.

8.11.1.2 Climate Normals

Monthly Climate Normals (Environment and Climate Change Canada 2021) are illustrated in Figure 8-8 for temperature, precipitation and wind speed. Also shown are period-of-record extremes at each station, which may extend beyond the 1981-2010 period.

Portage la Prairie is located roughly midway between Winnipeg and Brandon and because of their proximity, normal climatic conditions from Winnipeg and Brandon are indicative of general conditions at Portage la Prairie. This is illustrated in Figure 8-8 for precipitation, which shows similar patterns at all three stations. One notable difference in the precipitation plots is the extreme (period-of-record) daily precipitation in which Portage la Prairie CDA's 137mm event (August 16, 1985; (Environment and Climate Change Canada 2021)) exceeds extreme daily records at Winnipeg Richardson Int'l A and Brandon A. This difference shows the highly variable nature of precipitation compared to temperature.

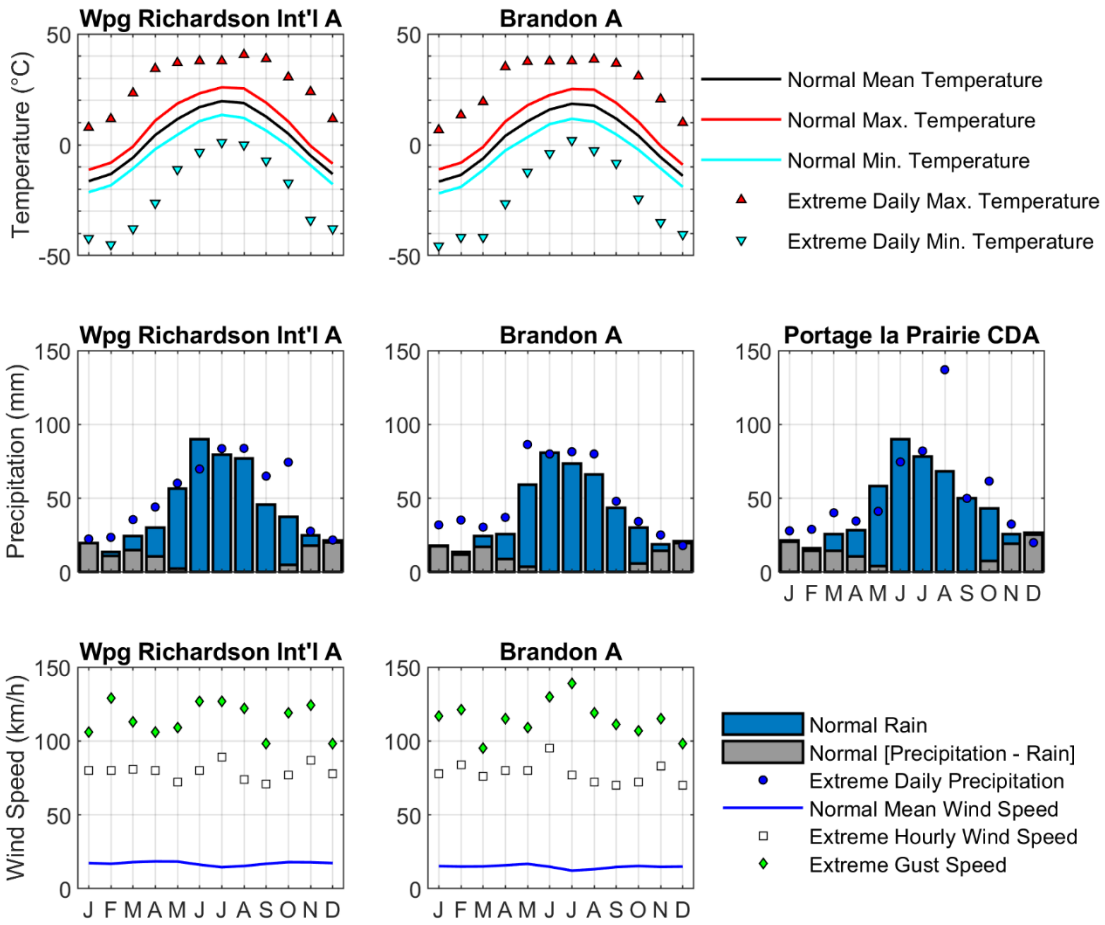


Figure 8-8: 1981-2010 Monthly Climate Normals at Winnipeg, Brandon and Portage la Prairie[4].

8.11.1.3 Trends

Adjusted and Homogenized Canadian Climate Data (AHCCD) from ECCC are developed specifically for purposes of trend analysis (Vincent, Hartwell and Wang 2020); (Mekis and Vincent 2011); (Wan, Wang and Swail 2010). AHCCD includes minimum temperature (Tmin), mean temperature (Tmean), maximum temperature (Tmax), rain (total of daily rainfall) , snow (total of daily snowfall), precipitation (total of daily precipitation), and wind speed (mean of hourly wind speed). Seasonal and

[4]Also shown (points) are period-of-record, sub-monthly, extremes for select variables. Data retrieved from ECCC (2021).

annual time series from AHCCD at select locations in the project area are plotted in Figure 8-9.

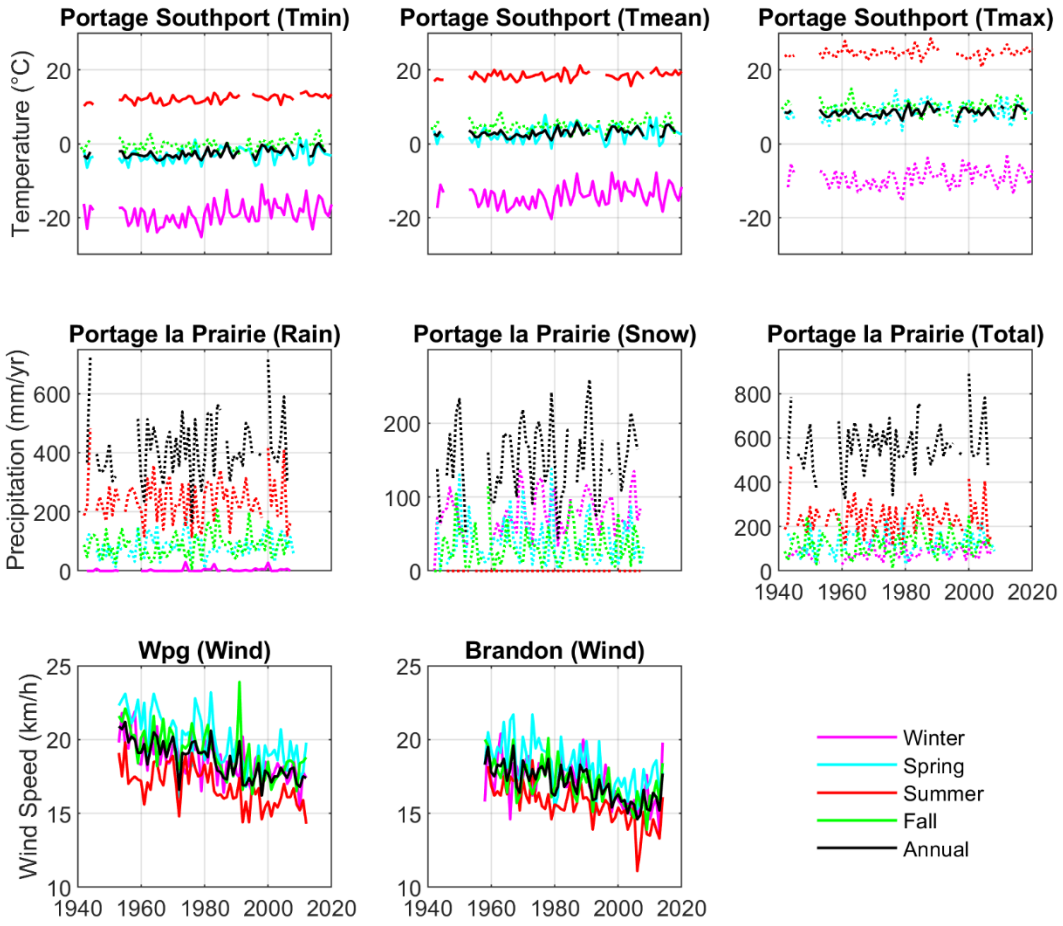


Figure 8-9: Time series of seasonal and annual temperature, precipitation and wind speed[5].

Statistically significant trends are shown in Figure 8-9 as solid lines (dotted lines are not statistically significant). Trends of note include:

[5]Solid lines indicate statistically significant trends and dotted lines indicate time series where no statistically significant trend was detected. Data shown are from the entire period available within ECCC's Adjusted and Homogenized Canadian Climate Data (AHCCD) for select stations of interest.

- Annual temperatures increased by
  - 0.031°C/yr for Tmin
  - 0.026°C/yr for Tmean
  - 0.019°C/yr for Tmax
- In winter
  - minimum temperatures increased by 0.044°C/yr
  - mean temperatures increased by 0.035°C/yr,
- In spring
  - minimum temperatures increased by 0.035°C/yr
  - mean temperatures increased by 0.029°C/yr
- In summer
  - minimum temperatures increased by 0.025°C/yr
  - mean temperatures increased by 0.016°C/yr
- The only significant precipitation trend was for increasing winter rain (0.02mm/yr), which is likely in response to warmer winter temperatures resulting in more precipitation falling as rain instead of snow.
- Annually, wind speeds decreased by 0.055km/h/yr in Winnipeg and 0.056km/h/yr at Brandon. Seasonally, the largest trend occurred in summer at Brandon by 0.057km/h/yr and in spring at Winnipeg 0.071km/h/yr.

It is important to recognize that trend analysis can be sensitive to the start and end dates. For the purposes of this assessment, trends are analyzed for their entire period of record available. Historic trends provide an indication of how the climate has changed in the past but may not be an accurate representation of continued longer-term changes in the climatic system (e.g., through extrapolation of trends).

8.11.1.4 Future Climate

Global climate models driven by future greenhouse gas emission scenarios (van Vuuren, et al. 2011) are used to project how Earth's climate may evolve in the future. Forty simulations from eighteen global climate models and two greenhouse gas emission scenarios provide the basis for this assessment.

The text below characterizes projections specific to the Portage la Prairie area. Based on the design life of the project, projections are presented for the 2050s (2040-2069) and 2080s (2070-2099) future horizons relative to the reference 1981-2010 period. Projected changes (deltas; Δ) indicate how the overall long-term climate may differ from the reference period, so information presented in this section can be complementary to historic climate normal presented in Section 8.11.1.1.

Table 8-5: Projected change for the 2050s future horizon (2040-2069)*

	Tmin (°C)	Tmean (°C)	Tmax (°C)	Precipitation (mm)	Evaporation (mm)	Runoff (mm)	Wind Speed (km/h)
Annual	2.97	2.83	2.60	3.00	3.7	-0.12	-0.12
Winter	4.34	3.73	3.18	2.65	1.81	2.36	-0.06
Spring	2.73	2.43	2.31	6.73	5.75	-2.95	-0.14
Summer	2.55	2.67	2.55	-1.11	2.66	0.2	-0.33
Fall	2.66	2.69	2.72	2.67	2.91	0	-0.17

↑ ↓	Strong agreement
↑ ↓	Moderate agreement
↑ ↓	Weak agreement
↑ ↓	Negligible agreement

*Relative to 1981-2010. Cell colours reflect agreement on the direction of change. Dark green / brown indicates strong agreement that an increase / decrease will occur, medium green / brown indicates moderate agreement that an increase / decrease will occur, light green / brown indicates weak agreement that an increase / decrease will occur, and grey denotes projections where the ensemble agreement is less than 60% on the direction of future change.

Table 8-6: Projected change for the 2080s future horizon (2070-2099)

	Tmin (°C)	Tmean (°C)	Tmax (°C)	Precipitation (mm)	Evaporation (mm)	Runoff (mm)	Wind Speed (km/h)
Annual	4.04	3.83	3.72	4.56	4.76	-0.34	-0.13
Winter	6.11	5.19	4.53	4.11	2.56	3.1	-0.04
Spring	3.85	3.57	3.45	9.72	9.79	-3.92	-0.11
Summer	3.45	3.52	3.69	0.45	4.29	0.2	-0.54
Fall	3.63	3.63	3.59	3.88	4.4	0.07	-0.19

↑ ↓	Strong agreement
↑ ↓	Moderate agreement
↑ ↓	Weak agreement
↑ ↓	Negligible agreement

The model projects average temperatures will increase by 2.83°C in the 2050s and 3.83°C in the 2080s (Table 8-5; Table 8-6). Both future time horizons (Table 8-5; Table 8-6) show strong agreement that temperature will increase into the future in all seasons. Winter is projected to experience the greatest temperature increase.

There is strong agreement that annual and winter precipitation will increase for both future time horizons. Increasing spring and fall precipitation is also projected, although with less agreement. Summer precipitation shows very small changes and is associated with notable uncertainty regarding the direction of change.

As expected, increasing temperature results in increasing evaporation, which may result in dryer summers. Some runoff projections show increasing winter runoff coincident with decreasing spring runoff, which may suggest changes in runoff timing. Increased temperatures result in earlier snowmelt in winter months, leaving less snow to melt in spring. Global climate models suggest that mean wind speed is not expected to drastically change in the future.

8.11.2 Greenhouse gases

The following section documents the predicted construction, operation and maintenance greenhouse gas emissions ('emissions') for the project, including construction activity emissions (including supply-chain emissions), land-use change emissions resulting from permanent disturbances along the right-of-way, and maintenance emissions during operation. A full technical report is provided in Appendix J.

Total aggregated emissions are anticipated to be 2.5 kilotonnes ("kt") of carbon dioxide equivalent ("CO_2e") for the project. While aggregated emissions are presented to the nearest tonne ("t") in Table 8-7, this is only done for comparison purposes; it is not intended to imply that this level of accuracy was achieved in the assessment of emissions.

Table 8-7: Summary of emissions

Activity	t CO_2e	% of total
Construction: Material Supply Chain	1,827	74.1%
Construction: On-Site Energy	231	9.4%
Construction: Labour Transport	5	0.2%

BP6/BP7 Maintenance	200	8.1%
Right-of-Way Land Use Change	202	8.2%
Total	**2,465**	

8.11.2.1 Construction-activity emissions

Emissions will result from the construction of BP6/BP7, including emissions embedded in the materials ("supply-chain emission") used to construct the line. These supply-chain emissions have been estimated to provide a useful point of comparison with direct on-site construction emissions.

Construction related activities for have been broken down into three major activities:

1. Manufacture of components (supply-chain)
2. Transportation of construction materials (supply-chain)
3. Construction

Most construction related emissions are supply-chain emissions embedded in the manufacturing of components (e.g., towers and conductors). Conservative estimates have been made during the calculation of emissions throughout. For example, most metal components will likely be manufactured internationally, but not all. For this assessment, India was selected as the presumed source location because India is one of the furthest locations in which to estimate transport costs, resulting in a conservative estimate of emissions (a higher estimate); but, the actual source location of the units is unknown at this time. A full list of assumptions is provided in the technical report.

While crane erection of the towers is presumed, it has been assumed that all towers are erected via heavy duty helicopter at a rate of 750 L of fuel per tower.

Emissions resulting from on-site energy use during construction are estimated to be 0.2 kt. For comparison, this is less than 1% of the annual emissions from Manitoba Hydro's existing fleet (25 kt of CO_2ein 2019; (Manitoba Hydro 2020)).

8.11.2.2 Land use change emissions

The use of construction vehicles during right-of way clearing will result in direct GHG emissions ("construction-related emissions"). In addition to this GHG impact, BP6/BP7 will also permanently alter the carbon content of a small area of land along the right-of-way.

For estimating land use change impacts, this assessment followed similar methods to those used for the life cycle assessment of the Manitoba-Minnesota Transmission Project (Jeyakumar and Kilpatrick 2015). From a carbon content perspective, only forestland within the project right-of-way footprint is permanently disturbed and assumed it will be converted to "Non-Treed" land (Appendix J).

For the purposes of this assessment we have assumed 1 ha (Table 8-8) of forestland will be permanently disturbed. This is a conservative assumption as it is likely less than 1 ha will be cleared. It is also assumed that a very small amount of land (less than 0.1 ha) will be permanently converted to concrete for tower foundations and have no carbon content remaining. Combined, these assumptions result in an average modified state of 13.8 tonne C/ha from an original state of 69 tonne C/ha for 1 ha of land (Table 8-8)

Land use change emissions as a result of the construction are estimated to be 0.2 kt of CO_2e. Table 8-8 summarizes the key inputs assumed for that estimate.

Table 8-8: Right-of-way land use change summary

Land use change component	Value	Unit
Area affected (ha)	1	Ha
Carbon content - original state	69.0	tonne C/ha
Carbon content - modified state	13.8	tonne C/ha
Permanent carbon change	55.2	tonne C/ha
Total GHG released	202.4	tonne CO_2e/ha
Total GHG Released	**0.20**	**kt CO_2e**

8.11.2.3 Line maintenance emissions

Emissions will result from the ongoing operation due to maintenance activities. It is assumed inspections may use air patrols (helicopter), flex track type or road vehicles. Regular inspections will occur by ground and by air.

Vegetation management within the right-of-way is required for public and employee safety, as well as the reliable operation of the line. An integrated vegetation management approach will be undertaken to address undesirable and non-compatible vegetation issues within the right-of-way. Vegetation control methods on Manitoba Hydro's rights-of-way are achieved primarily through mechanical control

(wheeled or tracked prime movers with drum or rotary cutters, mulcher, feller-bunchers, bulldozers with modified brush blades, etc.), herbicides, and manual control (chain saws, brush saws, and brush axes).

Based on emissions from Manitoba Hydro's entire vehicle fleet (25 kt of CO_2e; (Manitoba Hydro 2020a) and the size of Manitoba Hydro's existing transmission (13,800 km) and distribution (75,500 km) infrastructure (Manitoba Hydro 2020b), at a high level additional operating and maintenance emissions due to BP6/BP7 are expected to be in the 0 to 5 tonnes of CO_2e per year range (including air patrols).

At a high level, additional operating and maintenance emissions are expected to be less than 0.005 kt of CO_2e per year; a conservative upper limit of 0.2 kt will be assumed for the entire life of BP6/BP7.

8.12 Effects of the environment on the project

8.12.1 Overview

Effects of the environment on the project refer to the forces of nature that could affect the project physically or hamper the ability to carry out activities in their normal, planned manner. Typically, potential effects of the environment on any project are a function of project or infrastructure design and the risks of natural hazards and influences of nature. These effects may result from physical conditions, landforms and general site characteristics that may act on the project such that project components, schedule and/or costs could be substantively and adversely changed.

While environmental forces (e.g., severe weather, climate change) have the potential to adversely affect the project, good engineering design considers and accounts for these effects and the associated loadings or stresses on the project that may be caused by these environmental forces. The methodologies used for mitigating potential effects of the environment on the project are inherent in the planning, engineering design, construction, and planned operation of a well-designed project expected to be in service for several decades or longer.

The potential effects of the environment on the project is focused on the following effects:

- Delays in construction and/or operation and maintenance
- Damage to infrastructure
- Reduced visibility impacting public health and safety

8.12.2 Effects analysis

The assessment of the effects of the environment on the project considers potential changes to the project that may be caused by the environment. The project will be designed, constructed, and operated in compliance with various codes, standards, beneficial practices, acts, and regulations that govern the required structural integrity, safety, reliability, and environmental and operating performance of the project to minimize the potential for adverse effects of the environment on the project.

There are no environmental factors that are expected to interact substantially with the construction of the project. While some weather-related delays are possible, they are not likely to adversely affect the project construction, schedule, or cost.

During operation and maintenance, the transmission line could be subject to severe weather events. Manitoba Hydro designs its infrastructure to withstand extreme weather; however, it is not possible to design for all eventualities. Severe weather that has negatively affected the Manitoba Hydro system in the past includes tornados, ice storms and floods. There is potential for any of these to occur in the regional assessment area. Mitigation measures include, applying engineering practices and scheduling of activities to account for possible weather disruptions.

Over the next 100 years, Manitoba will likely experience warmer temperatures, a greater frequency of storm events, increasing storm intensity and an increase in annual precipitation. Potential effects of climate change on operation and maintenance of the project would be related to increases in the frequency of severe weather events, changes in temperature and changes in precipitation. It is expected that increases in extreme weather events would potentially affect operation and maintenance of the project by increasing unexpected maintenance due to storm damage. Changes in temperature could affect the freeze/thaw cycle, which will result in decreased foundation stability and potentially increased maintenance.

Mitigation measures include applying engineering practices and scheduling of activities to account for possible weather disruptions. Based on the above, the residual effects of the environment on the project during all phases of the project assessed as minor, with a moderate level of confidence because of the uncertainty in the potential changes to local, regional, and global climate that could occur over the life of the project.

8.12.3 Assessment conclusions

The most likely effect of the environment on the project is a short-term disruption in service and the economic costs of repair. The project will be designed to meet

applicable CSA standards. Design will be subject to two general design standards and the structural design loads will be based on a 150-year return period. Despite these measures, it is likely that extreme weather events can still result in outages and the requirement for repair of lines, conductors or towers. While this can result in socio-economic effects and potential public safety hazards, potential effects on the biophysical environment would be limited and associated mainly with an increased risk of an accidental release of hydrocarbons in the event of a flood or fire.

The project is being designed, and will be constructed and operated with regard for health, safety, and environmental protection to minimize potential environmental effects that could result during the normal course of construction, operation and maintenance as well as those that could result from forces of nature that could affect the project physically or hamper the ability to carry out activities in their normal, planned manner.

The careful planning and design of the project will minimize the potential for damage from extreme weather events. The effects of an individual event could have significant effects on a localized extent. However, the potential for these events to occur, given the measures that will be undertaken to prevent their occurrence, is low.

In the very unlikely and improbable event that damage to the line were to occur, it would be of a short duration, low frequency, or limited geographic extent such that major residual adverse environmental effects will not likely occur.

Overall, given the nature of the project, proposed mitigation, the potential residual environmental effects, extreme weather events on all valued components during all phases of the project, are assessed as not significant.

8.13 Accidents and malfunctions

8.13.1 Overview

In the context of environmental assessment, a malfunction is a failure of a piece of equipment, a device, or a system to operate as intended and an accident is an unexpected and unintended interaction of a project component or activity with environmental, health-related, social, or economic conditions (Impact Assessment Agency 2021).

These could occur as a result of abnormal operating conditions, wear and tear, human error, equipment failure, or other possible causes. Many accidents or malfunctions are preventable and can be readily addressed or prevented by good

planning, design, equipment selection, hazards analysis and corrective action, emergency response planning, and mitigation.

In this section, potential accidents and malfunctions that could result in significant adverse environmental effects are described, discussed, and assessed. The focus is on credible accidents that have a reasonable probability of occurrence, and where the resulting residual environmental effects could be major without careful management.

It is noted that accidents and malfunctions are evaluated individually, in isolation of each other, as the probability of a series of accidental events occurring in combination with each other is very minimal. These possible events, on their own, generally have a very low probability of occurrence and thus their environmental effects are of low likelihood. They have an even lower probability or likelihood of occurring together – thus their combination is not considered credible, nor of any measurable likelihood of occurrence.

Accident and malfunction event scenarios have been conservatively selected that represent higher consequence events that would also address the consequences of less likely or lower consequence scenarios.

The accidents, malfunctions, and unplanned events that have been selected based on experience and professional judgment are as follows:

- Worker accident
- Fire
- Power outages
- Tower collapse (weather, sabotage or force majeure)
- Failure of erosion protection and sediment control measures
- Spill of hazardous materials
- Collisions
- Discovery of a heritage site / object

Table 8-9 presents the potential interactions between the valued components and potential accidents or malfunctions. Project and cumulative effects of the accident or malfunction event on each valued component with a potential interaction are described, and the significance of the effect is determined using the same thresholds as those for the project environmental effects. Any event that results in human mortality is considered significant. The potential for, and consequence of, accidents and malfunctions were assessed considering historical risk information from Manitoba Hydro's experience and for other similar projects.

Table 8-9: Project-accident / malfunction interactions

Accident /malfunction	Valued components									
	Human health and safety	Wildlife and wildlife habitat	Property value, planned development and visual quality	Parks and recreation	Heritage	Traditional practices and culture	Fish and fish habitat	Vegetation	Economic opportunities	Agriculture
Worker accident	X									
Fire	X	X	X	X	X	X	X	X	X	X
Power outages	X								X	X
Tower collapse (weather, sabotage or force majeure)	X		X							
Failure of erosion protection and sediment control measures	X	X					X	X		
Spill of hazardous materials	X	X	X	X	X	X	X	X		X
Collisions	X	X								
Discovery of a heritage site / object					X					

8.13.2 Effects assessment

8.13.2.1 Worker accident

A worker accident has the potential to interact with human health and safety as it may result in harm, injury, or death to workers. All workers will be properly trained in practices to prevent workplace accidents including Workplace Hazardous Materials Information System (WHMIS), first aid, and other applicable training programs. These procedures are designed to prevent serious injury to staff and the general public as well as to minimize the occurrence of unplanned events and minimize any potential damage to the environment.

Interactions between a worker accident and communities will be mitigated by compliance with health and safety legislation, safety by design, and implementation of environmental management measures aimed at protecting human health. Safety risks to workers will be reduced by complying with the requirements of various governing standards including the federal *Canada Labor Code*, the federal *Transportation of Dangerous Goods Act*, the *Manitoba Workplace Health and Safety Act* and all associated regulations. Adherence to public safety codes and regulations will help the project to be carried out in a safe manner to protect workers and the public.

With the application of, and compliance with, these acts, regulations, and standards, including the application of safety and security measures that are known to effectively mitigate the potential environmental effects, the potential environmental effects of a worker accident on communities during construction and operation and maintenance of the project are considered not significant.

8.13.2.2 Fire

Potential effects caused by a fire include:

- Smoke emissions (GHG / climate)
- Safety risks to workers and the public (human health and safety)
- Loss or damage to property or resources (property value planned development and visual quality)
- Direct crop loss (agriculture)
- Contamination with sediment-laden water used in extinguishing the fire (fish and fish habitat, wildlife and wildlife habitat, vegetation, agriculture)
- Damage to infrastructure or heritage sites / objects (parks and recreations, heritage sites / objects, traditional practices and culture)

A fire may arise from heavy equipment or from natural causes such as a lightning strike.

Manitoba Hydro will ensure that personnel are trained in the use of fire-extinguishing equipment. In the unlikely event of a fire, local emergency response will be able to reduce the severity and extent of damage.

A large fire could create particulate matter levels greater than the ambient air quality standard over distances of several kilometers or damage vegetation or infrastructure in the area, but such situations would be of short duration, infrequent, and are not expected to occur because of planned mitigation and prevention measures. The potential residual environmental effects of a fire are therefore considered not significant.

8.13.2.3 Hazardous materials spill

Hazardous materials could be released into the air, soils, surface water or groundwater as a result of an accidental spill during construction or operation and maintenance activities.

In general, hazardous materials spills have the potential to:

- Contaminate surface and groundwater (human health and safety, fish and fish habitat, traditional practices and culture, wildlife and wildlife habitat)
- Contaminate soil (vegetation, agriculture, traditional practices and culture, wildlife and wildlife habitat)
- Increase harmful emissions (GHG / climate)

Spills are usually highly localized and easily cleaned up by on-site crews using standard equipment. Large quantities of hazardous materials will not be used by or stored as part of the project; therefore, a large spill is not possible.

Implementation of a detailed spill response plan and a well-designed construction environmental protection plan will result in ensure minimal potential effects through accidental releases. The contractor will be required to provide environmental training, as well as training in spill prevention and response, to construction personnel. Prior to the commencement of construction activities, Manitoba Hydro will ensure that spill response equipment is readily available. All spills will be contained, cleaned, and reported to applicable authorities as follows:

- Contaminated material or potentially hazardous material will be contained
- Proper safety precautions (e.g., protective clothing and footwear) will be taken

- The contractor will follow their spill response policy and will ensure that the provinces spill reporting line is notified for reportable spills
- Contaminated wastes, such as used cleaning cloths, absorbents, and pads, will be stored in proper waste containers
- Waste material will be disposed of at approved disposal facilities

Construction equipment will be cleaned and maintained in good working condition, with visual inspections of equipment performed on a regular basis. Petroleum products such as gasoline, diesel fuel, and oil will be properly labeled in accordance with the appropriate legislation and regulations. Refueling, oiling, and maintenance of equipment, as well as storage of hazardous materials, will be conducted in a designated and contained area(s). Servicing of equipment (e.g., oil changes and hydraulic repairs) will be completed off-site when possible. Vehicles will be equipped with spill containment and cleanup materials.

Personnel handling fuels and hazardous wastes will have WHMIS training and will be qualified to handle these materials in accordance with the manufacturer's instructions and applicable regulations. Hazardous waste and storage area(s) will be clearly marked and secured. Industrial waste will be reused or recycled on a priority basis. Where reuse or recycling opportunities are not available, industrial waste will be collected and disposed of at an approved facility. Garbage receptacles for solid non-hazardous wastes will be available. These wastes will be collected on a regular basis or as they are generated and will be disposed of at approved locations. With these mitigation measures and emergency response procedures implemented, and because of the low likelihood of such events, the potential residual environmental effects of a hazardous material spill on groundwater resources, aquatic environment, and terrestrial environment during construction and operation and maintenance of the project are considered not significant.

8.13.2.4 Vehicle accidents

A vehicle accident arising from project-related activities could cause injury or death to workers or the public (human health and safety; note that the potential for a fire or hazardous material spill, which could be associated with a vehicle accident or other means has been addressed above).

The potential for a vehicle accident exists during construction and operation and maintenance phase of the project. Worker traffic and truck traffic to and from the site, and the operation of heavy equipment on-site during construction have the potential to result in a vehicle accident during construction. Project-related vehicles will observe all traffic rules and provincial and federal highway regulations. Trucking

activity will observe speed limits and weight restrictions. Because the project will comply with all applicable traffic rules and regulations, the nominal increase in traffic volumes as a result of the project along with safety precautions, the potential residual environmental effects of a vehicle accident are considered not significant.

8.13.2.5 Tower collapse

While considered unlikely given the applied design standards, it is possible for a transmission tower to collapse during construction and operation as a result of extreme weather, mechanical failure, or intentional or unintentional human interaction.

Tower collapse has the potential to:

- Cause injury or death (human health and safety)
- Cause fires (effects and mitigation discussed above)
- Damage other infrastructure, heritage / cultural sites, crops, rare plant locations either directly due to tower collapse or as a result of emergency repair activities (vegetation, agriculture property values, proposed development and visual quality, parks and recreation, traditional practices and culture, agriculture)
- Impede access / movement (traditional practices and culture wildlife and wildlife habitat)

The risk of tower failure will be reduced through the application of sound engineering practice in the design of the towers and transmission lines for extreme loadings, the use of qualified construction contractors, and regular maintenance.

Engineering design will adhere to industry standards and reflect Manitoba Hydro's experience with similar projects. Design will follow the Canadian Standards Association (CSA) C22.3 No. 1-10 "Overhead Systems" standard. The reliability-based design method will be used for designing the structural components following the CAN/CSA-C22.3 No. 60826-10 "Design Criteria of Overhead Transmission Lines" standard.

In addition, consequences are managed through mitigation. Line maintenance crews will address damage to personal property, vegetation or soils. Soil contamination issues will be addressed following spill response planning.

The effects of a tower collapse would be localized and short term. The viability of wildlife populations or the capacity of critical habitat for wildlife species of conservation concern would not be jeopardized. The long-term persistence of vegetation communities and viability of vegetation species at risk will not be contrary to federal or provincial management objectives. Disruption of infrastructure or

agriculture is short term and minimal. Given the localized extent of the effects on wildlife habitat, effects on land use activities are not expected to extend beyond the actual collapsed structures. The likelihood of injury to or death of, humans or wildlife is low given the limited area affected by a tower collapse and the rarity of such an occurrence. As a result, while the magnitude of the effect of tower collapse on the affected valued component could be moderate to high, given the low likelihood and array of mitigation measures the effect is assessed as being not significant.

8.13.2.6 Erosion / sediment control failure

Erosion protection and sediment control measures will be implemented in areas near waterways (i.e. Crescent Lake and Assiniboine River) and other erosion-prone slopes, as required. Failure of erosion and sediment control measures is possible during construction due to extreme precipitation events. Failures could result in the release of sediment-laden runoff to receiving watercourses and the surrounding area.

The failure of an erosion and sediment control structure could directly affect water quality and indirectly effect fish and fish habitat.

Failure could also result in sediment covering adjacent vegetation, wildlife habitat or heritage sites / objects. The covering of heritage sites / objects could be a positive effect, since it would preserve the resource.

Traditional land and resource use by First Nations and Métis could be disrupted through the restriction of access to streams. Other land users, including recreational boaters, could experience restricted access to sites.

During construction, an erosion protection and sediment control framework will be provided to guide each contractor (where applicable) in preparing an erosion protection and sediment control plan. The plan will be in accordance with Canadian professional erosion and sediment control standards and guidelines. The plan will include inspection requirements to help minimize failures by ensuring erosion and sediment control measures are designed, installed and maintained properly, which limits the possibility of failure.

The extent of a failure would be small and the effects on fish and fish habitat, vegetation, wildlife habitat, heritage sites / objects, traditional land and resource use and other land uses are expected to be of a low magnitude. While failure of an erosion and sediment control measure could occur over the course of project construction, routine monitoring and inspection will aid in the rapid identification of such failure. Implementation of remedial action as required will limit environmental effects. Failure of erosion and sediment control measures are not a concern during

long-term operation because erosion and sediment will be controlled by vegetative cover and possibly other permanent measures such as riprap, gabions and other treatments.

In summary, the magnitude of the effects is low and there are monitoring and follow-up procedures to prevent extensive damage. The likelihood of the occurrence is low to moderate and the environmental effects on the affected valued component are assessed as being not significant.

8.13.2.7 Discovery of a heritage site / object

Cultural or heritage sites / objects may be discovered during activities involving ground disturbance such as construction related excavation. It is unlikely that a heritage sites / objects will be discovered during operation.

The discovery of a heritage site / object has the potential to affect heritage sites / objects and traditional practices and culture.

Heritage potential is determined during the environmental assessment. In areas of high potential, a preconstruction archaeological survey may be conducted.

Mitigation for the protection of heritage sites / objects is outlined in the cultural and heritage resources protection plan (Appendix H).

The CHRPP will provide clear instructions if Manitoba Hydro, its contractors and/or consultants, discover or disturb a cultural or heritage sites / objects and will determine the ongoing protection measures for the resources through processes outlined in this document.

If a heritage site / object is discovered, project work will cease in the area of the discovery and the project archaeologist will be contacted. Work in the area will continue only if approval is received from the archaeologist or the Historic Resources Branch.

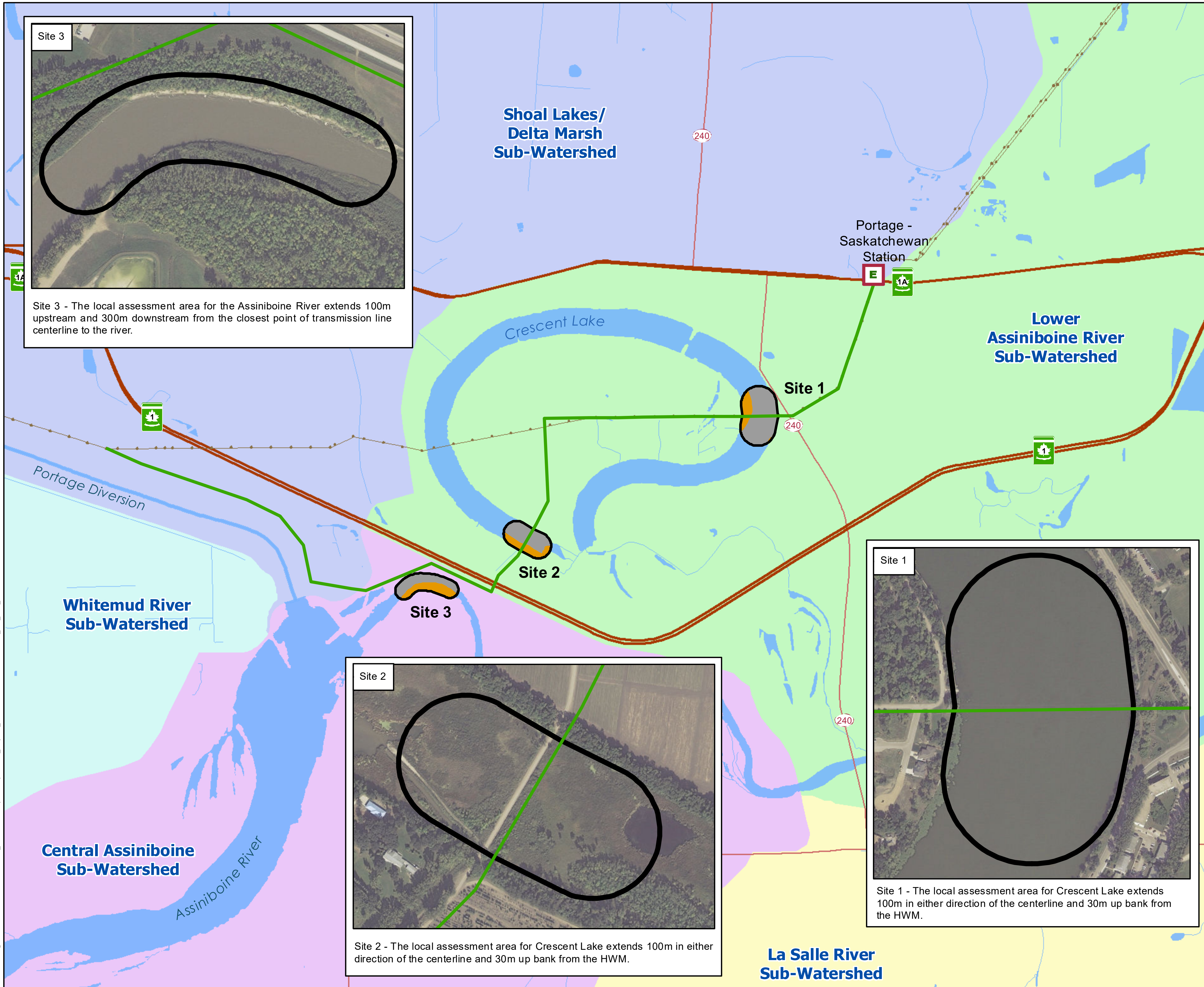
With the low probability of encountering heritage sites / objects during project-related activities, and in consideration of the nature of the project and planned mitigation, the potential residual effects are considered not significant.

8.13.3 Assessment conclusion

The project is being designed, and will be constructed and operated with regard for health, safety, and environmental protection to minimize potential environmental effects that could result during the normal course of construction, operation and maintenance as well as those that could result from accidents and malfunctions.

The careful planning of the project and the implementation of proven and effective mitigation will minimize the potential for accidents and malfunctions. The effects of an individual accident or unplanned event could have significant effects on a localized extent. However, the potential for these events to occur, given the measures that will be undertaken to prevent their occurrence, is low. In the very unlikely and improbable event that an accidents or malfunctions were to occur, it would be of a short duration, low frequency, or limited geographic extent such that major residual adverse environmental effects will not likely occur.

Overall, given the nature of the project, credible accidents and malfunctions considered, proposed mitigation, the potential residual environmental effects of all project-related accidents and malfunctions on all valued components during all phases of the Project, are assessed as not significant.



Site 3
Site 3 - The local assessment area for the Assiniboine River extends 100m upstream and 300m downstream from the closest point of transmission line centerline to the river.
Shoal Lakes/
Delta Marsh
Sub-Watershed
240
Portage -
Saskatchewan
Station
E
1A
Crescent Lake
Lower
Assiniboine River
Sub-Watershed
Site 1
Portage Diversion
Site 2
Site 3
Whitemud River
Sub-Watershed
Central Assiniboine
Sub-Watershed
Assiniboine River
Site 2
Site 2 - The local assessment area for Crescent Lake extends 100m in either direction of the centerline and 30m up bank from the HWM.
La Salle River
Sub-Watershed
Site 1
Site 1 - The local assessment area for Crescent Lake extends 100m in either direction of the centerline and 30m up bank from the HWM.

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Local Assessment Area

- Fish and Habitat Local Assessment Area

Soil Water Erosion Risk Class

- Not available in dataset
- M - Moderate (11-22 t/h/y)

Gross Sub-Watersheds

- Central Assiniboine
- La Salle River
- Lower Assiniboine
- Shoal Lakes/Delta Marsh
- Whitemud River

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 0.5 1 Kilometre

0 0.25 0.5 Mile

1:30,000

Project Development Area, Local and Regional Assessment Areas for Fish and Fish Habitat

Map 8-1

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Assessment Area Buffers

- 1 km
- 5 km
- 15 km

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 2 4 Kilometre
0 2 4 Mile

1:140,000

Assessment Area Buffers

Map 8-2

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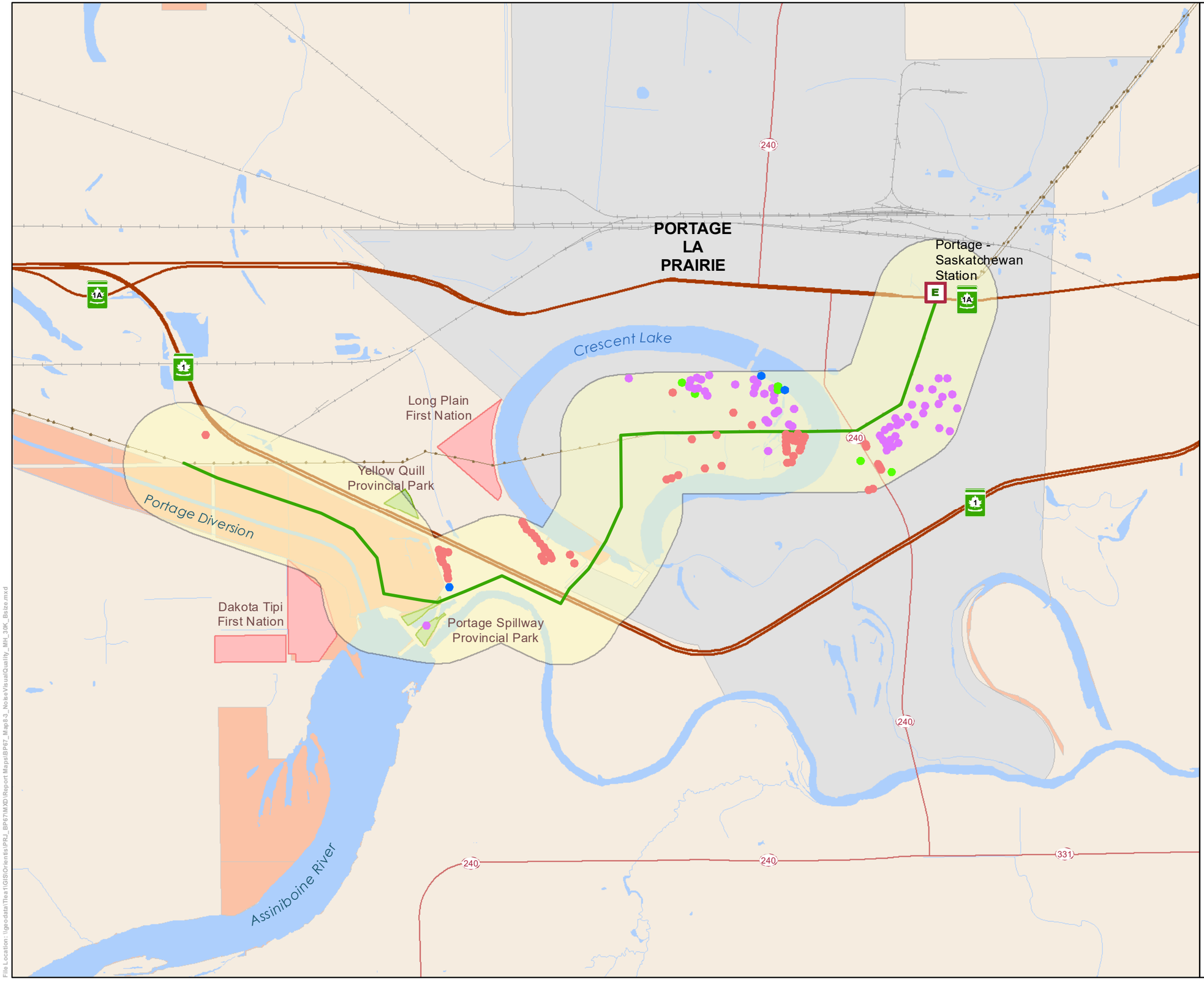

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Building Survey

- Special Features
- Historical/Cultural Resources
- Occupied House
- Recreational Bldg/Site

Study Area

- Noise and Visual Quality Study Area

Existing Infrastructure

- Transmission Line

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 13, 2021

N

0 0.5 1 Kilometre
0 0.25 0.5 Mile

1:30,000

Noise and Visual Quality Receptors

Map 8-3

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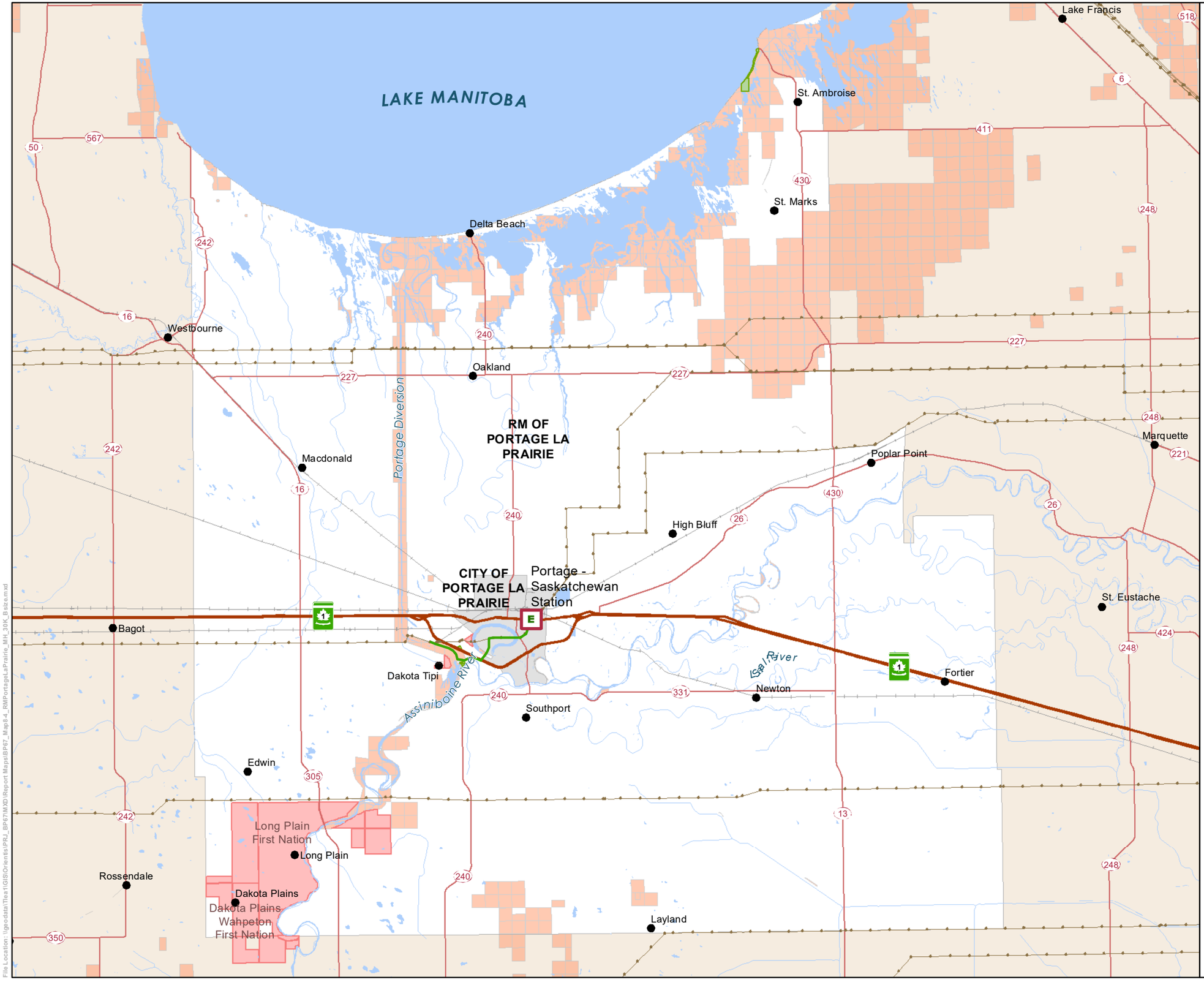

Manitoba Hydro

BP6 / BP7 Transmission Lines Replacement Project

Project Infrastructure

- Portage - Saskatchewan Station
- BP6/7 Final Preferred Route

Existing Infrastructure

- Transmission Line

Regional Assessment Area

- RM of Portage la Prairie

Landbase

- TransCanada Highway
- Provincial Road
- Railway
- First Nation
- Crown Land
- Provincial Park
- City/Town

Entire map area falls within Metis Natural Resource Harvesting Zone

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: April 14, 2021

N

0 2 4 Kilometre
0 2 4 Mile

1:225,000

Regional Assessment Area for Human Health and Safety

Map 8-4

File Location: \\gcdata\Tea1\GIS\Orientis\PRJ_BP67\MXD\Report Maps\BP67_Map8-4_RMPortageLaPrairie_MH_30K_8size.mxd

9.0 Environmental protection program

9.1 Introduction

Manitoba Hydro will implement the mitigation measures, monitoring and other follow-up actions identified during the assessment through an Environmental Protection Program (EPP). The EPP provides the framework for implementing, managing, monitoring and evaluating environmental protection measures consistent with regulatory requirements, corporate commitments, beneficial practices and public expectations. Environmental protection, management and monitoring plans will be prepared and implemented under the EPP to address environmental protection requirements in a responsible manner.

The purpose of this chapter is to outline how Manitoba Hydro will implement, manage and report on environmental protection measures, monitoring and other follow-up actions as well as regulatory requirements and other commitments identified in this environmental assessment report.

Manitoba Hydro developed the environmental protection program in accordance with its environmental policy.

Manitoba Hydro's Corporate Environmental Management Policy states the corporation is committed to protecting the environment by:

- ensuring that work performed by its employees and contractors meets environmental, regulatory, contractual, and voluntary commitments
- recognizing the needs and views of its interested parties and ensuring that relevant information is communicated
- continuously assessing its environmental risks to ensure they are managed effectively
- reviewing its environmental objectives regularly, seeking opportunities to improve its environmental performance
- considering the life cycle impacts of its products and services
- ensuring that its employees and contractors receive relevant environmental training, and
- fostering an environment of continual improvement

9.2 Environmental management

Manitoba Hydro is seeking recertification under the International Organization for Standardization (ISO) 14001 Environmental Management System standard and is

subject to requirements of the standard, including annual audits to verify its environmental performance. An environmental management system is a framework for developing and applying its environmental policy and includes articulation of organizational structure, responsibilities, practices, processes and resources at all levels of the corporation. The environmental management system includes commitments to comply with legislation, licenses, permits and guidelines, conduct inspections and monitoring, and review the results for adherence to requirements. The ISO standard ensures quality, performance and continual improvement in the delivery of Manitoba Hydro's environmental protection program.

9.3 Adaptive management

Adaptive management is a planned systematic process employed with the goal of continually improving environmental management practices by learning from their outcomes. The environmental protection program for the project has established the principles of adaptive management allowing for flexibility in the mitigation of adverse environmental effects that may result from the project. Manitoba Hydro will use the information gathered during follow up and monitoring activities to verify the accuracy of the environmental assessment effects predictions and the effectiveness of implemented mitigation measures.

Manitoba Hydro designed the EPP to be adaptive and responsive throughout the project lifecycle by evaluating program documents, processes, procedures and mitigation measures through inspection, monitoring and communication programs and conducting reviews to facilitate updates to the program.

Within the EPP, adaptive management will take place in two primary areas:

- At the management level, involving changes with the program structure itself
- At the implementation level, involving individual mitigation measures as management and implementation teams evaluate the onsite effectiveness of mitigation strategies or the program.

Scheduled update meetings between departments, annual reviews of the program and its effectiveness will take place to foster the process.

9.4 Experience from previous projects

Manitoba Hydro has extensive experience in the development of environmental protection, monitoring and follow-up plans for all sizes of projects in many different environments, from small electrical stations, to transmission lines that span over half of Manitoba.

The development of the EPP has allowed the standardization and consistent approach to environmental protection, monitoring and follow-up. The EPP improves through the experiences from past and current projects (e.g., monitoring and inspection results, documentation format changes).

9.5 Indigenous engagement

As a component of the Indigenous engagement process, Manitoba Hydro offered the ICACs the opportunity to review the IEP and traditional practice, culture and heritage chapters of the environmental assessment. Feedback shared during by Indigenous communities during the IEP helped inform the environmental assessment report and EPP.

The knowledge that was shared through the IEPassisted Manitoba Hydro with:

- Developing a greater understanding of the project development area
- Identifying key concerns in the project development area
- Identifying potential project effects
- Planning and designing the project
- Developing potential mitigation measures

Manitoba Hydro recognizes the unique relationship that Indigenous communities and organizations have with their areas of land use and appreciates sharing of information about their history and culture, and perspective on the project.

9.6 Environmental protection program

9.6.1 Overview

Manitoba Hydro's Environmental Protection Program (EPP) provides the framework for the delivery, management and monitoring of environmental and socio-economic protection measures that satisfy corporate policies and commitments, regulatory requirements, environmental protection guidelines and beneficial practices, and input during the public engagement process and Indigenous engagement process. The EPP:

- Describes how Manitoba Hydro is organized
- Functions to deliver timely, effective, comprehensive solutions and mitigation measures to address potential environmental effects
- Defines roles and responsibilities for Manitoba Hydro employees and contractors
- Outlines management, communication and reporting structures.

The EPP includes the what, where and how aspects of protecting the environment during the pre-construction, construction, operation and decommissioning of the project. Figure 9-1 illustrates the components of the EPP. The following sections describe each component in further detail.

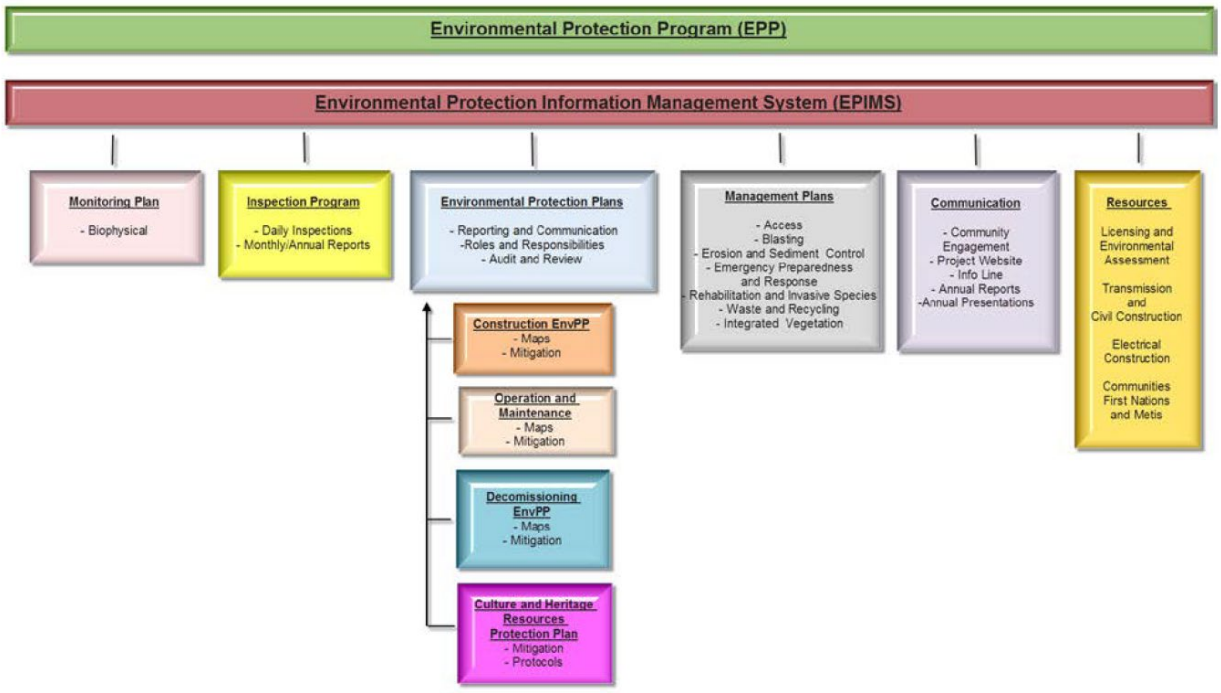

Figure 9-1: Environmental protection program components

9.6.2 Organization

The organizational structure of the EPP includes senior Manitoba Hydro management, project management and implementation teams that work together to provide timely and effective implementation of environmental protection measures identified in environmental protection plans (Figure 9-2). Manitoba Hydro senior management is responsible for the overall EPP, including resourcing, management and performance, and is accountable for regulatory compliance, policy adherence and interested party satisfaction.

The environmental protection management team is composed of senior Manitoba Hydro staff and is responsible for the management of environmental protection plans, including compliance with regulatory and other requirements, quality assurance and control, consultation with regulators, and related public and

Indigenous engagement activities. Environmental consultants and advisors support the management team.

The environmental protection implementation team is composed of Manitoba Hydro operational field and office staff and is responsible for the day-to-day implementation of environmental protection plans, including monitoring, inspecting and reporting. The implementation team works closely with other Manitoba Hydro staff as required.

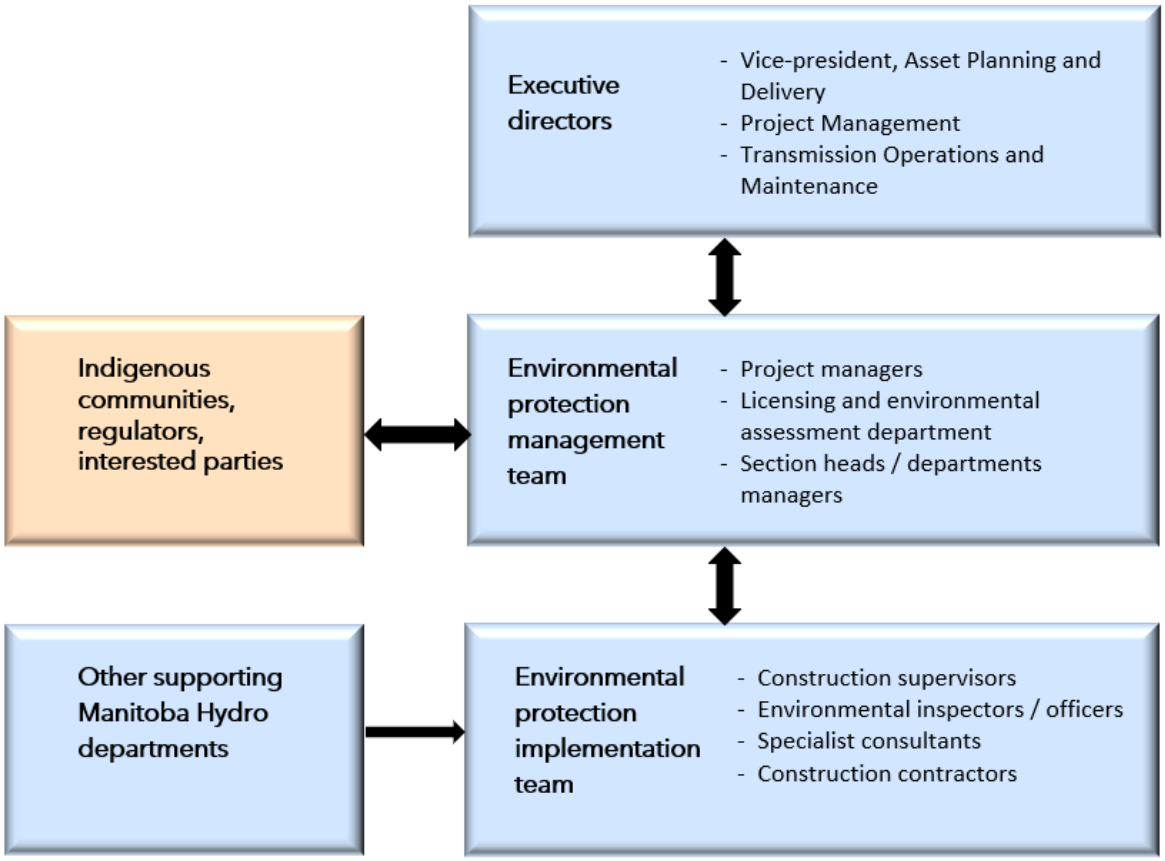

Figure 9-2: Environmental protection organizational structure

9.6.3 Resources

Manitoba Hydro commits resources early in the planning cycle to provide effective environmental assessment, mitigation and monitoring. Teams of engineers and environmental professionals develop preventative or avoidance mitigation measures

that include design and routing alternatives. In addition, there are resource allocations for the delivery and implementation of environmental protection measures to meet corporate policy and government regulatory requirements.

Manitoba Hydro is committed to staffing the environmental protection program with environmental inspectors and providing required support, including training, financial resources and equipment.

9.6.4 Roles and responsibilities

Figure 9-3 illustrates the typical organizational lines of reporting and communications. The roles and responsibilities for delivery of the project and implementation of environmental protection measures are as follows:

- The construction supervisor has overall responsibility for the implementation of the environmental protection plans and reports to a section head or department manager.
- The Licensing and Environmental Assessment Department oversees the development of environmental protection documents and associated inspection and monitoring programs, including ongoing public and Indigenous engagement activities.
- The construction contractor is responsible for ensuring work adheres to the environmental protection plans and reports to the construction supervisor.
- Environmental inspectors / officers have the primary responsibility to confirm that environmental protection measures and specifications are implemented per the environmental protection plans as well as provide information and advice to the construction supervisor.
- Manitoba Hydro field safety, health and emergency response officers are responsible for the development and execution of the safety program and occupational health and safety practices at the various construction sites.

Other Manitoba Hydro employees, including engineers and technicians, provide information and advice to the construction supervisor.

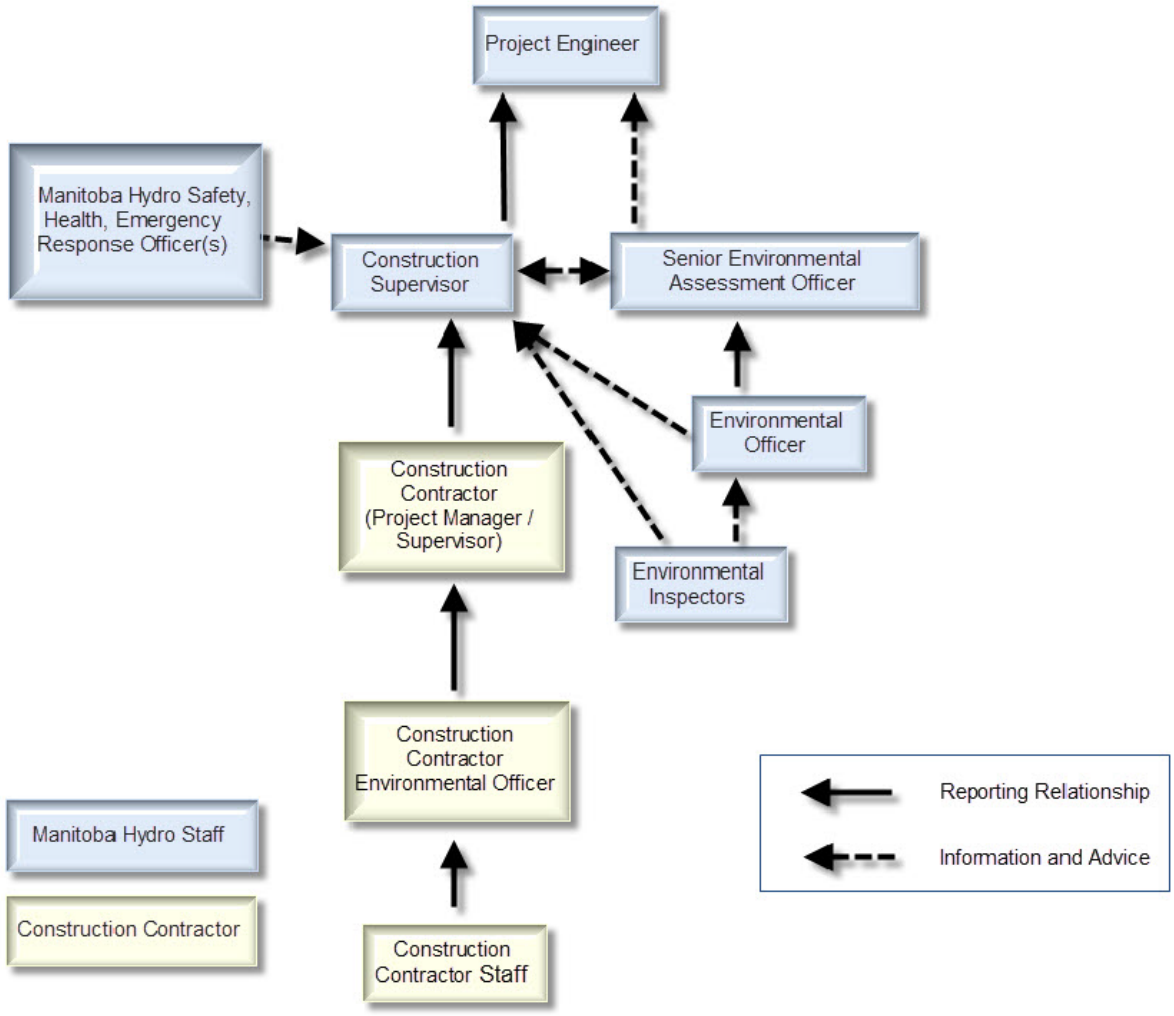

Figure 9-3: Typical organizational lines of reporting and communications

9.6.5 Communication and reporting

Manitoba Hydro personnel will maintain ongoing communications with Manitoba Conservation and Climate, other provincial and federal departments, and Indigenous communities and organizations regarding implementation of the environmental protection plan. The construction supervisor and environmental inspectors will maintain ongoing communications with the contractor and contract staff through daily tailboard meetings and weekly or otherwise scheduled construction meetings at the worksite. Inspection reports as well as incident, monitoring and other reports will be prepared and available on site for the regulators, contractors and Manitoba Hydro staff.

Manitoba Hydro will provide Indigenous communities and organization, landowners, interested parties and the public with ongoing opportunities to review and comment on the project. Manitoba Hydro developed a dedicated project webpage to facilitate communication with Indigenous communities and organizations, landowners, interested parties and the public. The environmental protection management team will record and review formal enquiries or complaints for response or action. Manitoba Hydro will also engage Indigenous communities in monitoring of the Project whether it be through field tours offered to community members during construction of the Project or through Indigenous monitoring positions.

9.6.6 Environmental protection plans

Environmental protection plans document environmental protection measures to provide for compliance with regulatory and other requirements, and to achieve environmental protection goals consistent with corporate environmental policies. Manitoba Hydro designed the environmental protection plans as user-friendly reference documents that provide project managers, construction supervisors and contractors with detailed lists of environmental protection measures and other requirements implemented in the design, construction and operation phases of a project.

Manitoba Hydro organized the environmental protection measures by construction component and activity, and environmental component and issue to assist project personnel in implementing measures for work sites and activities.

Manitoba Hydro will develop the environmental protection plans described in the following sections.

9.6.6.1 Construction

The construction environmental protection plan (CEnvPP) will be prepared prior to construction. It is a key element in implementing effective environmental protection and limiting the potential adverse environmental effects identified in the environmental assessment report. It also outlines actions to identify unforeseen environmental effects and implement adaptive management strategies to address them. An important component of an environmental protection plan is review and updating. This allows environmental protection measures to remain current, continually improving environmental performance.

A CEnvPP is composed of general and specific environmental protection measures that cover all aspects of the work and the environment. General environmental protection measures for the project include mitigation measures and follow-up

actions identified in the environmental assessment report, including design mitigation, provincial and federal regulatory requirements, beneficial practice guidelines, Manitoba Hydro environmental policies and commitments, and input during public and Indigenous engagement.

The CEnvPP lists the general environmental protection measures for major components and activities associated with the project. Environmental protection measures are provided for environmentally sensitive sites (ESS) identified during public and Indigenous engagement and assessment activities. Environmentally sensitive sites are locations, features, areas, activities or facilities along or immediately adjacent to the transmission line corridor or other project components that are ecologically, socially, economically or culturally important and sensitive to disturbance by the project and, as a result, require site-specific mitigation measures.

The CEnvPP will contain orthophoto map sheets that provide Manitoba Hydro project managers, construction supervisors, employees, contractors and contract employees with detailed site-specific environmental protection information that can be implemented, managed, evaluated and reported on in the field.

9.6.6.2 Operation and maintenance

As this Project is only a small portion of the entire BP6/BP7 transmission lines from Brandon to Portage, standard mitigation measures will apply during operations and a specific operation and maintenance environmental protection plan is not planned at this time.

9.6.6.3 Decommissioning

A decommissioning environmental protection plan will be prepared at the end of the project's operational life and will contain decommissioning methods, waste and recycling management, and mitigation measures to address environmental effects and legislation that is in effect at that time.

9.6.6.4 Cultural and heritage sites / objects

The fact that cultural and heritage sites / objects have intrinsic value to Manitobans is understood by Manitoba Hydro and addressed through a separate protection plan. The culture and heritage resource protection plan (Appendix H) outlines protection measures in the event of the discovery of previously unrecorded cultural and heritage sites / objects during construction and describes the ongoing monitoring of known cultural and heritage sites / objects for disturbance.

Through Indigenous engagement and previous projects, Manitoba Hydro understands and acknowledges the importance of cultural and heritage sites / objects to Indigenous communities. Manitoba Hydro has developed mechanisms such as notification of discovery and involvement in site investigations, which are further explained in the culture and heritage resource protection plan.

Results from the heritage resources monitoring program will be discussed through Indigenous engagement on an as required basis during construction, as well as through a heritage resources impact assessment to the Manitoba Historic Resources Branch per the terms of the Heritage Resources Act (1986) and heritage permit.

9.6.6.5 Management plans

Management involves the organization of activities and resources to resolve or respond to environmental problems, issues or concerns. Management plans provide reasoned courses of action to achieve pre-defined goals or objectives. Management plans will be prepared to address important management issues, regulatory requirements and corporate commitments identified in the environmental assessment report. The management plans will describe the management actions, roles and responsibilities, evaluation mechanisms, updating requirements and reporting schedules. The following management plans will be prepared prior to the start of construction of the project:

- Access
- Biosecurity
- Blasting
- Erosion protection and sediment control
- Emergency preparedness and response
- Rehabilitation and weed management
- Waste and recycling

Environmental inspectors / officers will conduct regular inspections during construction to ensure adherence to the plans. The following sections describe each plan.

9.6.6.6 Access management plan

Prior to the start of construction, Manitoba Hydro will prepare an access management plan to minimize the need to construct new access roads and trails.

The access management plan will outline:

- The use of existing roads and trails to the extent possible during construction

- Management objectives and principles
- Contact requirements for municipalities, landowners, resource users and other parties consulted prior to accessing lands
- Security requirements, including
  - Terms and conditions for access
  - Restrictions on firearms
  - Hunting and fishing
  - Other resource use activities
- Environmental protection measures including
  - Timing windows
  - Vehicle cleaning and servicing
  - Gate protocols
  - Load restrictions
  - Warning signage
  - Speed limits
  - Sensitive area avoidance
  - Stream crossings
  - Other environmental issues
- Access management issues and mitigation strategies
- Safety of construction workers and the general public
- Respect for First Nation and Métis rights and resource users
- Protection of natural, cultural and heritage sites / objects

9.6.6.7 Biosecurity

Prior to the start of construction Manitoba Hydro will prepare a biosecurity management plan for the project to provide guidance to Manitoba Hydro staff and contractors in order to prevent the introduction and spread of weeds and other pests, including invasive species, in agricultural land and livestock operations through project pre-construction and construction activities.

9.6.6.8 Blasting

Prior to the use of explosives, the contractor will prepare blasting plans to manage the storage and use of explosives at construction sites in accordance with environmental protection measures, provincial and federal legislation and guidelines, and corporate policies for explosives.

9.6.6.9 Emergency preparedness and response

Prior to the start of construction, each contractor will prepare an emergency preparedness and response plan to prepare for and respond to emergencies at construction sites in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment. The plan will include the following:

- Spills or releases of hazardous substances, including petroleum products
- Accidents involving hazardous substances
- Medical emergencies
- Explosions and fire
- Measures prescribed for
  - Provision of emergency response planning
  - Responsibilities
  - Training
  - Exercises
  - Procedures
  - Containment
  - Clean-up equipment and materials

9.6.6.10 Erosion protection and sediment control

Prior to the start of construction, Manitoba Hydro will develop an erosion protection and sediment control framework to guide each contractor in preparing an erosion protection and sediment control plan to limit adverse environmental effects of sediment releases on the aquatic environment in accordance with provincial and federal legislation and guidelines, and corporate environment policies and guidelines.

The plan will prescribe environmental protection measures including:

- Frozen ground conditions
- Establishment of buffer zones
- Avoidance of sensitive areas
- Use of bioengineering techniques

9.6.6.11 Rehabilitation and weed management

Prior to the start of construction, Manitoba Hydro will prepare a rehabilitation and weed management plan in accordance with environmental protection measures and provincial guidelines for rehabilitation.

The plan will prescribe measures for:

- Washing equipment and vehicles prior to entering construction sites
- Controlling vegetation at construction sites
- Restoring and re-vegetating disturbed sites

9.6.6.12 Waste and recycling

Prior to the start of construction, Manitoba Hydro or the contractor will develop a waste and recycling management plan to manage waste at construction locations in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment.

The plan will include measures for:

- Waste reduction
- Recycling and reusing initiatives
- Storage of kitchen wastes
- Recycling and disposal of construction wastes
- Disposal of wastes at licenced facilities

9.7 Follow-up and monitoring

Follow-up and monitoring are conducted to verify the accuracy of the environmental assessment of a project, assess the effectiveness of measures taken to mitigate adverse effects and determine compliance with regulatory requirements. Manitoba Hydro implements the follow-up and monitoring activity using two programs called inspection and monitoring, which are discussed further in the sections below.

9.7.1 Indigenous engagement

Manitoba Hydro will offer Indigenous communities and organizations environmental protection program meetings to review and discuss the findings of the environmental assessment and engagement and how the information shared will inform the EPP.

Manitoba Hydro will also engage Indigenous communities in monitoring of the Project whether it be through field tours offered to community members during construction of the Project or through Indigenous monitoring positions. Manitoba Hydro will further discuss with Indigenous communities to determine the preferred and most meaningful option for monitoring.

9.7.2 Inspection program

Inspection is the organized examination or evaluation involving observations, measurements and sometimes tests for a construction project or activity. The results of an inspection are compared to specified requirements, drawings and standards for determining whether the item or activity is in conformance with these requirements. Environmental inspection is an essential and key function in environmental protection and implementation of mitigation measures.

Manitoba Hydro has established a comprehensive integrated environmental inspection program to comply with regulatory approvals and meet corporate environmental objectives. The program includes environmental inspectors onsite during construction activities. Manitoba Hydro's approach to environmental inspection includes:

- Compliance with regulatory approvals
- Adherence to environmental protection plans
- Onsite environmental inspectors
- Training and education
- Regular monitoring and inspection during construction
- Interaction with contractors (e.g., pre-construction meeting, daily discussion)
- Regular review of inspection and monitoring information
- Quick response to incidents or changing conditions
- Monthly summary reports
- Regular reporting to regulators
- Notification of regulators of emergency or contingency situations

Environmental inspectors / officers will:

- Visit active work sites to inspect for compliance with licence, permit or other approval terms and conditions, and adherence to environmental protection plan general and specific mitigation measures
- Report all instances of non-compliance to the construction supervisor, contractor and applicable regulatory authority
- Report incidents such as accidents, malfunctions, spills, fires, explosions and environmental damage to the construction supervisor and applicable regulatory authority
- Record all inspection activities in a daily journal and complete daily inspection forms

- Provide daily and monthly inspection reports electronically to the environmental protection information management system for review and viewing by applicable Project staff

Incidents will be dealt with immediately and followed up in subsequent daily inspection reports.

9.7.3 Monitoring program

Due to the small scope of the project and minimal natural habitat, an environmental monitoring plan has not been prepared for this project. However, should inspection discover unknown effects, one will be prepared and implemented.

Should it be required, monitoring will be carried out by Manitoba Hydro and may be contracted to environmental consultants that possess the necessary expertise, equipment and analytical facilities. As well, Manitoba Hydro will also engage Indigenous communities in monitoring of the Project whether it be through field tours offered to community members during construction of the Project or through Indigenous monitoring positions.

9.7.4 Environmental protection information management system

An environmental protection information management system (EPIMS) is the internal central repository of environmental protection information, including:

- Environmental protection documents
- Reference information such as regulations and guidelines
- Inspection reports
- Monitoring field data and reports

The environmental inspection program will employ modern electronic recording, reporting and communication systems using field computers, geographic positioning systems and digital cameras. Field computers will have project and other reference information needed for effective implementation of environmental protection measures, including regulations, guidelines, licences, permits, engineering drawings, specifications, maps, reports and data.

EPIMS is a tool that helps Manitoba Hydro monitor and report on environmental protection implementation, regulatory compliance and incident reporting. EPIMS will be the mechanism to provide reporting and tracking of environmental protection performance, and the foundation of an auditable EPP.

9.8 Pre-construction activities

Manitoba Hydro will undertake several activities prior to commencing construction of the project to set the direction for environmental protection and compliance with legislated requirements. Manitoba Hydro will endeavour to meet with interested Indigenous communities and organizations during the finalization of the construction environmental protection plan to discuss, address and mitigate concerns, to the extent possible, with cultural and environmentally sensitive sites.

Manitoba Hydro will obtain licenses, permits, authorizations and other approvals, including property agreements, right-of-way easements and releases, prior to commencement of construction of each project component. Additional terms and conditions of these approvals will be incorporated into the construction environmental protection plan. Additional approval requirements to be obtained by the contractors will be identified and communicated to the successful bidders.

The Licensing and Environmental Assessment Department will typically participate in the tender / direct negotiated contract development process to make sure environmental requirements are included as contract specifications. Bidders are required to list and defend their environmental record and must have an environmental policy, including a commitment to environmental protection.

Meetings will be held with the contractors to review the environmental protection requirements, establish roles and responsibilities, management, monitoring and other plans, inspection and reporting requirements, and other submittals. Prior to the start of construction, contractor employees will be trained and/or oriented on environmental protection requirements.

9.9 Work stoppage

The duty to stop work rests with everyone encountering situations where the environment, including biophysical, socio-economic and heritage sites / objects, are threatened by an activity or occurrence that has not been previously identified, assessed and mitigated. Work stoppage is also to occur in the event of an environmental accident, extreme weather event or exposed human remains. Individuals discovering such situations are to inform their supervisor who will report the matter to the construction supervisor or environmental inspector / officer immediately. The contractor is also required to stop work voluntarily where construction activities are adversely affecting the environment or where mitigation measures are not effective in controlling environmental effects. Remedial action plans or other environmental protection measures will be developed and implemented

immediately after discussion and prior to resumption of work if previously halted. Work is not to resume until the situation has been assessed and responded to and Manitoba Hydro approves the resumption of work. Stop work orders will be documented, reported to regulatory authorities (if applicable) and reviewed at construction meetings.

9.10 Review and updating

9.10.1 Incident reviews

CEnvPP will be subject to review in the event of an incident, including environmental accidents, fires and explosions, reportable releases of hazardous substances and non-compliance situations.

9.10.2 Auditing

Auditing is a systematic approach to defining environmental risk and/or determining the conformance of an operation with respect to prescribed criteria. An environmental audit typically involves a methodical examination of evidence that may include interviews, site visits, sampling, testing, analysis, and verification of practices and procedures. Environmental protection plans for the project will be subject to internal and external audits through Manitoba Hydro's ISO 140001 registration process. The audit results will help to evaluate the effectiveness of environmental protection measures, to learn from inspection and monitoring programs, and to improve project planning and environmental assessment performance.

9.10.3 List of revisions

A list of revisions will be maintained at the beginning of each environmental protection plan that identifies the nature of the revision, section revised and dates.

9.11 Summary

This chapter outlined the environmental protection program where environmental protection commitments, mitigation measures and follow-up actions identified in this environmental assessment report will be implemented, managed, reported and evaluated. The purpose, organization, responsibilities, management, communication and other aspects of the environmental protection program were described. Environmental protection plans are described as they relate to the construction, operation and decommissioning stages in the project planning cycle and environmental assessment and licensing process. Implementation of follow-up

actions, including inspection, management and auditing are discussed. Environmental management and monitoring plans are also identified.

10.0Conclusion

The environmental assessment for this project examined potential effects on biophysical and socioeconomic components. Biophysical components assessed include climate, noise and air quality, geology and hydrogeology, terrain and soils, fish and fish habitat, vegetation, and wildlife and wildlife habitat.

Socioeconomic components assessed include human health and safety; parks and recreation, property value, residential development and visual quality; agriculture; and traditional practices, culture and heritage.

The primary mechanism to mitigate potential effects involved the short construction period (four months) during the winter, and a routing process involving studies of the natural and built/socioeconomic environment and including engagement with Indigenous groups, affected landowners, interested parties and the public. The final preferred route was modified based on input and environmental conditions.

Mitigation measures were developed to address effects that were not avoided by routing. In terms of physical environment effects, such as those relating to soil erosion, air quality and noise, the assessment determined that they will typically be localized and short in duration. Effects to the natural environment in the project region consist mainly of agricultural land and there are few areas of natural habitat that would be crossed by the project. Natural terrestrial habitat is limited. There are several wildlife species of conservation concern that may occur in the region, but few natural areas near the transmission line where they could occur. The presence of the transmission line may result in bird-wire collisions, but not at levels that would have measurable effects to regional populations. The route crosses Crescent Lake and is adjacent to the Assiniboine River for several hundred meters. With mitigation, no effects to fish habitat are expected.

The project is expected to result in positive economic benefits to the region, through the presence of the workforce, but also indirectly, through facilitating development of industry. There will be a slight increase in traffic associated with the workforce, but the volume will be low and outside of traditionally heavy traffic periods.

Known heritage sites were mostly avoided during the routing process, with measures developed to manage previously un-discovered cultural or heritage sites / objects.

The proposed route avoids private residences

The route runs adjacent to several recreational facilities and there are over 50 within 500 m that would experience some noise and/or visual intrusion.

A full description of effects to harvesting as a result of the project are provided within each Indigenous Knowledge report. Manitoba Hydro understands the severity of the residual effects to vary between communities but overall, the project has low impacts due to its presence within a relatively exurban location.

The proposed route travels on or adjacent to agricultural land so there will be effects associated with the inconvenience, nuisance and increased production costs associated with operating farming equipment and crop production. Manitoba Hydro has developed a compensation policy for landowners that grant an easement for a transmission line right-of-way and for incidental and or physical damages to property during construction.

The environmental assessment includes an evaluation of potential cumulative effects and effects of the environment on the project, as well as an analysis of potential accidents, malfunctions and unplanned events. It also includes a description of the environmental protection program developed for the project, including the various roles, communication protocols, and commitments to monitor project activities and manage potential effects.

Based on the routing process, and the measures developed to mitigate and manage any potential adverse effects, the conclusion of environmental assessment was that the residual effects were predicted to be considered not significant.

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Appendix A

Transmission line routing

Table of contents

List of tables

Manitoba Hydro

1.0 Transmission line routing

1.1 Overview

This appendix is intended to be read as supporting material to chapter 3 of the environmental assessment report for the BP6/BP7 transmission project. It describes the models used in the transmission line routing process used to determine the location of the final preferred route.

The routing methodology used for this project is based on the EPRI-GTC overhead electric transmission line siting methodology[1].

1.2 Routing methodology

The EPRI-GTC methodology is a quantitative, computer-based methodology developed by the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC) for use as a tool in evaluating the suitability of an area for locating new overhead transmission lines.

The EPRI-GTC methodology is informed by geospatial information (where features and activities occur on the landscape) and, with the help of models at each step through the process, considers three broadly conceived perspectives that apply to land use, plus a fourth perspective that considers the other three equally. The three perspectives (and their project team representatives) are:

Built environment perspective is concerned with limiting the effect on the socio-economic environment. In routing decision-making, the built perspective (built) group is composed of agricultural, socio-economic, resource use and heritage discipline specialists, as well as Manitoba Hydro property and environmental assessment staff.

Natural environment perspective is concerned with limiting the effect on the biophysical environment. the natural perspective (natural) group is composed of wildlife, fish and vegetation and wetland discipline specialists.

Engineering environment perspective is concerned with cost, system reliability, constructability and other technical constraints. The engineering perspective

[1] EPRI-GTC. 2006. EPRI-GTC Overhead Electric Transmission Line Siting Methodology. Tucker, GA: Georgia Transmission Corporation.

(engineering) group is represented by Manitoba Hydro project management, system planning, design, construction and maintenance staff.

1.2.1 Areas of least preference

The areas of least preference are features to avoid when siting a transmission line due to physical constraints (extreme slopes, long water crossings), regulations limiting development (protected areas), or areas that would require extensive mitigation or compensation to minimize impacts. The areas of least preference used for the BP6/BP7 routing process are provided in Table A-1.

Table A-1: Area of least preference

Aboriginal Lands
Airports/Aircraft Landing Areas (glide path)
Buildings
Campgrounds/Picnic Areas
Cemeteries/Burial Grounds
Contaminated Sites
Federal/Provincial/Municipal Heritage Sites
Heritage Plaques
Known Archaeological Sites
Military Current/Past Installations
Active Mines and Quarries
Non-spannable Waterbodies (>450m)
Provincial Park Reserves
Recreational/Natural Provincial Park
Recreational Centers (Golf, Skiing, etc.)
Religious Worship Sites
Schools/Day Care
Indian Reserves/TLE Selections
Towers/Antennae
Waste Disposal Sites
Wastewater Treatment Areas

1.2.2 Alternate route evaluation model

The alternative route evaluation model (Table A-2) was developed by Manitoba Hydro team members. The team determined the criteria in the model as well as the relative weights of each criterion. The criteria are informed by feedback received during previous projects and engagement. The criteria are grouped into engineering, natural, and built perspectives and each criterion is given a weight. Definitions for each of the model criteria are provided in Table A-3.

Table A-2: Alternative route evaluation model

Criteria	Weight
Built	
Relocated Residences	30%
Potential Relocated Residences	18%
Proposed Developments	16%
Diagonal Crossings of Agriculture Crop Land	11%
Proximity to Residences	6%
Special Features	5%
Historic / Cultural Resources	5%
Current Agricultural Land Use	4%
Proximity to Buildings and structures	3%
Land Capability for Agriculture	2%
Natural	
Crown Land (natural)	30%
Wetlands	25%
Stream/River Crossings	30%
Natural Forests	15%
Engineering	
Construction/Design Costs	60%
Seasonal Construction + Maintenance Restrictions	15%
Accessibility	10%
Proximity to infrastructure	15%

Table A-3: AREM criteria definitions

Criteria	Measurement	Criteria Description
Built		
Relocated residences	Count	Occupied residence categorized in buildings layer and windshield surveys that are within the right-of-way
Potential relocated residences	Count	Occupied residence categorized in buildings layer and windshield surveys that are within 100 meters of the edge of the right-of-way
Proposed Developments	Count	Quarter section of land within which there is an approved residential subdivision
Diagonal crossing of Agriculture Crop Land (Acres)	Acres	Diagonal crossings of land identified to be in agricultural capability classes 1-3
Proximity to Residences	Count	Occupied residence categorized in buildings layer and windshield surveys that are 100-400 meters from the edge of the right-of-way
Special Features	Count	Schools, Churches, Park Parcels, Recreational Trails, Campgrounds, Resorts and Lodges, Woodlots
Historic/Cultural Resources	Count	Designated and known heritage sites within 250 m of the edge of the ROW
Current Agricultural Land Use (Acres)	Acres	Annual crop (x 2.7) and hayland (x1) land cover classes
Proximity to Buildings and Structures	Count	All buildings and structures from buildings layer not including occupied and unoccupied residences, churches, schools, daycare, unobservable or unused buildings
Land Capability for Agriculture (Acres)	Acres	Soil classes 1-3 (x2) and 4-5 (x1).
Natural		
Crown land (natural)	Acres	Crown land with natural code.
Stream/River Crossings – Centreline	Count	Natural stream/river crossings based on Fisheries and Oceans Canada data. Types A, B, C, and D (Milani 2013).
Wetland Areas (Acres) – ROW	Acres	All wetland classes from Forest Resource Inventory data
Natural Forests (Acres) – ROW	Acres	All forested (*i.e.*, productive and non-productive) cover classes from Forest Resource Inventory data
Engineering		
Design / Construction Costs	Cost	Estimated costs including construction material costs, estimates of tower type based on terrain, additional costs for angle structures and clearing costs
Seasonal Construction and Maintenance Restrictions	Value	A value determined by the presence of wetland, forest, and agricultural land use/land cover patterns within the ROW
Accessibility	Value	A value determined by the ROW's proximity to the nearest public roadway (improving accessibility), and any wetland locations within the ROW (reducing accessibility)
Index of Proximity to existing infrastructure	Value	A value determined by the ROW's proximity to existing transmission lines, pipelines and rail lines

1.2.3 Preference determination model

In order to provide guidance to the decision-making process, prior to the development and evaluation of route segments, the transmission senior management team developed a list of key considerations and assigned each a weight based on relative importance for this project. This formed the basis of the preference determination model. Weights were based on technical experience, familiarity with the key issues in the project area related to its geographic and sociological makeup and input from the engagement process. The team determined the criteria in the model as well as the relative weights of each criterion (Table A-4).

Table A-4: Preference determination model

Criteria	Percent	Description
Cost	40%	Cost was based on high-level cost estimates for construction, materials, and property acquisition, used for relative comparison
Community	30%	Input received from public and First Nation and Metis engagement
Schedule risks	10%	Includes consideration of the need for additional approvals, seasonality of construction, overall level of complication expected that could result in delays.
Environment (Natural)	7.5%	Consideration of the natural environment route statistics with interpretation by the project team and additional information not captured by the criteria that can inform the relative potential effect on the natural environment of different route alternatives.
Environment (Built)	7.5%	Consideration of the built environment route statistics with interpretation by the project team and additional information not captured by the criteria that can inform the relative potential effect on the built environment of different route alternatives.
System Reliability	5%	Consideration of external factors (e.g. weather events) that could affect the reliability of the transmission line during operation.

Appendix B
Public engagement process summary

Public engagement information

Prepared by Manitoba Hydro

Asset Planning and Delivery

Licensing & Environmental Assessment

April 2021

Table of contents

List of tables

Appendices

The following document includes summaries from the public engagement process for the BP6/BP7 transmission replacement project. The document has four main sections that include information from:

- the virtual information sessions
- interested party meetings
- online survey feedback
- feedback portal data

1. Virtual information sessions

Table 1-1 Virtual information session dates, times and number of participants

Round	Date	Time	# of participants
1	October 26, 2020	7:00 pm	4
	October 27, 2020	4:00 pm	4
	November 3, 2020	12:00 pm	5
	November 4, 2020	7:00 pm	1
2	March 16, 2021	7:00 pm	3
	March 17, 2021	12:00 pm	7
	March 18, 2021	7:00 pm	8

1.1 Round 1 summary of issues and concerns from virtual information sessions

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
Engagement	A participant indicated that they are concerned about level of involvement the RM has had to date. The participant shared that they are a key stakeholder who should be more involved.	Manitoba Hydro has met with the RM to discuss the Project and the RM sent a letter to Manitoba Hydro sharing their preferred route for the Project.
	A participant shared concerns that people who do not have	Manitoba Hydro staff sent direct mail to potentially affected

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	access to computer, internet or who are not tech savvy will not have the opportunity to share input.	landowners and a postcard to Portage la Prairie residents with the toll-free Project number. The toll-free number can be used to reach project staff if people want to request project related packages to be mailed to them.
	A participant shared that their neighbours might have concerns too. The participant expressed that there are differences of opinion in the neighborhood. The participant wants clear visibility with what Manitoba Hydro is proposing to do. A participant would like to know more about the nature of the work, compensation and how it will change their future use of the land. The participant wants to understand what Manitoba Hydro is planning to do and does not want the line to impede future use of the land and future farming of the land. The participant expressed that they were highly impacted by the storm last year, so they understand that this is needed.	Manitoba Hydro will continue to share information as the Project progresses.

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
Health and safety	Does Manitoba Hydro know the amount of EMFs from the line? A participant is concerned that they are surrounded by the lines if the lines go across the street from their home.	Manitoba Hydro staff shared that there have been thousands of research studies worldwide assessing potential health effects of EMFs. The conclusion of these scientific agencies has been generally consistent. Overall, they concluded that the research does not show that either electric fields or magnetic fields are a known or likely cause disease, including cancer. Manitoba Hydro staff indicated that with the double circuit, electric fields can be reduced when compared to a single circuit line. Manitoba Hydro is currently modeling the level of EMF anticipated at this location to address this question. Manitoba Hydro can share the EMF modelling data when it is ready, and links to Health Canada materials.
	A participant mentioned that they are glad to hear that we are removing the temporary bypass lines from the ditch (adjacent to PTH1) since they're a safety concern.	Noted.
	A participant is concerned that the storm crumpled the towers and the proximity of	The towers are designed to fail by crumbling within their own footprint, and the ROW widths

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	the towers to homes if there was another storm.	takes this into consideration.
	A participant shared concerns about health effects of EMF. They know someone who lived near a transmission line and died quite young. They are concerned about health effects of the project in the Yellowquill neighborhood. Another participant shared concerns about EMF. They shared it is different for a worker to be standing under a line for 8 hours than for them living near the line for the rest of our lives.	The design of the lines helps minimize the EMF. Manitoba Hydro staff shared resources from independent sources, including Health Canada.
	The participant shared concern with chemical and pesticide use under the line. They currently do not use any pesticides	As part of its Integrated Vegetation Management Program Manitoba Hydro seeks permission from landowners prior to the use of herbicides for vegetation management within the right of way, when concerns are expressed alternative methods of vegetation management are discussed with the land owner to ensure the safe operation of the line.
Mitigative route options	A participant asked if there could be a tower south of the golf course that ties into the	Manitoba Hydro evaluated this option and found that the route is close to the school and would just

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	existing towers to avoid more homes.	offset the impacts to the participants on that side of the lake.
	A participant asked if the segments could cross the river and avoid the city, by putting a tower by the lagoon and staying well south of the city to Angle road by 240 and then go north. Another participant shared that they very much agree with this potential route and would recommend using segment 15 to cross the river.	Manitoba Hydro evaluated this option and found that crossing the river twice was not preferred because of the infrastructure along the river and how it would interact with the transmission line.
Project description	A participant asked if the line is moving power in or out of Portage.	The power moves in both directions as it is part of an interconnected system.
	A participant asked if Manitoba Hydro would bury the lines?	Manitoba Hydro only buries lines where it is too congested as it is approximately 10x the cost.
	A participant asked if the right-of-way has expanded and what the width is now.	The right-of-way width depends on where the line is, whether it is close to a road or line. Towers will be located on a 30 m right-of-way when following a road or mile line, or 38 m when placed in a field.
	A participant asked if the width of right of way will be bigger than the temporary line.	Manitoba Hydro answered that yes, it will be bigger than the temporary right of way.

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
Property values	A participant shared concerns about property value in the Yellowquill neighborhood. Another participant shared concerns about property value. The participant shared that they felt in Winnipeg, where property is scarce, it might be easy to sell your land after but here there is a lot of available land so property value might not bounce back as easily.	Research on property values associated with transmission line projects has shown that small effects on values sometimes occur immediately after construction but diminish over time with no long-term effects.
Routing	A participant shared that they are concerned about the impact to the hotel.	The hotel was considered during the routing process.
	A participant asked why the line couldn't go on Long Plain First Nation land? They shared that it's too bad that the segments are going across Portage. They shared that they think there will likely be development all over the island and the lines will have to be moved eventually. They recommended that the line should go outside the city and if not, they should follow 3,2,8. They asked if the line could follow the south side of the bypass?	There are safety concerns with having the lines right beside the highway.

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	A participant is concerned about the route on the island especially segment 7. It would impact the view for about 16 people. They currently have a natural view and there's a lot of wildlife there. They recommend segment 5/9 instead.	
	A participant enquired about segments 9-13 but on the north side of the highway.	There are safety considerations and not enough room on the north side of the highway.
	A participant indicated that segments 11 and 12 might get caught up with overpass development. If line is along the highway, it might have to get moved in the future.	Manitoba Hydro we will continue talking with the province about the project.
	In response to Manitoba Hydro staff indicating that they had already received mitigative route recommendations, a participant asked where the route recommendations came from.	The mitigative routes came from the online portal and from previous virtual sessions, anyone interested could go on the portal and draw suggested route segments.
	A participant lives near segment 3, right by the lake, the metal structure is 800 feet from their house. They were concerned that their neighbours might see it.	After the session, Manitoba Hydro staff picked up the bolts left in the landowner's yard. The tower near the landowner's home on the island would be restrung.

Table 1-2 Category of discussion and summary of Manitoba Hydro response from Round 1 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	There were also many metal bolts left on their field. Are these towers near their home on the island being replaced?	
	One participant asked if Manitoba Hydro considered going around the city.	Manitoba Hydro considered options that went around the city, but they would be quite longer and more expensive
Trees / wildlife / recreation	The participant shared concerns about their tree nursery south of Crescent Island along Highway 1. They have a row of trees running east-west parallel to the highway (the imagery on the portal map is old so it does not quite reflect the area now). There are much younger trees on the west side and the east side is cleared but they use it for the tree nursery.	Manitoba Hydro noted the concerns and will work with the landowner.

1.2 **Round 1 alternative route segment concerns from virtual information sessions**

Table 1-3 Alternative route segment concerns from Round 1 virtual information sessions

Route segment #	Comment
1-8	A participant expressed concern that there may be no fish in Crescent lake but there are salamanders and frogs. There is also an animal refuge in the area (believed it to be a deer refuge). Homeowners will be affected, and use of park spaces will be affected. A participant shared that they are involved in a group that works with First Nations' children in foster care and that as a First Nation person, they have picnics in the park with those children in foster care. They also have ceremonies there.
7	A participant is concerned about the route on the island especially segment 7. It would impact the view for about 16 people.
9	The landowner's father owns land with a tree nursery just east of segment 9 (south of Crescent Island, paralleling highway 1) and they have concerns about this segment.
10	A participant is concerned about road safety at segment 10. There are a lot of collisions and heavy traffic on the highway.
	A participant prefers not to have it on 10 because trees act as noise and visual buffer from construction yard. Another participant shared that trees act as noise buffer for the Trans-Canada Highway, shelter from noise and wind, removal of trees would reduce property value Another participant lives right by the highway, lots of noise from traffic here so they value every leaf on every tree because it blocks the noise, removal of trees would reduce the property value.
11	A participant shared that this segment is preferred, very little impact on residential area and farm property, no trees in this area.
	Another participant shared that segment 11 is their preferred route.
	Another participant shared that this is their preferred route, however bank near the # 11 is eroding quickly because of flooding, there will be problems with erosion, there is a provincial park here so you will get some kick back from people who use the park here, don't shift it

Table 1-3 Alternative route segment concerns from Round 1 virtual information sessions

Route segment #	Comment
	any more north because you will run into the water treatment plant and they are expanding all the time and then any more north than that is too close to my home, lots of unused land behind the Days Inn, so this segment is better than 10 and 12.
12	A participant is concerned about trees and wildlife near segment 12. There are a lot of people who use the pond at the end of 12. There's a lot of fishing there and feel that the line would be too close to the area.
	A participant indicated that 12 is right across from them, all the houses face that way so it will affect the whole neighborhood, concern with radiation and health, concerns with trees and habitat. Other participants shared heritage bush acts as a visual buffer for them, they would hate to see this 200-year old bush come down, trees also act as noise buffer.
	A participant shared that there is an endangered Eastern Peewee (bird) near the end of segment 12 and that they have had conversations with Christian Artuso from the Federal government about.
15	A participant recommends using segment 15 to cross the river.
	A participant shared 11 to 15 would be preferred.

1.3 **Round 2 summary of issues and concerns from virtual information sessions**

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
Agriculture	A participant expressed that the line was there when the development was put in just 2-3 years ago. They asked is Manitoba Hydro changing the line just for	In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area, including a section of a double circuit line between

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	that little stretch? The participant shared that this is going to change the whole way they farm. The participant shared that they don't know if they will ever be able to be compensated enough and they might not be able to irrigate under the line again. They shared this is not fair to them because they feel they will never be able to farm again. The participant shared that they have been threatened with expropriation before. They indicated that it has been suggested by members of the public that they are racists. The participant asked if this project even has anything to do with the width of the easement?	Brandon and Portage la Prairie. As a result, the lines need to be repaired, rebuilt and modernized with a permanent replacement that meets safety requirements for rights-of-way. Manitoba Hydro has developed a compensation policy for landowners that grant an easement for a transmission line right-of-way and for incidental and or physical damages to property during construction.
Engagement	A participant expressed concerns with racism and there have been comments on Facebook made by people calling them haters. They shared that they don't know if it's a racist thing or a community thing. The participant added that their farm and business is being shone in a bad light.	Manitoba Hydro staff followed up with their social media staff about the comments in the Facebook ad and the comments were not in violation of Manitoba Hydro's social media policy. The ad closed the next day and Manitoba Hydro staff continued to monitor if there were any offensive comments and would remove comments that violate Manitoba Hydro's social media policy, which includes comments that use foul language

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
		or are offensive, threatening, abusive or are intended to misinform others.
Heritage	A participant added that they would like to see the archaeologist conduct heritage work on their land.	Manitoba Hydro is planning to do extensive heritage work for the project.
Homes	A participant asked about how many homes are affected by the new width requirement and will any houses be demolished.	The right-of-way for the new preferred route does not directly run over any homes. With the preferred route, no houses will be demolished.
Mitigation	A participant asked how Manitoba Hydro will follow through with mitigation measures proposed in the survey.	Manitoba Hydro provides a detailed list of mitigation measures within the environmental assessment report filed for the Project. If approved, these mitigation measures become commitments that must be implemented in fulfillment of the licence. Manitoba Hydro works closely with affected landowners and their communities to mitigate effects and encourages those with outstanding concerns to reach out. Please see contact information provided in public engagement materials with any outstanding measure you feel is unaddressed.

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
Mitigative routing suggestions	The participant likes the idea of crossing the river instead of the preferred route.	Crossing the river twice was not preferred because of the infrastructure along the river and how it would interact with the transmission line.
	A participant expressed concerns that First Nations are driving the process. The participant asked why the route doesn't go straight west from the Mayfair Farms across Yellow Quill school, why run the towers onto Cottonwood Drive, on the north side the towers are already there.	The route is very close to the school and would just transfer the impacts to the participants on that side of the lake.
	A participant offered a route suggestion to go along the diversion right down to the river then follow the road and if it doesn't encroach on First Nation land then go along Highway 240. East of the dam on the river and then across along the road allowance that is already there that is not being used because they don't want people driving across the dam, then go up highway 240, east of the sewage plant. There is lots of expansion on the Island so avoiding it would be preferred.	Manitoba Hydro has considered several routing options including options that don't go on the island, but they are longer and more costly and as such have been eliminated from further consideration.
	A participant asked why the line can't just follow the south side of	This route would go over homes. Manitoba Hydro staff asked

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	the highway.	Manitoba Infrastructure to see if we could bump out the line, but this would introduce safety concerns.
	The participant asked if the line coming from the east, rather than crossing the highway up to the Island, if it could go alongside the highway and avoid the Island entirely.	There is pivot irrigation infrastructure in the area and this location would also not meet the highway safety tolerances. Longer routes have more potential for impact.
	The participant added that the route would not be much longer if you go around the island and that we would miss all the congestion and future development.	Manitoba Hydro is using existing towers and that cost is also a driving factor in the routing decision.
	The participant expressed concerns with future development and a new hospital being built with a helicopter landing pad. There are concerns with transmission wires and the helicopter. Thinking long term, avoiding the island entirely is much better. Perhaps the line should go south of the water treatment plant and then up angle road.	Cost and agriculture are considerations. The line avoiding the island was nearly twice as long and substantially more costly.
	A participant asked about going north of Portage or underground.	Part of this challenge is the railway infrastructure in the north and that there is already lots of incompatible underground infrastructure.

Table 1-4 Category of discussion and summary of Manitoba Hydro response from Round 2 virtual information sessions

Category	Discussion	Summary of Manitoba Hydro response
	The participant added that the best route would be north of the hotel but that this is a problem for the First Nation. The participant shared that they feel the only way to go is north of the city. They shared that they feel the taxpayer is paying for all of this so why not go north of the city, the railroad is not a problem north of the city.	This route would be much longer and would have to cross the railroad many times.
Original line location	A participant wanted to know if all the buildings were put in place when the line was there, and no new buildings have been built, is Manitoba Hydro moving all the houses?	The houses are too close for the width of the Right-of-Way (ROW) are in the sections of the line being re-routed.
	A participant asked why we can't build the towers where they were previously.	The line was first built over half a century ago and that the Right-of-Way (ROW) width requirements has changed since then.
	The participant asked if the houses on Island Lake are too close to the easement.	Since the line follows the road allowance, there is more room for the easement.
Project description	A participant asked about easement width. They are about 18 feet from the easement and have plans to build property in the future on land that is about 30-40 feet away.	Manitoba Hydro's property department will follow up with this participant.

1.4 **Round 2 preferred route comments from virtual information sessions**

Table 1-5 Preferred route concerns from Round 2 virtual information sessions		
Category	Discussion	Summary of Manitoba Hydro response
Proximity to homes	A participant expressed concerns that they feel that the route going into the Mayfair farm that takes a hard left (runs along the west shore of the island) would significantly change the value of 18 properties on Pine Crescent. They shared that the route furthest to the left, which is the longest route, is the one that is the least preferred from their opinion because it is in close proximity to their property on the other side of the river.	The final preferred route does not follow the route furthest to the east.
Riverbank erosion	A participant expressed that the preferred route is good for them because it is away from their home but that they believe the topography of the land near the Assiniboine river is not suitable for a transmission line. They shared concern that there will be impacts to the riparian area that is already falling into the river since the big flood in 2001. They shared that they feel Manitoba Hydro will have to take all the trees out. They shared there is no geological bottom or engineered bottom to the river and that there will be no trees so the next flood will just rip right through. The participant shared their understanding that there are cottonwood trees that are 10 feet wide at the bottom and 100 feet tall.	Manitoba Hydro has sent people on the ground and Manitoba Hydro engineers have factored in riverbank mitigation during the routing process. Manitoba Hydro understands that the metal tower will be moved. The archaeologists have created parish maps that show how the river has changed over the years. The plan is to put the towers as close to the water treatment plant and away from the river as possible.

Table 1-5 Preferred route concerns from Round 2 virtual information sessions		
Category	Discussion	Summary of Manitoba Hydro response
	They shared that if Manitoba Hydro is going to cut down all the trees, they should have sent people to the field to see. The participant shared that they think Manitoba Hydro will also have to take down a metal tower.	
Soil conditions	A participant expressed concerns that the riverbank is falling into the river and slumping. The participant shared that over by the park, it is swampy and boggy, and asked how can towers stay there and not fall over?	Manitoba Hydro engineers are looking into shoreline erosion and whether it will influence tower design or placement.
Space between river and treatment plant	The participant added that by putting the towers along the river, they feel that Manitoba Hydro will have to move them again in a few years as they believe there is no space between the river and water treatment plant for the towers.	Manitoba Hydro understands that there is sufficient space.
Towers	A participant asked if the preferred route is influenced by the fancy new tower they put up.	The existing towers on the island did influence the decision but it was only one factor. Manitoba Hydro also considered other route options off the island, but they were much longer and more costly.
Water treatment plant expansion	A participant asked if Manitoba Hydro has talked to the water treatment folks about expansion.	Manitoba Hydro staff have talked to staff at the water treatment plant and they are not currently planning to expand to the south.

2. Interested party[1] feedback

Table 2-1 Interested party meetings and dates

Round	Date of Meeting	Interested parties
1	October 2, 2020	City of Portage la Prairie
	October 23, 2020	Portage la Prairie planning district
	October 27, 2020	Rural Municipality of Portage la Prairie
	October 29, 2020	Manitoba Infrastructure
	November 5, 2020	City of Portage la Prairie Water Treatment Plant
		City of Portage la Prairie Water Treatment Plant
	November 6, 2020	Manitoba Infrastructure
	November 10, 2020	Manitoba Parks and Resource Protection
	November 13, 2020	Historic Resources Branch
	November 26, 2020	Portage Regional Recreation Authority
2	March 12, 2021	Historic Resources Branch
	March 23, 2021	Rural Municipality of Portage la Prairie

2.1 **Round 1**

2.1.1 Portage la Prairie Planning District

Portage la Prairie Planning District staff shared information about a development concept for the area near towers 2, 3 and 4. They shared that the areas around alternative route segments #14 and #17 are used to store fill for Manitoba Infrastructure.

Alternative route segment #11: Portage la Prairie planning district staff shared a preference for this route as the area around here is city/RM land, which would reduce

[1] An interested party is someone or a group that would potentially have feedback to provide, may be affected by the decisions made regarding route selection, have a specific interest or mandate in the area, data to share, ability to disseminate information to membership or a general interest in the Project's route selection area.

impact on private landowners.

2.1.2 Rural Municipality of Portage la Prairie

There was discussion about who Manitoba Hydro has reached out to, tower design and whether this project will increase capacity and easement width.

A representative from the Rural Municipality of Portage la Prairie shared that they are concerned about the line going through rural municipality lands and near homes instead of going through Long Plain First Nation lands. A representative asked why the route is not on the north side of Highway 1 and noted concern about the impact on properties as some of the homes have been there for 80 years. A representative from the Rural Municipality of Portage la Prairie asked why Manitoba Hydro couldn't have a segment that went across segment 7 and then south down to Yellowquill Road.

- Manitoba Hydro staff shared that Long Plain First Nation has already developed near the line and there was not enough room to accommodate the line.

A representative from the Rural Municipality of Portage la Prairie asked why Manitoba Hydro did not route the line on the junction road on municipal land, further noting the route could follow Crescent Road to Pine Crescent.

- Manitoba Hydro staff indicated that they could investigate this and provide a response. Manitoba Hydro staff determined that there is insufficient width in the existing municipal right-of-way for the transmission line.

A representative from the Rural Municipality of Portage la Prairie asked if it would be helpful if they included information on their webpage about the Project. Manitoba Hydro staff emailed information and the rural municipality included it on their webpage.

The Rural Municipality of Portage la Prairie shared concerns about alternative route segment #10 as their preference is to avoid homes and homes have been at this location for up to 80 years.

The Rural Municipality of Portage la Prairie sent a letter with an attached map on November 12, 2020 indicating that they have reviewed the proposed route for the project and requested that Manitoba Hydro review their preferred route and give it

serious consideration in the final decision. The Rural Municipality of Portage la Prairie also shared their preferred route using the feedback portal (Figure 21, Figure 22, Figure 23 and Figure 24)

2.1.3 Manitoba Infrastructure

There was discussion between Manitoba Hydro and Manitoba Infrastructure (MI) staff about the requirements if the transmission line is located near the highway including the required vertical clearances for wires crossing the highway, whether there would be any structures in between the highway and offset locations for towers near the highway. MI representative indicated they prefer not to have transmission towers between the highway and the service road. MI representative indicated that there may be intersection improvements (at PTH 1 and Yellowquill) and that MI may prefer to protect the land around it for that purpose.

A MI representative suggested that routing the transmission line alongside the Portage Diversion could affect movement of equipment into the floodway or the use of the floodway.

- Manitoba Hydro staff shared that they received feedback from the public suggesting routing the transmission line across the diversion control structure and adjacent lagoon.

A MI representative responded that they would have concerns about that as they would not want a structure in close proximity to the control structure. The MI representative asked what the specific location of the towers would be running along the Diversion.

MI representatives shared a preference for alternative route segment #14 and shared it is preferred as it is further from diversion

MI representatives shared concerns about the following: alternative route segment #10 as they prefer not to have any towers between the highway and the service road. Alternative route segment #15 and #11 are not preferred as it may affect movement of equipment into the floodway or the use of the floodway and may impede future plans for expansion. They shared that they have concerns about the mitigative route #2 (the route that crosses the river twice) as they would not want a structure near the control structure

MI representatives shared that segment 15 goes directly over their access to the yard.

They move semis with front end loaders in there and would need clearance for an excavator on a semi.

- Manitoba Hydro noted that tower spotting could accommodate the largest equipment and locations of exit and entry and that MI representative was satisfied with this.

In a response to a question from Manitoba Hydro, MI representatives indicated that the soil stockpile at segment 17 and 18 is an active storage pile and this pile is expanding to the northwest. MI land extends west to tower 33-34. MI representatives indicated no concerns with segment 18.

2.1.4 City of Portage la Prairie Water Treatment Plant

City of Portage la Prairie Water Treatment Plant staff noted concern about segments along Trans-Canada Highway 1 as there is underground infrastructure there. This includes a large water pipe and other infrastructure near the junction of Trans-Canada Highway 1 and an unnamed access road to the east of Yellowquill. Construction in these locations may require protection including rig mats for access across the area.

City staff shared there are no plans to expand the water treatment plant building to the south so there is no interference with the potential transmission line segment. City of Portage la Prairie Water Treatment Plant shared concerns about alternative route segment #9 and they noted concern about segments along Trans-Canada Highway 1 as there is infrastructure there

2.1.5 Manitoba Parks and Resource Protection

Manitoba Parks and Resource Protection (MPRP) staff shared concerns about segments that could affect Yellowquill Park (segment #13). Clearing of the trees in the ROW if a line were to be developed here would be considered by MPRP staff to be a significant impact to the park. The park is heavily used by local residents and managed through an agreement with the rural municipality.

MPRP staff indicated that a tower in the corner of the Portage Diversion Spillway Park (segment #11) with limited clearing is less concerning than routing in Yellowquill Park.

Other potential locations for route segments through the spillway park were

discussed. A key concern from Parks staff is clearing, which would be larger if ROW crossed park rather than current alignment with one corner tower.

Parks staff shared that most park use occurs in proximity to the parking lot and closer to the river (fishing, boating). Manitoba Parks and Resource Protection shared that for alternative route segment 11 the location is acceptable as they feel there would be limited clearing, it's further away from active use area of park, which is closer to the River and parking lot. They shared that alternative route segment 13 is not preferred due to impacts to recreation including park users and clearing of trees along Trans-Canada Highway 1 side of park.

2.1.6 Historic Resources Branch (HRB)

Historic Resources Branch staff shared that they have concerns with the potential heritage impact of all segments on Crescent Island and those in proximity to historic Fort la Reine. They noted they could require extensive heritage work on the island and near Fort la Reine. Fort la Reine was built three times. Land access to this area is challenging for heritage work as there are numerous river lots. The island and the area by Fort la Reine will likely require deep subsurface testing (up to 2 m).

Historic Resources Branch staff asked how far Manitoba Hydro can shift the transmission towers. Manitoba Hydro staff shared that the towers have not been spotted so we have flexibility in shifting the towers, but the spans are limited to 300m.

Historic Resources Branch staff shared concerns alternative route segments 1-8 as there is high heritage potential near this segment. Historic Resources Branch staff shared that there were parish buildings, a church, a school, and burials on the island. For alternative route segment 12, staff indicated that there is high heritage potential near this segment. For alternative route segment 11 and 15, the area is an ancient active riverine environment with oxbows. Deep testing will be required in this area. There are usually cemeteries associated with forts; however, there has been no documented location for a cemetery at Fort la Reine so extra caution is warranted.

2.1.7 Portage Regional Recreation Authority (PRRA)

PRRA shared that they would have been concerned if the transmission lines crossed the tennis courts or the disc golf course that are located north of the existing ROW. They have no concerns with the current alignment on the west side of the island. The alignment appears to run beside the road and there's a deer pen fence on the island where you used to be able to feed deer. PRRA anticipates that the current segment

through the east end of the island would have very miniscule impact on them and they have no red flags with the Project.

2.1.8 Round 1 summary of interested parties' location specific preferences

Table 2-2 summarizes location specific (alternative route segment) preferences from the Round 1 interested parties' meetings.

Table 2-2 Round 1 location specific preferences from interested parties' meetings

Alternative route segment	Preferences
11	Location acceptable - Limited clearing, further away from active use area of park which is closer to the River and parking lot
14	Would be better as it's further from floodway

2.1.9 Summary of interested parties' location specific concerns

Table 2-3 summarizes location specific (alternative route segment) concerns from the interested party meetings and includes recommendations for mitigation.

Table 2-3 location specific concerns from Round 2 interested parties' meetings

Alternative route segment	Concerns/constraints	Recommendations by participants for minimizing/mitigating potential effects
1-8	High heritage potential near these segments	Deep testing is anticipated to be required for new tower locations.
9	Noted concern about segments along Trans-Canada Highway 1 as there is infrastructure there	Recommended using matting if there is construction along the Trans-Canada Highway 1
10	Preference to avoid homes; homes have been at this location for up to 80 years.	Recommended a segment going across segment 7 down to Yellowquill
	Requirement not to have any towers	Noted

Table 2-3 location specific concerns from Round 2 interested parties' meetings

Alternative route segment	Concerns/constraints	Recommendations by participants for minimizing/mitigating potential effects
	between the highway and the service road.	
11	Not preferred as it may affect movement of equipment into the floodway or the use of the floodway; may impede future potential for expansion.	Noted
	High heritage potential near this segment	Deep testing will be required in this area.
12	High heritage potential near this segment	Deep testing will be required in this area.
13	Not preferred - recreation – park users and clearing – trees along TCH 1 side of park	Noted
15	Not preferred as it may affect movement of equipment into the floodway or the use of the floodway; may impede future potential for expansion.	Noted
	High heritage potential near this segment	Deep testing will be required in this area.
Mitigative route	Would not want a structure very near the control structure	Align mitigative route to the NE of existing line in this area.

2.2 **Round 2**

2.2.1 Historic Resources Branch

Historic Resources Branch staff asked if the tower locations at the Assiniboine river crossing the Assiniboine on the west side of the island were to be moved and were concerned if they were. Manitoba Hydro noted that this area will be restrung.

Historic Resources Branch recommended that the Project Archaeologist be on site during geotechnical drilling as to determine the soil stratigraphy and how much of the areas have been built up. Follow-up: The geotechnical work for the Project is anticipated to take a few weeks so it might not be the best use of resources to have an archaeologist onsite for the whole time. Manitoba Hydro is proposing depending on timing to either conduct the HRIA first or alternatively in combination with the geotechnical work at specific sites and have the archaeologist on call if any artifacts are discovered during the geotechnical work.

2.2.2 Rural Municipality of Portage la Prairie

Manitoba Hydro staff shared the round 2 presentation.

3. Online survey feedback

3.1 Round 1 survey

There were 48 respondents to the survey.

3.1.1 Project impact

The first question in the survey asked respondents "do you think the Brandon–Portage la Prairie (BP6/BP7) transmission lines replacement project will have an impact on you?" 28 respondents (58%) selected yes, 11 selected don't know (23%) and 9 selected no (19%).

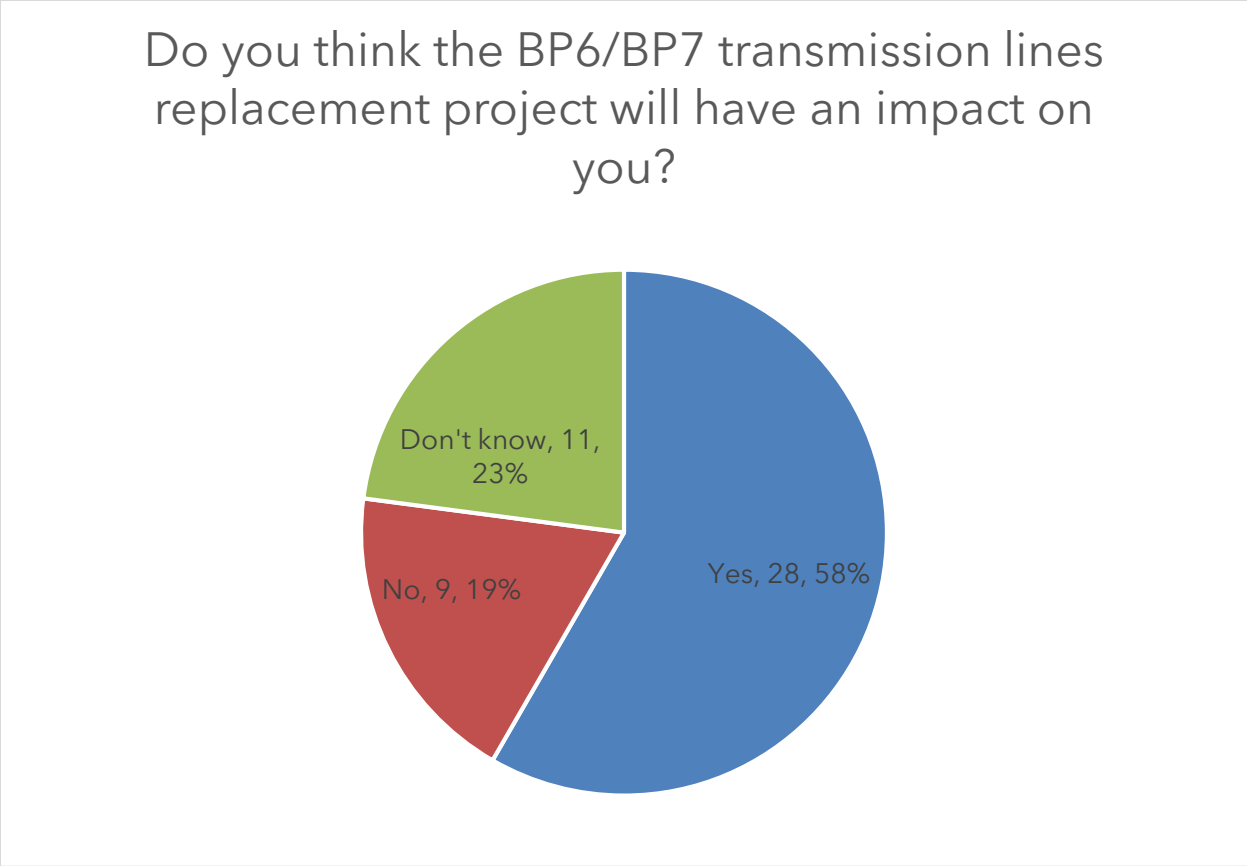


Figure 1. Do you think the BP6/BP7 transmission lines replacement project will have an impact on you?

3.1.2 How do you think the project might impact you?

The second question in the survey asked respondents how they think the project might impact them. 12 out of the 20 responses (50%) were concerns about the proximity to homes, including the following:

"Definitely, we live in the area. We have lived here for 30 years and love it. The treed areas, river, and pond gives us an area to walk and appreciate nature. The location is close to town and very accessible to the highway."

"Yes, I live in area effected and do not want high voltage line close to my house. Health risks, lose of natural habitat and decreased property values."

"We live on the Island Park - Irvin Place and would appreciate the lines are as far away as possible from the small residential area"

Other concerns include:

- Impacts on residential neighbourhoods and property values:
    - *"My Home is on one of the planned routes. It will affect my property value, and the way I live."*
- Cost of the project
    - *"Cost and disturbance of moving line"*
- Potential health effects and safety:
    - *"Thank you for literature pertaining to health and safety. Even though improved measures to pacemaker devices (temporary disruption of pacemaker and resets), I do not believe that living in close quarters to EMF field is worth the risk, especially when alternate avenues are available."*
- Concerns about routing the line
    - *"We live adjacent to #1 Bypass and have already been affect with new line. Not sure 1 - why the north side route was chosen? 2 - Infrastructure chosen is no major steel tower leading to lower heights. 3 - We were not asked for input or concerns. Will changes/upgrades be needed for long-term transmission line replacement and growth? We would prefer to see deployment on the south side of the by-pass where there is little residential development."*
- Impacts on wildlife
    - *"It will impact the Wildlife and Fisheries Branch as the management agency for wildlife in the area."*
- Impacts on green space
    - *"Proposed route is through neighborhood green space."*
- Impacts on farmland:
    - "*the line goes over farmland I farm"*
- Concerns about infrastructure
    - *"Having to adjust to the Keshkemiqua urban reservation affects more than just them ... First Nations should be a priority!!!! But infrastructure was lacking in the area!!!"*

One respondent shared, *"I think that purchasing the 5 homes as I have heard of will lower the value of my property and impact my plans for future. Plus there will be extra noise from highway traffic. It will change my way of life and destroy the way of life for my friends and neighbors."* Manitoba Hydro would like to reassure the respondent

that they are not planning to purchase 5 homes as part of the Project.

3.1.3 What best describes you?

The survey asked respondents what best describes them. The most common response (27 respondents) was that they live in Portage la Prairie. 23 respondents pass through the project area on a regular basis and 22 respondents live in a community that has interests in the area. No respondents selected that they own a business in the project area.

Figure 2. What best describes you?

3.1.4 Top considerations

What are your top considerations regarding this Project?

The survey asked participants to select their top considerations regarding this Project and the top three considerations were impact on property and residential developments (24 respondents), "I recognize that this project is being planned as a result of the October 2019 storm and understand that although there will be effects as a result of its construction, it's necessary and has my support" (23 respondents),

and "improvements to transmission infrastructure in my region will improve reliability, I see this as a benefit" (18 respondents).

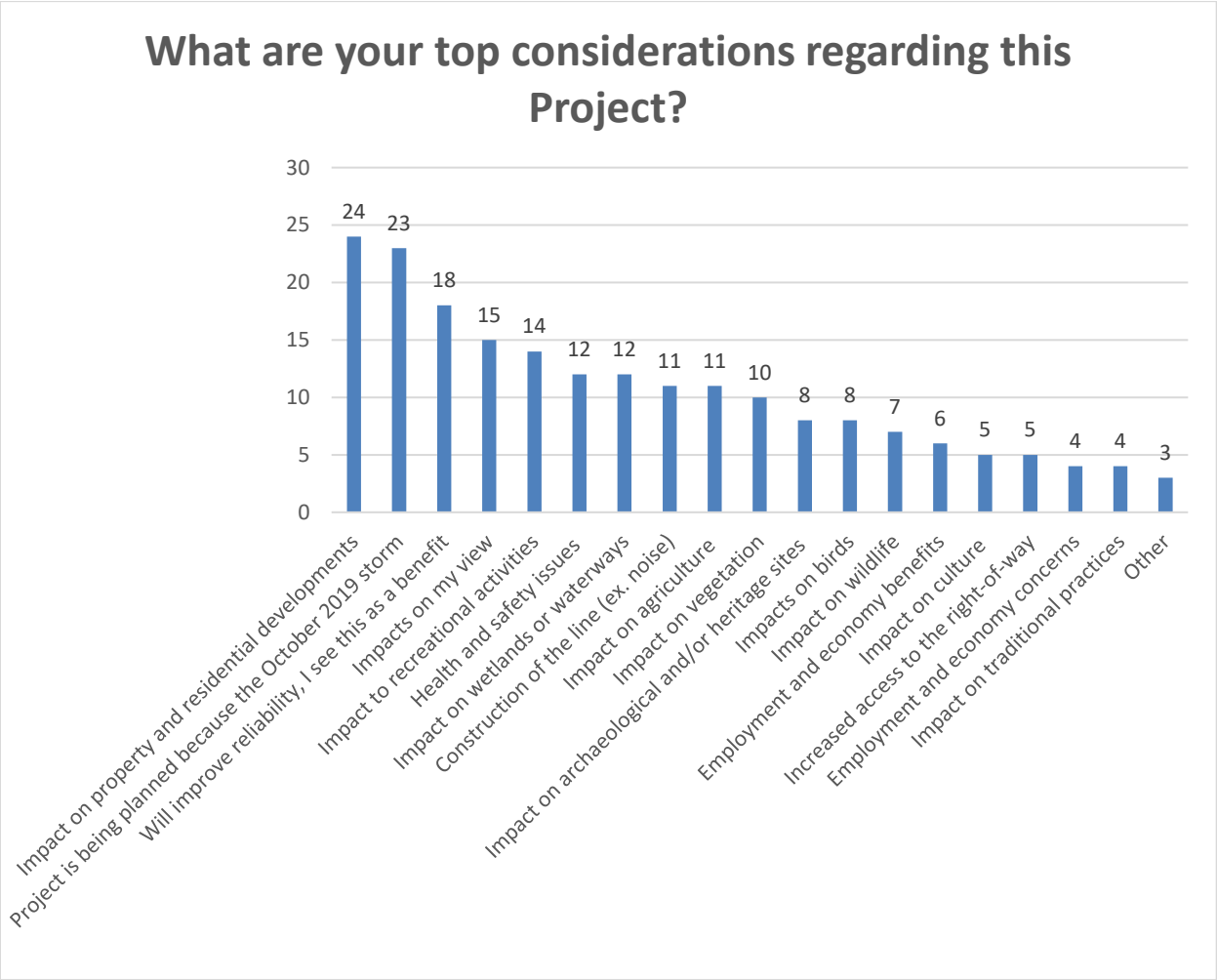


Figure 3. Top considerations regarding this Project.

The two other concerns shared by respondents were:

- *"Impacts on the endangered species – Eastern Peewee"*
- *"Our concern is the cost of the changes to the route because certain individuals would not allow it through their land anymore. Especially after towers were repaired and new towers were built."*

Sixteen respondents (33%) expanded on their project concerns. One respondent shared the following,

> *"Loss of property value - We have worked hard for what we have. Medical*

concerns. Magnetic fields surrounding us. We already have a hydro station near. There are many people in our area who have cancer. We love the area. We don't want to lose the surrounding trees and the nature (deer, fox, beaver, porcupine, racoon, geese, multiple birds; as well as an Endangered species - Eastern Peewee. Many people use the area for biking. walking, fishing, birding, snowmobiling, as well as tourists stop for lunch and stretch their legs. Diversion to Crescent Lake is a resting area and fly-way for migrating geese and ducks. Yellowquill Trail/Highway #1 intersection is a very busy, dangerous, and deadly intersection. most of the accident vehicles land on the south side ditch and road."

Concerns were shared regarding:

- potential impacts on homes and property values:
  - *"if our house is affected, we would have to move, using the route the furthest away from the houses would be best."*
  - *"Love the present view from our yard. 10%-15% property value decrease."*
  - *"Keep the lines as far away as possible from the small residential area within the Island Park, Portage la Prairie"*
- routing options:
  - *"I believe the proposed line should be on the south side of HWY 1 and only cross HWY 1 once.",*
  - *"Move new wooden pole transmission from north side of by-pass to towers on south side.",*
  - *"The shortest and most direct route of all the options is best. 1. Smaller environmental and atheistic impact. 2. Most likely cheapest. 3. Easiest."*
  - *"Present line is direct path and has existed for many years. No need to zigzag to please some and develop green space and park setting. Plus the towers have already been replaced and would be cost prohibitive to not use them."*
  - *"line should not intersect the island"*
- communication for the project:
  - *"communication with me as an affected resident"*
  - *"not until we receive all the information."*
  - Request to follow up with landowner *"via phone or in person"*
- birds:
  - *"There is extensive travel by waterfowl between Crescent Lake and*

surrounding agricultural fields, crossing both the existing route and all proposed alternative segments. Bird wire collisions are a concern."

- Reliability:
  - *"I think it is important reliable source to power our homes even during in climate weather."*

3.1.5 Recommendations for Manitoba Hydro on minimizing any potential effect of this Project

20 respondents (42%) said they have recommendations for Manitoba Hydro on minimizing any potential effect of this Project and 28 respondents (58%) said they did not.

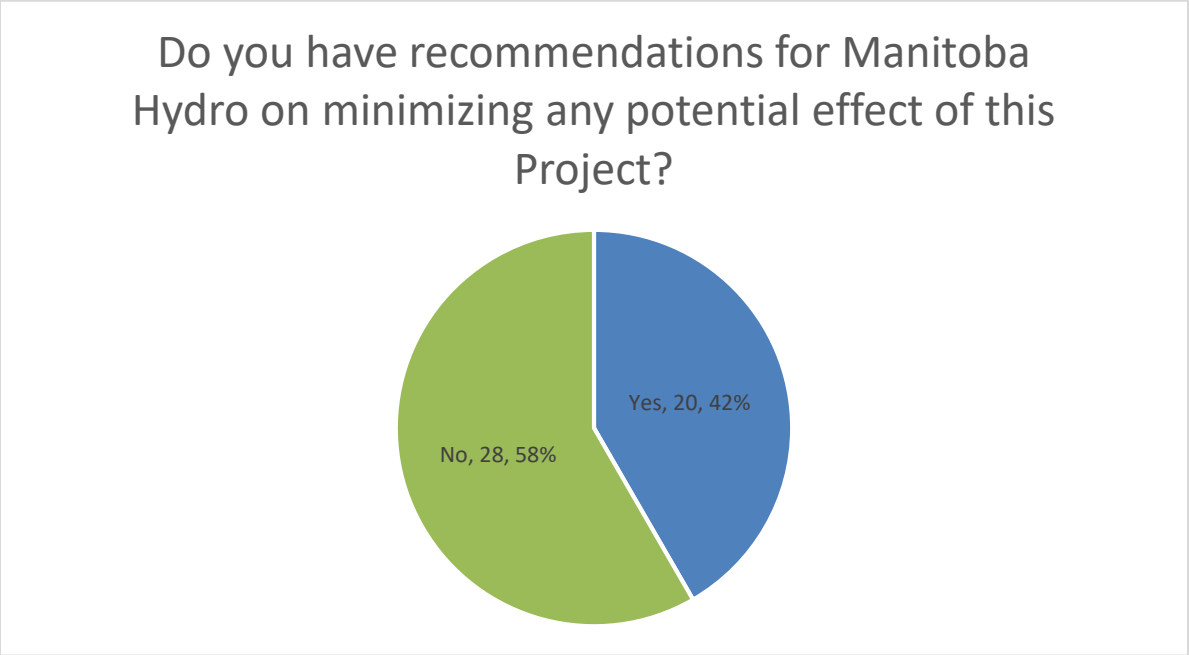


Figure 4. Do you have recommendations for Manitoba Hydro on minimizing any potential effect of this Project?

Respondents shared:

- Routing preferences
  - *"Move new wooden pole transmission from north side of by-pass to towers on south side."*
  - *"Leave the line where it currently ran"*
  - *"move the line completely off the island"*
  - *"New Route - Existing line in Mayfair farm extended to Portage Golf*

Course. Goes over Crescent Lake, to field behind the homes, (3 houses) Line angles to Cottonwood Rd, to cemetery. Goes across cemetery to existing lines. Benefits - Shorter route, less money, does not cross major highway or follow highway, No loss of habitat for endangered species,"

- *"keeping it away from houses."*
- *"Follow the floodway diversion bank to the river then proceed along the north side of river. Proceed to east of Days Inn to where the Portage la Prairie pump for Crescent Lake cross Highway to Mayfair Farms. Would not be any problem to existing Homes."*
- *"Use the route that will least impact all concerned."*
- *"Not in total understanding why the line cannot go back to where they were."*
- *"Stay away from any First Nations Land in the future"*
- *"I would recommend the shortest route possible, i.e. the one shown in green on the mailer card"*
- *"Run lines on the floodway number 15 on the map"*
- *"Preferred routes #18 and #15"*
- *"Use existing path"*
- *"Keep the lines as far away as possible from the small residential area within the Island Park, Portage la Prairie"*
- *"Put the line where it was"*

- Engagement preferences
  - *"Consultation with everyone in the proposed area!!!"*
- Wildlife mitigation:
  - *"Manitoba Hydro should explore the use of bird diverters as a mitigation tactic. Locations for deployment should be determined in the Environmental Assessment through baseline monitoring."*

Table 3-1 location specific concerns in comment sheets

Alternative route segments	Specific location of concern or constraint	Recommendation by respondent for minimizing/mitigating potential effects of the project
1	*"We live on the Island Park - Irvin Place and would appreciate the lines are as far away as possible from the small residential area"*	*"Keep the lines as far away as possible from the small residential area within the Island Park, Portage la Prairie"*

Table 3-1 location specific concerns in comment sheets		
Alternative route segments	Specific location of concern or constraint	Recommendation by respondent for minimizing/mitigating potential effects of the project
10	*"We live adjacent to #1 Bypass and have already been affect with new line. Not sure 1 - why the north side route was chosen? 2 - Infrastructure chosen is no major steel tower leading to lower heights. 3 - We were not asked for input or concerns. Will changes/upgrades be needed for long-term transmission line replacement and growth? We would prefer to see deployment on the south side of the by-pass where there is little residential development."*	*"Move new wooden pole transmission from north side of by-pass to towers on south side"*
	"We don't want towers next to our properties on Yellowquill trail. We have lived there for 37 years. We plan on retiring on our property and do not wish these lines be near us."	*"Run lines on the floodway number 15 on the map"*
11	*"Diversion to Crescent Lake is a resting area and fly-way for migrating geese and ducks. Yellowquill Trail/Highway #1 intersection is a very busy, dangerous, and deadly intersection. most of the accident vehicles land on the south side ditch and road."*	*"New Route - Existing line in Mayfair farm extended to Portage Golf Course. Goes over Crescent Lake to field behind the homes, (3 houses) Line angles to Cottonwood Rd, to cemetery. Goes across cemetery to existing lines. Benefits - Shorter route, less money, does not cross major highway or follow highway, No loss of habitat for endangered species"*
	"Proposed route is through neighborhood green space."	*"Present line is direct path and has existed for many years. No need to zigzag to please some and develop*

Table 3-1 location specific concerns in comment sheets		
Alternative route segments	Specific location of concern or constraint	Recommendation by respondent for minimizing/mitigating potential effects of the project
		green space and park setting. Plus the towers have already been replaced and would be cost prohibitive to not use them."
12	*"I think that purchasing the 5 homes as I have heard of will lower the value of my property and impact my plans for future. Plus there will be extra noise from highway traffic. It will change my way of life and destroy the way of life for my friends and neighbors."*	*"Follow the floodway diversion bank to the river then proceed along the north side of river. Proceed to east of Days Inn to where the Portage la Prairie pump for Crescent Lake cross Highway to Mayfair Farms. Would not be any problem to existing Homes."*

3.1.6 Is there anything you would like Manitoba Hydro to do differently on this project compared to past projects?

The survey asked participants "Is there anything you would like Manitoba Hydro to do differently on this project compared to past projects?", 23 respondents (48%) indicated that they didn't know, 16 respondents (33%) indicated no and 9 respondents (19%) indicated yes.

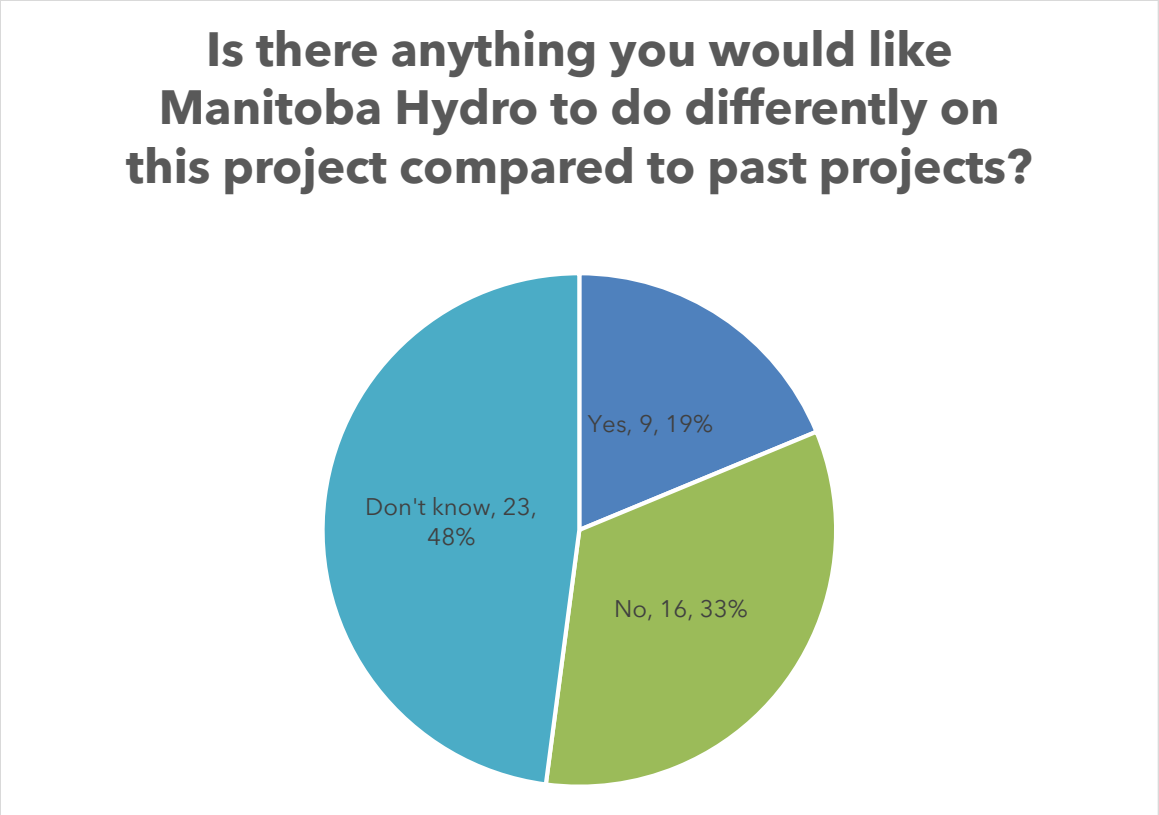


Figure 5. Is there anything you would like Manitoba Hydro to do differently on this project compared to past projects?

Changes recommended by respondents include:

- Routing options:
  - *"Does it have to run right through the city?"*
  - *"Change the route"*
- Project design/schedule:
  - *"Design transmission to easily integrate future selling to grid of locally produced power."*
  - *"Ensure it is reliable and bury line as much as possible."*
  - *"Do not delay."*
- Maintenance:
  - *"Upkeep on existing infrastructure!! The lack of upkeep on said infrastructure in the past resulted in a reactive response to the storm instead of a proactive approach to infrastructure!!!"*
- Engagement
  - *"listen to the people directly involved with the line placement"*

- Wildlife
    - *"It is unknown to us if bird diverters exist along the current Crescent Lake crossing. Regardless, bird diverters should be considered with the proposed alterations."*

3.1.7 Did you find the project information on the webpage helpful?

The survey asked participants if they found the information on the webpage useful. 32 respondents (67%) indicated yes, 11 respondents indicated they don't know (23%) and 5 respondents indicated no (10%).

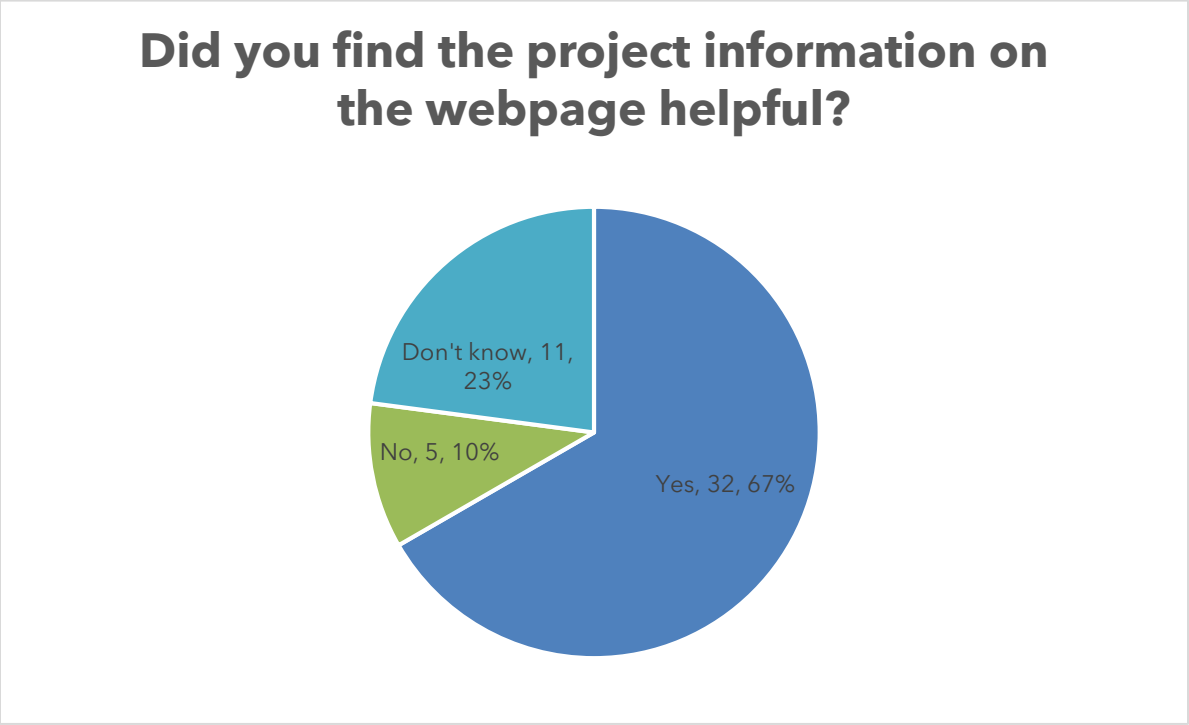


Figure 6. Did you find the project information on the webpage helpful?

3.1.8 How can we better share project information? What other project information would be helpful?

The survey asked respondents how can we better share project information? What other project information would be helpful? Responses included:

- Improved communication:
    - "Map blurry on Portage online. Did not receive postcard with intent soon enough. Not enough information - what houses may be removed, location of towers. Was not sure what the numbers represented. E-mail

or letter sent to people in area. Many people down our street (Yellowquill Trail) did not receive the postcard of intent."
    - "Manitoba Hydro could inform residents by via Canada Post as not all residents have access to electronic media."
    - "The exact proposed construction in relation to our property……can not be figure out from the map"
- More information:
    - "Explain the reason of having to reroute bp6"
    - "I don't think I understand what exactly is being done enough to make educated comments."

3.1.9 Is there anything else the project team should consider?

The survey asked respondents if there is anything else the project team should consider. 20 respondents indicated they don't know (42%), 12 respondents indicated yes (25%) and 16 respondents indicated no (33%).

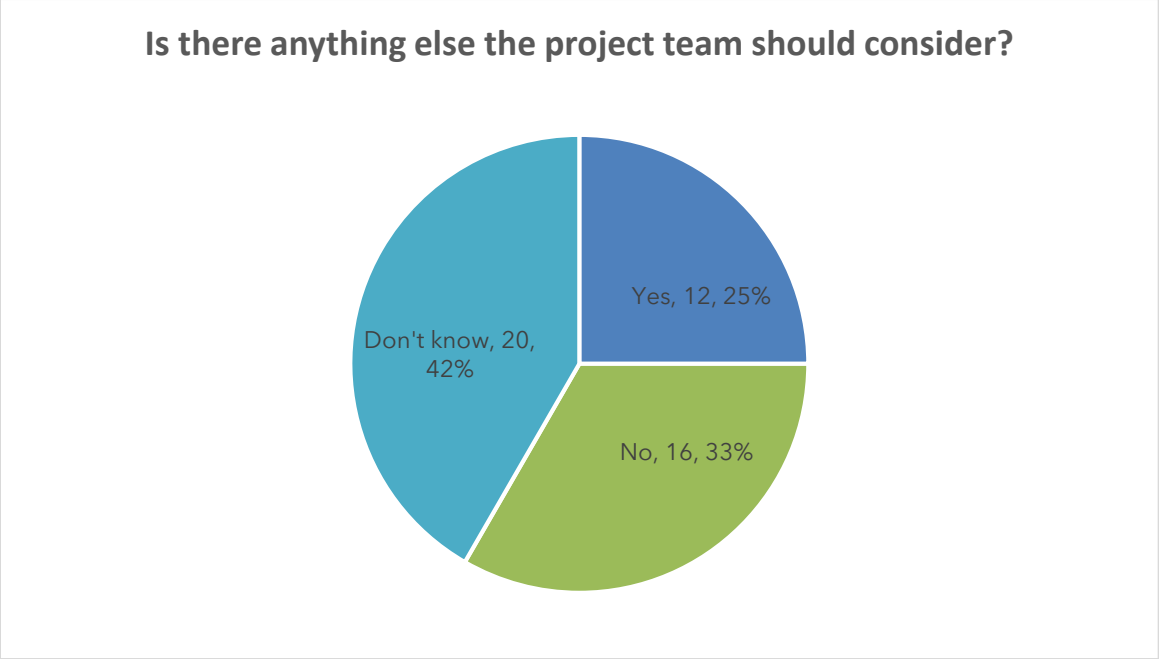


Figure 7. Is there anything else the project team should consider?

Comments shared include the following:

- Routing:
    - "A few years ago there was a study completed on a highway interchange near this proposed route. This should be taken into

consideration."
    - "Use the original route"
    - "yes don't cross the island, should go around and follow the highway"
    - "Use same route. Bury cable"
    - "Just please keep it away from Yellowquill trail personal properties."
    - "Minimum impact on the residential areas within the Island Park, Portage la Prairie"
- Project design:
    - "I am sure cost is a factor but wonder if underground service would be more reliable when possible"
    - "What will happen to the existing right of way"
- Engagement:
    - "The feedback from all parties concerned!!! Not just the First Nations!!!"
    - "Residents, communication and compensation"
    - "Not enough info has been relayed to the homeowners immediately affected by the line proposed."

3.1.10 Would you like to receive project updates and information?

The survey asked respondents if they would like to receive project updates and information. 32 respondents indicated yes (67%), and 16 respondents indicated no (33%).

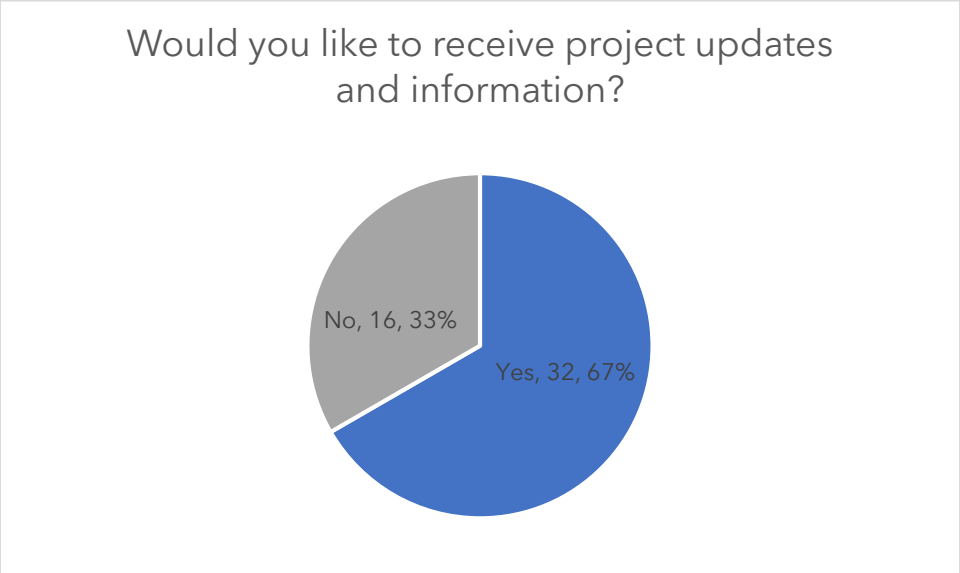


Figure 8. Would you like to receive project updates and information?

3.1.11 How would you prefer to receive information and updates?

The survey asked respondents how would you prefer to receive information and updates? The top choses were email (26 respondents), letters (5 respondents) and Facebook (4 respondents).

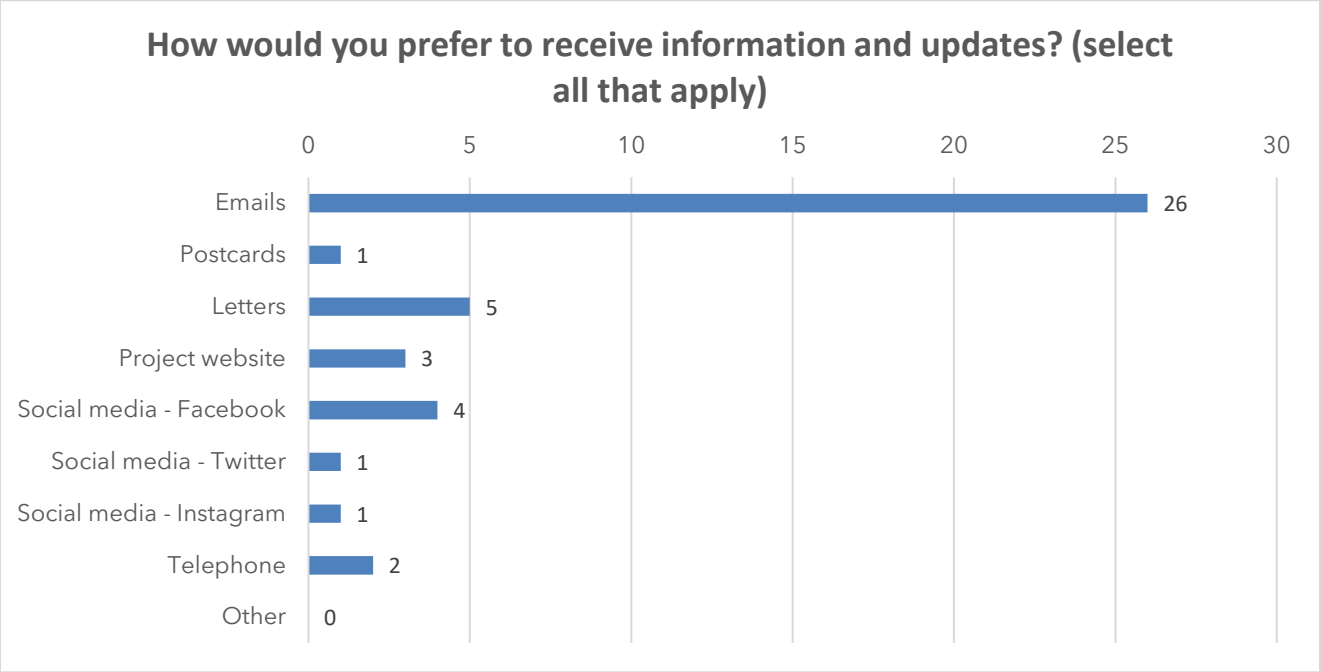


Figure 9. How would you prefer to receive information and updates?

3.1.12 Would you like to sign up for the project update emails?

The survey asked respondents if they would like to sign up for project update emails. 25 respondents (52%) chose yes and 23 respondents (48%) chose no.

3.2 Round 2

There were 28 respondents to the survey.

The first question in the survey asked, "do you have any concerns about the preferred route as shown on the previous page"? 11 respondents (39%) indicated no, 9 respondents answered yes (32%) and 8 respondents answered maybe (29%).

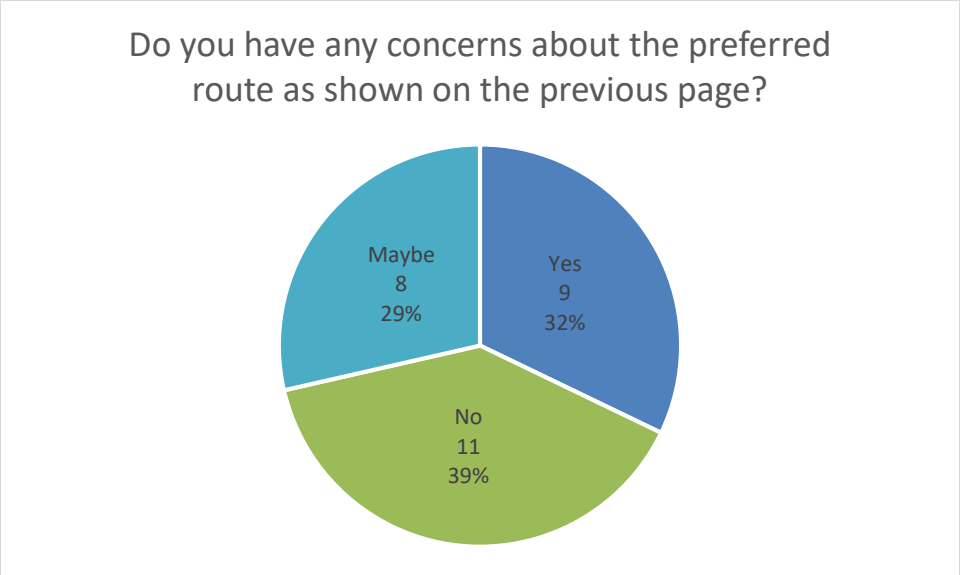


Figure 10. Do you have any concerns about the preferred route as shown on the previous page?

Concerns shared by participants asked why Manitoba Hydro did not consider a route that went around Portage la Prairie or why we were rerouting the segments of the line.

"Prefer to see a route round the north part of Portage where it is mainly farm land. no homes, no trees and out of Portage. Second option put the towers back in the original route. All the original destroyed towers, have been replaced except for on the native land. The hotel was built when the towers existed there, therefore the 30 metre excuses does not apply. Not sure what the real reason is for not putting up those towers. Replacing those couple of tower would save a lot of money. Concerns regarding the existing route are: the safety hazard along the highway, placing towers on unstable riverbanks, especially if there is flooding, cutting down old trees, does not make sense."

"The route goes across land that would be ideal for future development for the city and new homes. No one is going to want to build a half a million dollar home with a huge transmission line basically in the back yard."

3.2.1 Agriculture

The survey asked respondents if the information regarding agriculture addressed their concern. 14 respondents (52%) indicated yes, 8 respondents (30%) indicated no, and 5 respondents (18%) indicated partly.

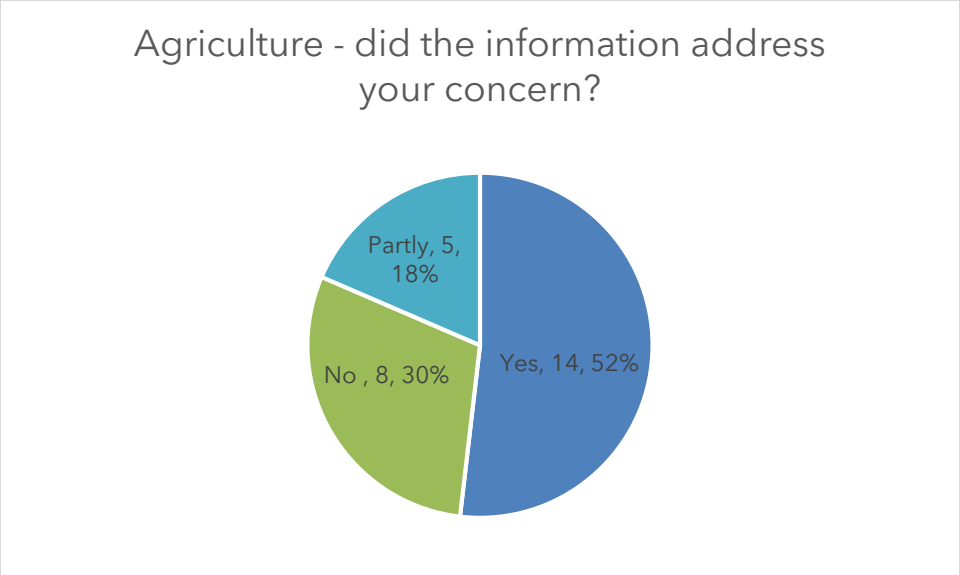


Figure 11. Agriculture - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for agriculture. 7 respondents indicated yes (54%) and 6 respondents answered no (46%). The most common mitigation recommended was to find a different route:

"*Find another route*"

"Follow the routing of the temporary power line. Keep it out of the city."

"Leave the lines where they were and then this would not effect vegetable food production which should be considered valuable"

"This is running through a 3rd generation farm (my families Mayfair) and if the line can't go through long plain due to housing then why should it be allowed to go by ours, our migrant workers homes, my grandparents, aunts/uncles and neighbors homes"

One participant asked about landowner compensation: "*There is an impact to the future resale value of the land because of the new route of this line. How is that included in compensation?*"

The survey asked if there is anything else we missed. 5 respondents (38%) indicated yes and 8 respondents (62%) indicated no. The most common comments were to move the line. One participant asked, "*How do we run irrigation and grow vegetable row crops*". Another shared concerns that local residents' voices may be not be

heard, *"Communication with the residence affected Spring of 2021. A good start in the fall of 2020, but now it seems it is open to all the public to have their input and the voice of the local residents will be way overshadowed".*

3.2.2 Economic opportunities and benefits of the project

The survey asked respondents if the information regarding economic opportunities and benefits of the project addressed their concern. 18 respondents (67%) indicated yes, 5 respondents (18%) indicated no, and 4 respondents (15%) indicated partly.

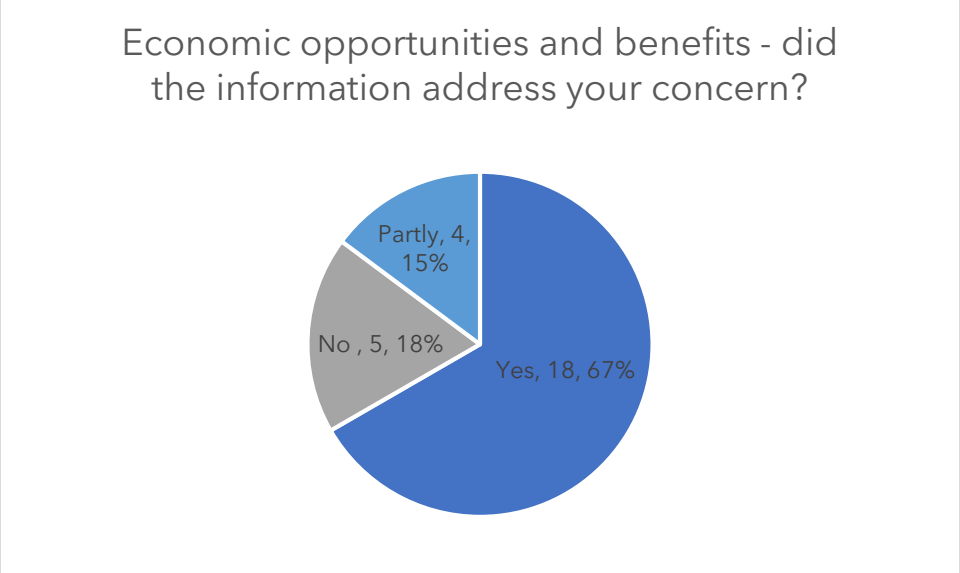


Figure 12. Economic opportunities and benefits - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for economic opportunities and benefits. 2 respondents indicated yes (29%) and 5 respondents answered no (71%). Mitigation recommended included:

"Leave the lines where they were" and "The line is located near two reserves and may affect their plans for economic growth. If contractors are from "across Manitoba and Canada", it will further alienate the First Nation people."

The survey asked if there is anything else we missed. 3 respondents (38%) indicated yes and 5 respondents (62%) indicated no. Comments included:

"This needs to be a comments section, not yes or no. But short term financial impact doesn't mitigate the long term loss of habitat"

"what businesses are we talking about?"

"How will you not destroy our business"

3.2.3 Fish and fish habitat

The survey asked respondents if the information regarding fish and fish habitat addressed their concern. 20 respondents (77%) indicated yes, 3 respondents (11%) indicated no, and 3 respondents (12%) indicated partly.

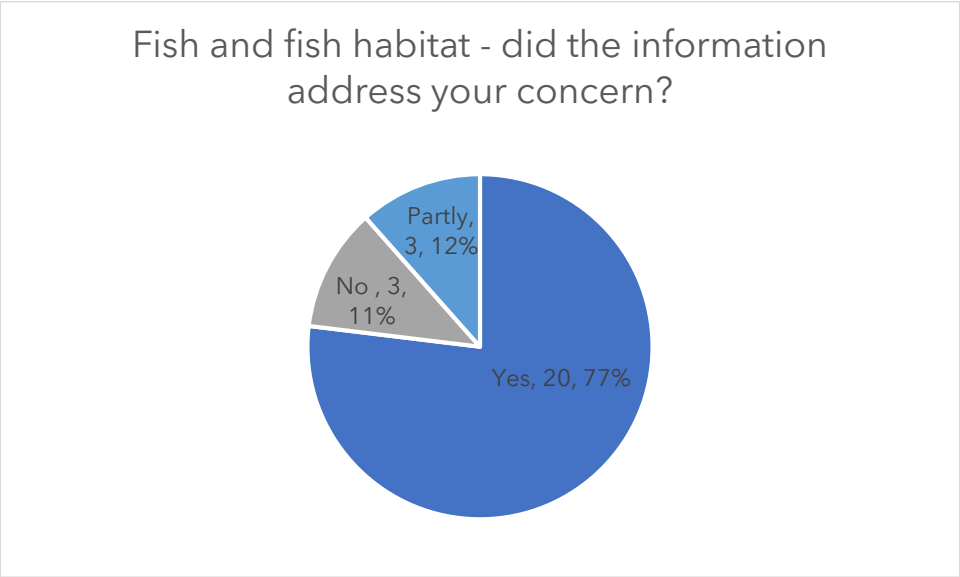


Figure 13. Fish and fish habitat - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for fish and fish habitat. 2 respondents indicated yes (33%) and 4 respondents answered no (67%). Mitigation recommended included:

"You've had a dismal reputation for actually following through except to the barest minimum of effort in this respect before. Which outside local environmentally invested party will be onsite making sure you abide by the things you say?"

"It seems that you are environmentally conscious, however, you have never properly addressed the impact Manitoba hydro has had on lake Winnipeg. The Jenpeg site affects the whole lake as well as cross lake and Norway house."

The survey asked if there is anything else we missed. A comment was shared *"Oversight to make sure you do what you say you will do. You've bare bones'd too many environmental safeguards in the past for us to trust you just on a glib word in a*

survey".

3.2.4 Human health

The survey asked respondents if the information regarding human health addressed their concern. 20 respondents (74%) indicated yes, 5 respondents (19%) indicated no, and 2 respondents (7%) indicated partly.

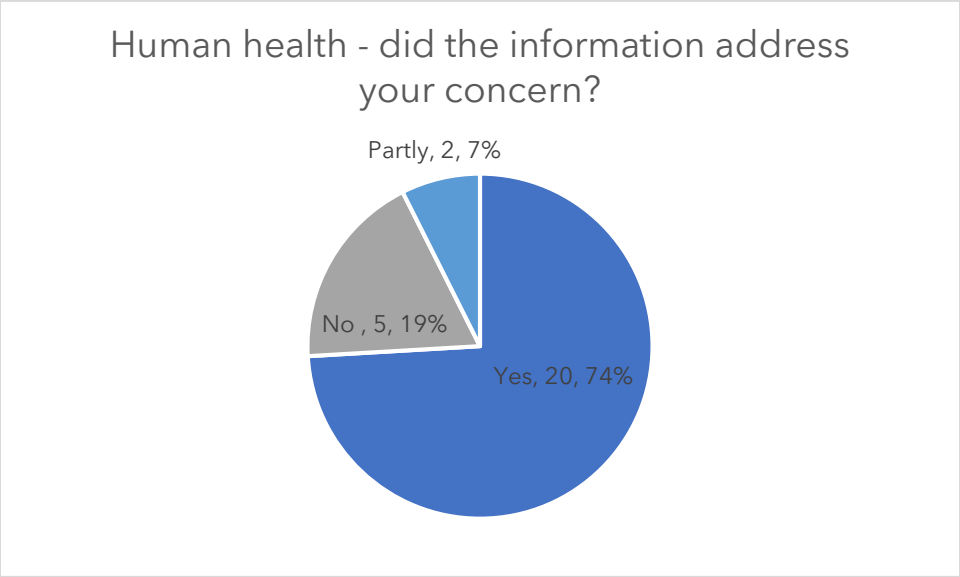


Figure 14. Human health - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for human heath. 4 respondents indicated yes (67%) and 2 respondents answered no (33%). Mitigation recommended was about Electric and Magnetic Fields (EMF) and requested changes to the route. EMF mitigation included:

"Even though you say you will notify us, sometimes your notices do not make it to your homes. The EMF levels are very scary, because of the harm they can do. You say the levels will be regulated, maybe at the beginning, but as time goes on the regulation side."

"Thank you for addressing this. EMF levels vary however with current, so although it is true that appliances emit Electro Magnetic Fields they do not do it to the degree that these power lines will. It is known that an EMF does interfere with sleep. Lack of sleep affects both mental and physical health. So although the field produced is not a direct factor it is an indirect factor".

Requests to change the route included:

"run the line south of the city" and "Leave the lines where they were. Who is going to help with my family's stress?"

The survey asked if there is anything else we missed. Comments included:

"I realize it may be hard to attain, but statistical data showing the effects of EM radiation levels may help."

"In your response could you mention how far away from the local residential area you are planning to put the lines?"

"Our family's stress and feeling of racism"

3.2.5 Visual quality

The survey asked respondents if the information regarding visual quality addressed their concern. 20 respondents (74%) indicated yes, 4 respondents (15%) indicated no, and 3 respondents (11%) indicated partly.

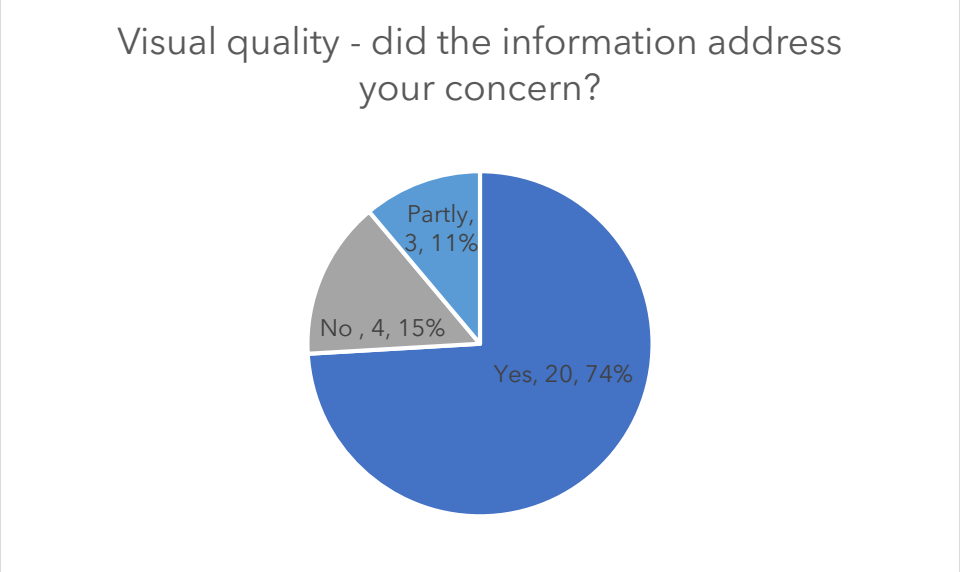


Figure 15. Visual quality - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for visual quality. 4 respondents indicated yes (57%) and 3 respondents answered no (43%). Mitigation recommended was about moving the preferred route or rebuilding in the original line location:

"Placing the tower north of town can be out of sight of homes. A concern regarding railway lines was brought up. I'm sure there are lines that go over railroads elsewhere" and *"Find another route"*.

"Stay on the already established route" and "Leave the towers set up the way it was".

The survey asked if there is anything else we missed. Comments included *"Stay on the land you already occupy"* and *"Prime developmental land"*.

3.2.6 Parks and recreation

The survey asked respondents if the information regarding parks and recreation addressed their concern. 21 respondents (78%) indicated yes, 5 respondents (18%) indicated no, and 1 respondent (4%) indicated partly.

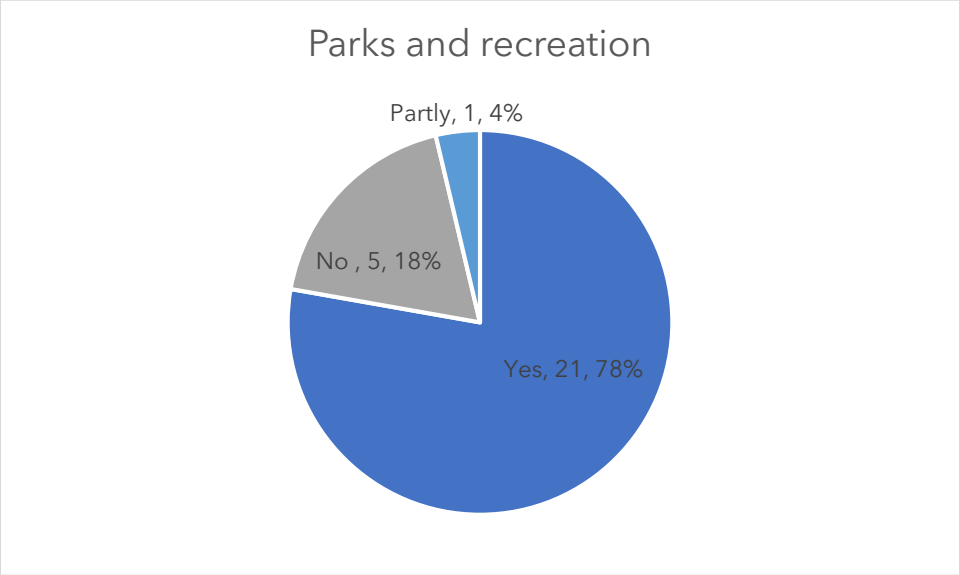


Figure 16. Parks and recreation - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for parks and recreation. 3 respondents indicated yes (60%) and 2 respondents answered no (40%). Mitigation recommended included:

"Everyone understands about short term annoyance. What about the long term impact?"

"Keep the line out of Island Park. Keep the green space green."

"Leave the lines where they were"

The survey asked if there is anything else we missed. Comments included *"You haven't addressed the long term impact of any of these concerns so far except the agriculture ones" and "How do we farm our land with people on it How do family's come out for a day of Strawberry picking."*

3.2.7 Property and residential development

The survey asked respondents if the information regarding property and residential development addressed their concern. 15 respondents (60%) indicated yes, 5 respondents (20%) indicated no, and 5 respondents (20%) indicated partly.

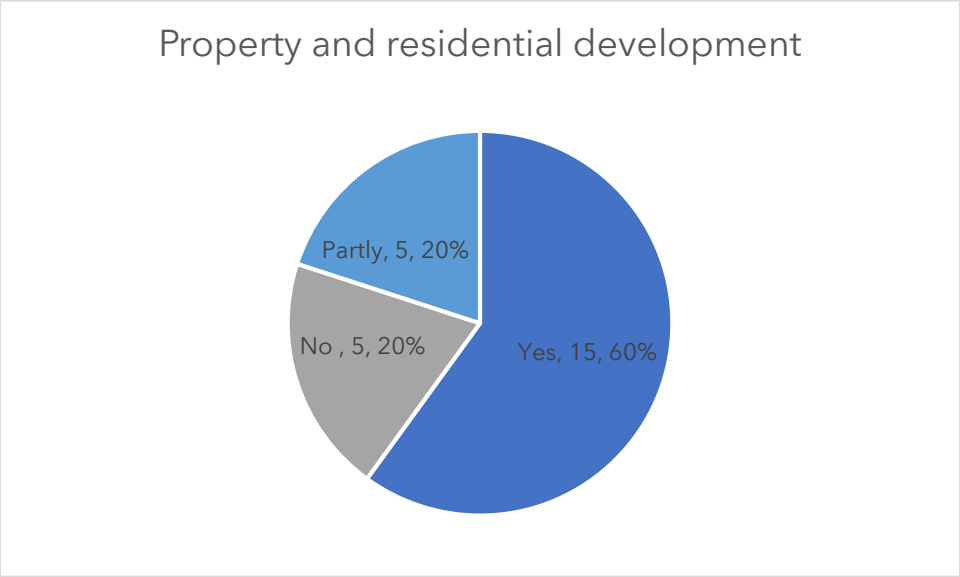


Figure 17. Property and residential development - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for property and residential development. 7 respondents indicated yes (70%) and 3 respondents answered no (30%). Mitigation recommended included concerns with the project impacting development:

"In the Yellowquill Trail area there is so much crammed in here already - homes, water treatment plant, diversion, hydro station, water resource, highways dept, natural resources. We don't need anything else to add to the clutter."

"The line would close the door on future development in the area. The line needs to go south of the city."

"The potential new housing development in the East end of the city will be impacted."

"Have an open discussion with all residential landowners within the proposed line to discuss future impacts and concerns"

"Leaving the lines where they were

There were also recommendations that Manitoba Hydro hire an appraiser and redo research on changes to land values:

"You do your own reports. Could you perhaps hire an appraiser to access the value difference? It would appear far less biased if you did."

"Redo your research on the impact of transmissions lines on land value!"

The survey asked if there is anything else we missed. Comments included *"I don't know what it is but I know you've missed something and so I'll say yes and not absolve you by saying I don't know or I'm not sure"* and *"Can you develop houses under the line"*.

Traditional practices, heritage and culture

The survey asked respondents if the information regarding traditional practices, heritage and culture addressed their concern. 21 respondents (81%) indicated yes, 3 respondents (11%) indicated no, and 2 respondents (8%) indicated partly.

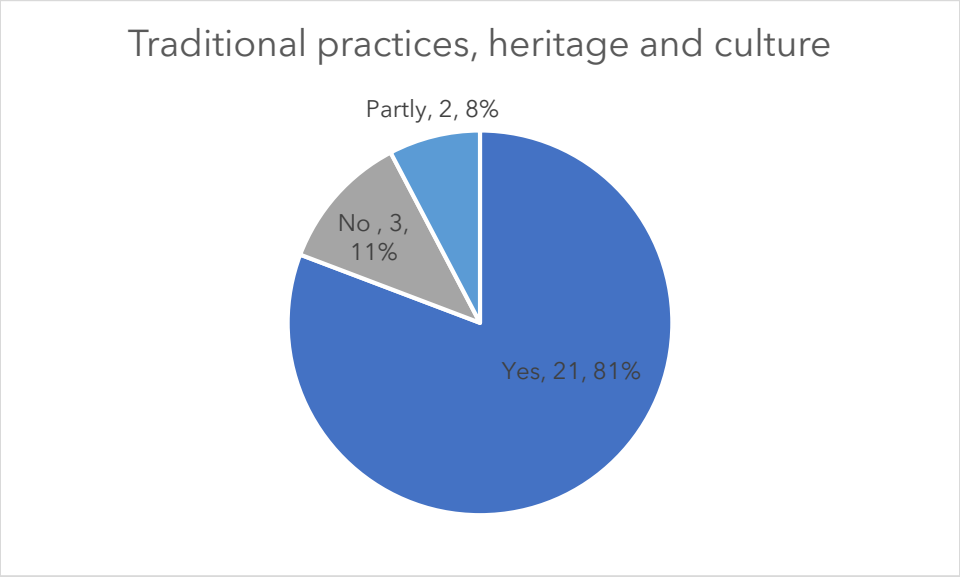


Figure 18. Traditional practices, heritage and culture - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for traditional practices, heritage and culture. 2 respondents indicated yes (40%) and 3 respondents answered no (60%). Mitigation recommended included:

"The river and surrounding land, in the Yellowquill trail area, has been the site for early settlers and native homes. I grew up in the area and know that many arrowhead, and very ancient animal bones have been found along the riverbeds. Who knows what might be found if the area was investigated" and "Leave the lines where they were"

The survey asked if there is anything else we missed. Comments included *"Not going to give you a pass by saying no because you've only given partial info"* and *"What is traditional to one group. What is family tradition farming? Family's traditions of coming out Strawberry picking effects thousands of families"*.

Vegetation

The survey asked respondents if the information regarding vegetation addressed their concern. 20 respondents (80%) indicated yes, 2 respondents (8%) indicated no, and 3 respondents (12%) indicated partly.

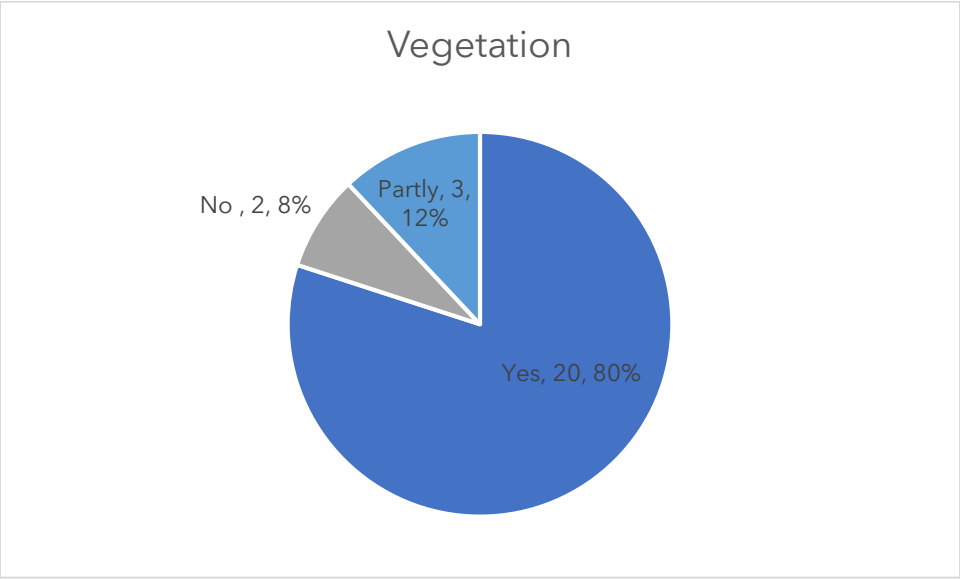


Figure 19. Vegetation - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for vegetation. 2 respondents indicated yes (40%) and 3 respondents answered no (60%). Mitigation recommended included:

"You say the amount of vegetation removed has be taken into consideration, but it does not say exactly how much will be removed. A special concern is very old trees. The park area has beavers, duck, geese, small birds who depend on the vegetation habitat in the area. Humans keep encroaching on their homes."

"Leave the lines where they were there is no vegetation issues".

The survey asked if there is anything else we missed. Comments included *"This is a fly way for many geese, ducks and seagulls, from the diversion to crescent lake. They fly back and forth at least 4 times a day. More wires are going to result in bird/wire collisions therefore more broken wings - dead birds."*

"Not going to absolve you of responsibility by saying you haven't missed anything"

"How do we replace our vegetable and other row crops without the ability to irrigate".

Wildlife and wildlife habitat

The survey asked respondents if the information regarding wildlife and wildlife habitat addressed their concern. 21 respondents (84%) indicated yes, 2 respondents (8%) indicated no, and 2 respondents (8%) indicated partly.

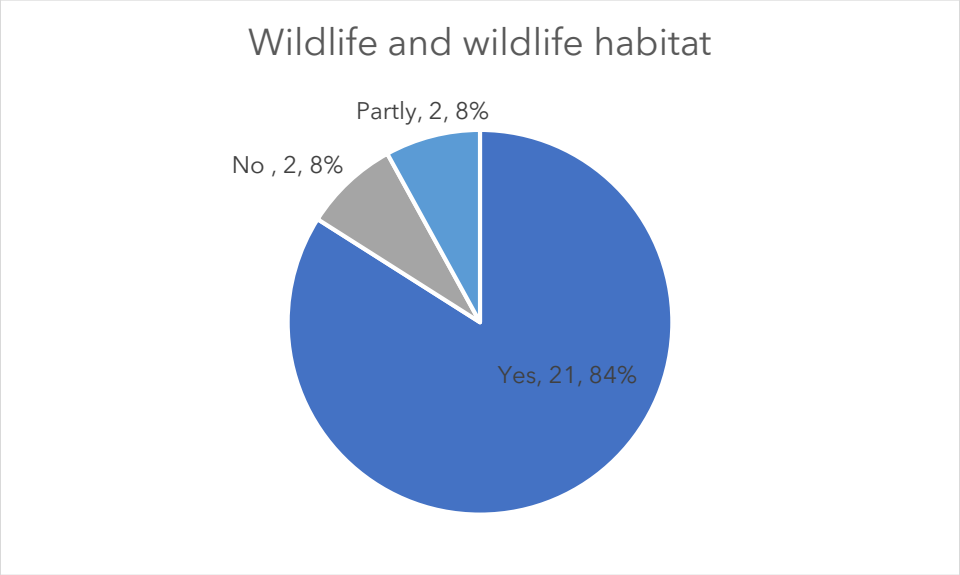


Figure 20. Wildlife and wildlife habitat - did the information address your concern?

The survey asked respondents if they can suggest further mitigation for wildlife and wildlife habitat. 3 respondents indicated yes (75%) and 1 respondent answered no

(25%). Mitigation recommended included:

"*This is a fly way for many geese, ducks and seagulls, from the diversion to crescent lake. They fly back and forth at least 4 times a day. More wires are going to result in bird/wire collisions therefore more broken wings - dead birds. Not sure if the diverters will work. Animals and birds need more than low growing plants (grass??) The noise and movement of humans and machinery will scare the animals and birds away.*"

"What do you do when you find burrows and nests? You've given partial info again"

"Leave the lines where they were for many trees will be removed for a new location"

The survey asked if there is anything else we missed. Comments included:

"The park area is a good spot for birders, campers, fishermen, walkers and bikers. Putting a large tower in the park really spoils the area."

"Not going to absolve you of responsibility by saying no because I can't honestly answer this question with the partial info you've given"

3.2.8 Any additional comments

The survey asked if participants had any additional comments. Comments included, "*How will the landowners be compensated?*"

"When do you plan to get in contact again with the local residents? Your map that shows your preferred route does not give a clear indication of where your plans are. What should be added is landmarks such as roads, or the water treatment plant. This would remove confusion."

"How many years of lost ability to crop will we be paid out for a lifetime mine or my children's or my grandchild's"

"I've Emailed to register for the Mar 18th info session but haven't heard back."

4. Feedback portal feedback

4.1 Round 1

Table 4-1 includes the alternative and mitigative route segments, source and votes from the feedback portal. Table 4-2 includes the mitigative route segments, and date created. The alternative route segments with the most votes include Segment 1,

Segment 3, Segment 9 and Segment 11.

Table 4-1 Alternative or mitigative route segments and votes from the feedback portal

Alternative route segment name	Segment source	Number of Votes
Segment 1	Manitoba Hydro	3
Segment 2	Manitoba Hydro	1
Segment 3	Manitoba Hydro	3
Segment 4	Manitoba Hydro	2
Segment 5	Manitoba Hydro	2
Segment 6	Manitoba Hydro	0
Segment 7	Manitoba Hydro	2
Segment 8	Manitoba Hydro	0
Segment 9	Manitoba Hydro	3
Segment 10	Manitoba Hydro	0
Segment 11	Manitoba Hydro	3
Segment 12	Manitoba Hydro	0
Segment 13	Manitoba Hydro	0
Segment 14	Manitoba Hydro	0
Segment 15	Manitoba Hydro	2
Segment 16	Manitoba Hydro	0
Segment 17	Manitoba Hydro	0
Segment 18	Manitoba Hydro	2
The shortest route	Virtual portal user	0
Oct 27 Discussion Forum Participant Proposal	Discussion forum participant	0
Discussion Forum Route 1	Discussion forum participant	0
Alternative Segments BP6&7 Proposed Option by RM of Portage la Prairie Council	RM of Portage la Prairie Council	0

Table 4-2 Mitigative route segment and date created

Mitigative route segment	Segment source	Date mitigative route segment created
The shortest route	Virtual portal user	October 23, 2020
Oct 27 Discussion Forum Participant Proposal	Discussion forum participant	October 28, 2020
Discussion Forum Route 1	Discussion forum participant	October 27, 2020
Alternative Segments BP6&7 Proposed Option by RM of Portage la Prairie Council	RM of Portage la Prairie Council	November 13, 2020

Table 4-3 Alternative or mitigative route segment and comments from users

Alternative or mitigative route segment	Comments from feedback portal users
Segment 1	RM of Portage la Prairie Council's Preferred Route. Landowner should have strongest say in this section.
	this route will have less impact monitor all segments of route heritage concerns
Segment 2	Moderately impacts use of land.
Segment 3	
Segment 4	RM of Portage la Prairie Council's Preferred Route. Landowner should have strongest say in this section.
Segment 5	Strongly impacts use of land
	heritage concerns monitor all segments of route
Segment 6	Moderately impacts use of land.
Segment 7	RM of Portage la Prairie Council's Preferred Route. Landowner should have strongest say in this section.
Segment 8	Moderately impacts use of land.
Segment 9	RM of Portage la Prairie Council's Preferred Route
	heritage concerns monitor all segments of route
	this route will have less impact
Segment 10	More large transmission towers within PTH 1A corridor causing safety issues.
Segment 11	RM of Portage la Prairie Council's Preferred Route

Table 4-3 Alternative or mitigative route segment and comments from users	
Alternative or mitigative route segment	Comments from feedback portal users
Segment 12	Major impact for existing residences along Yellowquill Trail.
Segment 13	More large transmission towers within PTH 1A corridor causing safety issues.
	Major impact to existing dog park and cemetery.
Segment 14	More large transmission towers within PTH 1A corridor causing safety issues.
Segment 15	RM of Portage la Prairie Council's Preferred Route
	less impact monitor heritage concerns
Segment 16	More large transmission towers within PTH 1A corridor causing safety issues.
Segment 17	More large transmission towers within PTH 1A corridor causing safety issues.
Segment 18	RM of Portage la Prairie Council's Preferred Route
	less impact along spillway monitor heritage concerns on all aspects
Oct 27 Discussion Forum Participant Proposal	Will strongly impact replacement of the spillway and expansion of the cells in the future.
Discussion Forum Route 1	Major impact to existing agriculture landowners, future cemetery expansion, golf course, Yellowquill School, residences north of Cottonwood and skewed intersection.
	shorter route heritage concerns

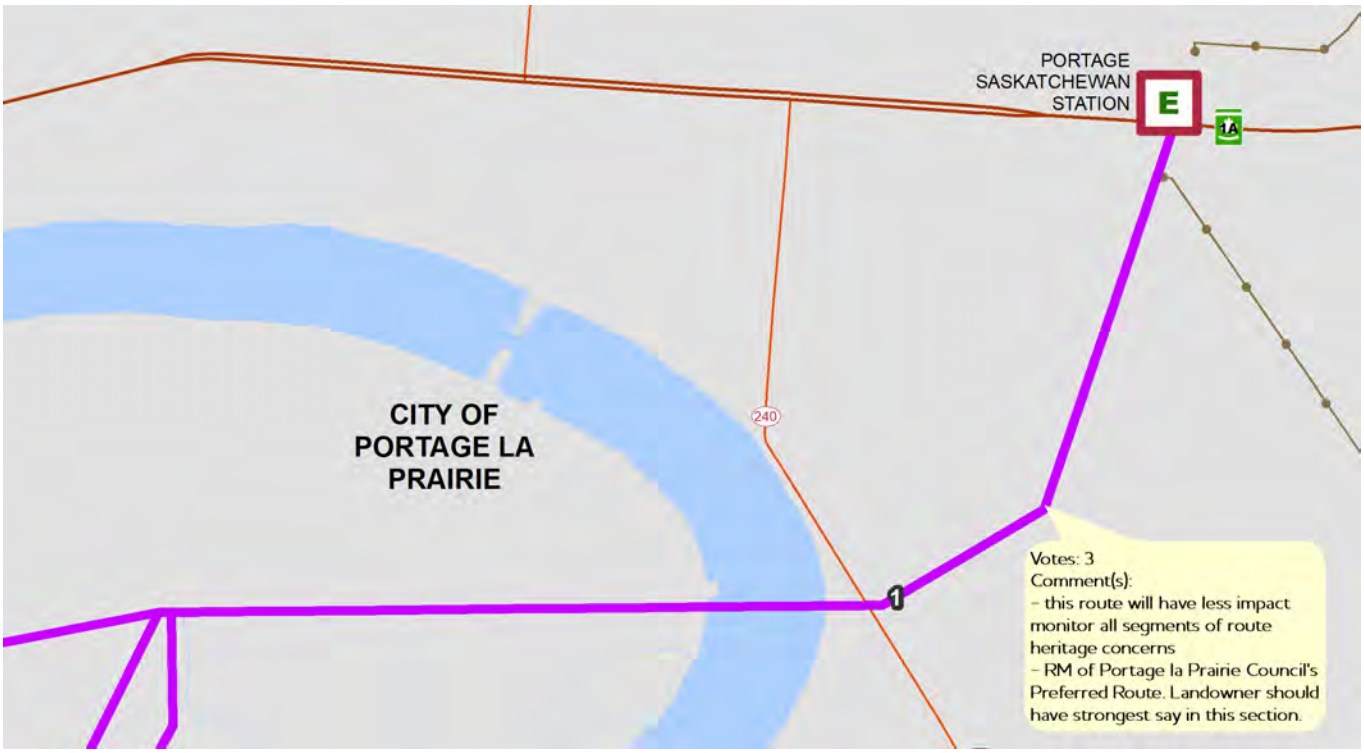


Figure 21 Segment 1 feedback portal comments

Figure 22 Segments 3-8 feedback portal comments

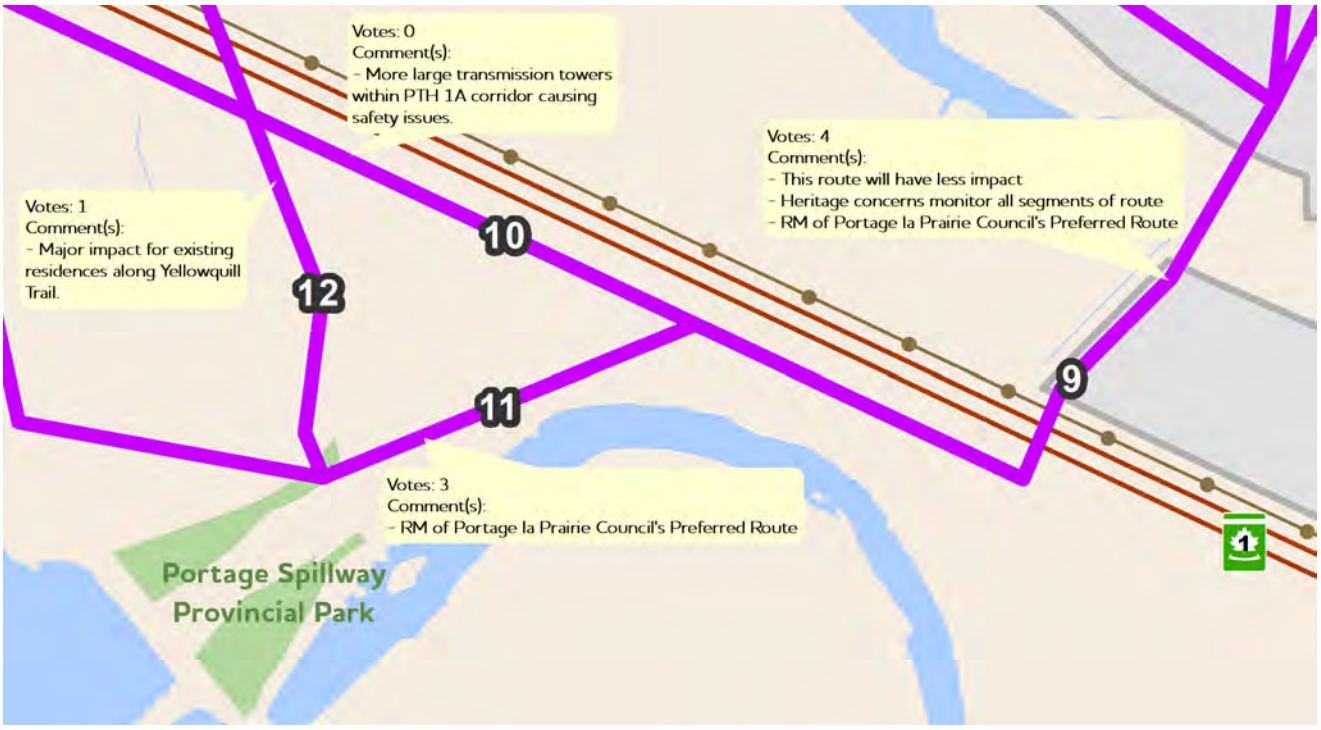


Figure 23 Segments 9-12 feedback portal comments

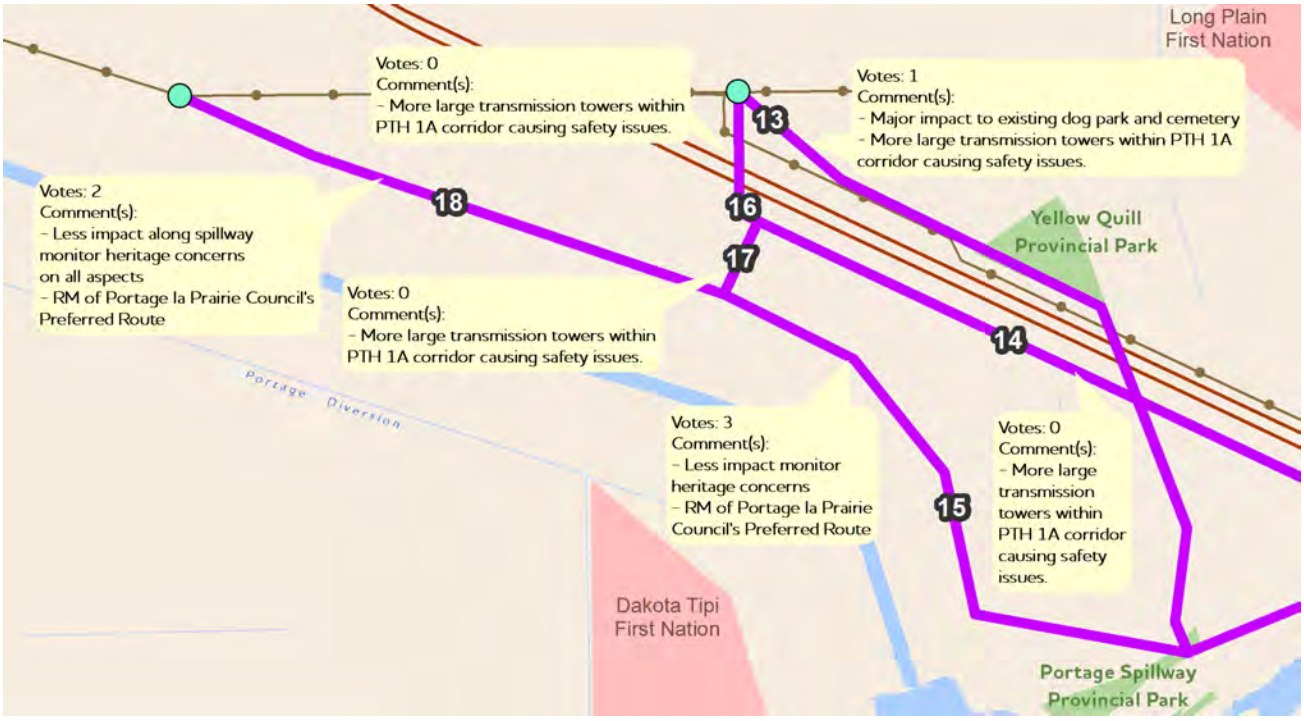


Figure 24 Segments 13-18 feedback portal comments

4.2 **Round 2**

Table 4-4 Round 2 feedback portal participant features of interest and comments	
Feature of interest identified by participants	Participant comment
Significant property value impact and loss of enjoyment	If the western-most route is chosen it will loom over the treeline across the lake summer and winter disrupting the views and changing the nature of our properties' enjoyment. There are at least 14 east 13 homes who would be impacted to some degree
Western most route concern	Lost enjoyment of property for 12+ property owners
Loss of value impact; western route of concern	The placement of hydro lines will seriously impact upon the neighboring property value in terms of aesthetics, and impact upon the natural wildlife habitats. In a nutshell, they will be a tremendous eye-sore.
Alternative routes for bp6/bp7	We live on Pine Cres and the western most route would greatly reduce our enjoyment of our view out our living room window and from our yard across the lake, therefore we are opposed to this route. We take no position on the other 3 most eastern routes
Request to revisit the preferred line established earlier	Preferred route selection avoids Yellowquill Trail / all reserve property / detriment to Pine Crescent and uses existing towers /route on Island Farm. Stays well away from riverbank engineering issues. Shorter than the preferred route identified.
Transmission line reroute	Re-routing along the shore of Crescent Lake is not only at a determine to property owners, who risk losing value, aesthetics, but also will impact the wild life and will cost significantly more only to appease one demographic at the expense of others
Request to revisit the	My family of five lives on Pine Crescent. We

Table 4-4 Round 2 feedback portal participant features of interest and comments	
preferred line established earlier	bought our property because of the country feel both in the back yard and our front yard. We prefer the Brandon Avenue then south on existing roadway.
Request to revisit the preferred line established earlier	We think the country feel of our view will be negatively impacted with looming towers and lines in view.
Resident preferred choice	Segment 1 to Segment 5 to Segment 9.

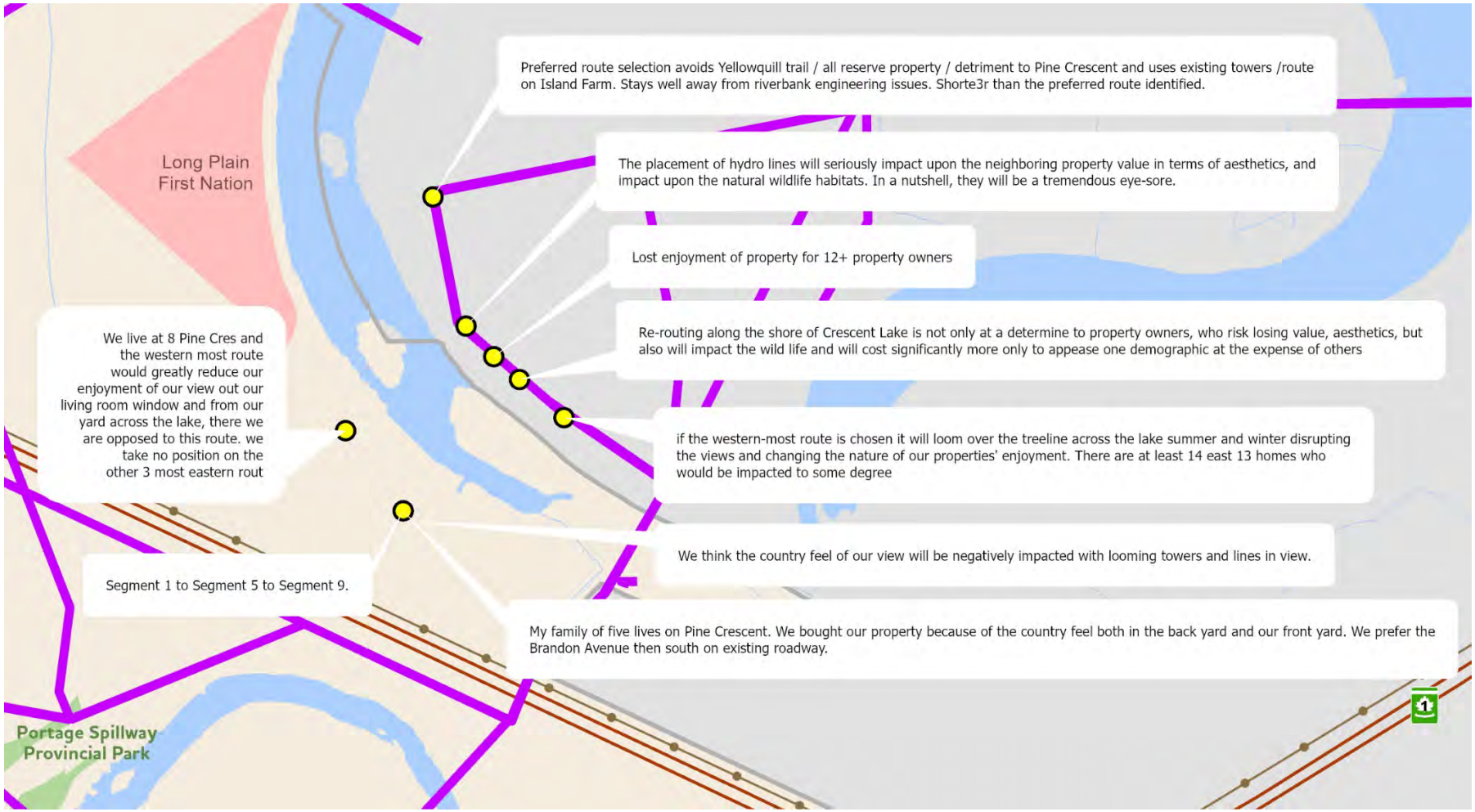


Figure 25 Round 2 feedback portal comments

Appendix A Round 1 information sheet

Brandon-Portage la Prairie (BP6/BP7)
Transmission line replacement project

In October 2019, a powerful storm ripped through southern Manitoba. A mix of freezing rain, wet snow, and high winds caused extensive damage to Manitoba Hydro's system unlike anything seen before and left thousands of customers without power.

Portage la Prairie and surrounding communities were some of the hardest hit. In the days to follow, crews worked tirelessly and in challenging conditions to rebuild hundreds of kilometres of distribution lines and sections of the transmission network to restore power as quickly as possible.

Now, work is continuing on some of the large-scale repairs and rebuilds in the area, including one double circuit transmission line between Brandon and Portage la Prairie (referred to as BP6/BP7).

What is happening?

Some sections of the BP6/BP7 transmission line need to be entirely rebuilt with permanent replacements.

For the sections that need to be rebuilt, Manitoba Hydro is considering different routes as development beside the line has grown and requirements for right-of-way widths have increased since the line was first built over half a century ago.

Where is it?

The following map shows the sections of BP6/BP7 that need to be rebuilt and rerouted (in green) and the alternative route segments (in purple) currently under review.

Feedback received through engagement will help determine the preferred route.

A steel tower in the Portage la Prairie area left crumpled by the storm.

Map of the Portage la Prairie area showing sections of BP6/BP7 that need to be rebuilt and rerouted.

Manitoba Hydro

Why is it necessary?

Over 50 towers on BP6/BP7 were damaged by the storm. As a temporary solution to quickly restore power to affected customers in the area, a smaller, wood pole transmission line was installed along the Trans-Canada Highway. Now, Manitoba Hydro needs to rebuild permanent replacements for the damaged sections to ensure it can continue to reliably serve the growing electricity needs of the area into the future.

Are regulatory approvals required?

Yes. This project requires approval as a Class 2 development under The Environment Act.
An environmental assessment for the rebuilt sections of BP6/BP7 will be conducted and a report will be submitted to Manitoba Conservation and Climate for approval.

How will the new route be decided?

Routing is a key part of the environmental assessment process. Data gathering, on the ground fieldwork, technical and environmental considerations, as well as input from landowners, Indigenous communities, interested parties, and the public, will help inform the preferred route for the rebuilt sections of BP6/BP7.

When will the work happen?

The tentative schedule (subject to change) is:

- Fall 2020 – Round 1 (Identify & evaluate alternative route segments)
- Winter 2020 – Round 2 (Select preferred route)
- 2021 – File environmental assessment report for regulatory review
- 2022 – Construction start, if regulatory approval is received.

We want to hear from you

There are a number of opportunities for you to learn more about this work, ask questions, voice your concerns, and provide feedback to help inform our routing and plans.

Online survey

Go to **www.hydro.mb.ca/bp67** to tell us what you think about the proposed alternative route segments. Survey closes on November 20.

Virtual information sessions

Join us for a virtual information session on:

- October 26 at 7:00 pm
- October 27 at 4:00 pm
- November 3 at 12:00 pm
- November 4 at 7:00 pm

To register, e-mail LEAprojects@hydro.mb.ca or call 1-877-343-1631.

Online feedback portal

Take part in our online feedback portal as an interactive way to comment on the alternative route segments, share suggestions, and identify points of interest in the area.
Go to **www.hydro.mb.ca/bp67** to get started.

For more information:

Visit www.hydro.mb.ca/bp67 to learn more and sign-up for updates. Send your questions to LEAprojects@hydro.mb.ca or call 1-877-343-1631.

Available in accessible formats upon request.

Appendix B Round 1 postcard

Brandon-Portage la Prairie (BP6/BP7): Transmission line replacement project

Alternative routes for sections of BP6/BP7 under review

We are planning repairs to a double circuit transmission line between Brandon and Portage la Prairie (BP6/BP7) that sustained major damage in the October 2019 storm. Some sections need to be entirely rebuilt and rerouted since development beside the line has grown and requirements for right-of-way widths have increased since the line was first built.

Online feedback portal

Comment on the alternative route segments, share suggestions, and identify points of interest in the area, in our feedback portal at www.hydro.mb.ca/bp67

Join us for a virtual information session:

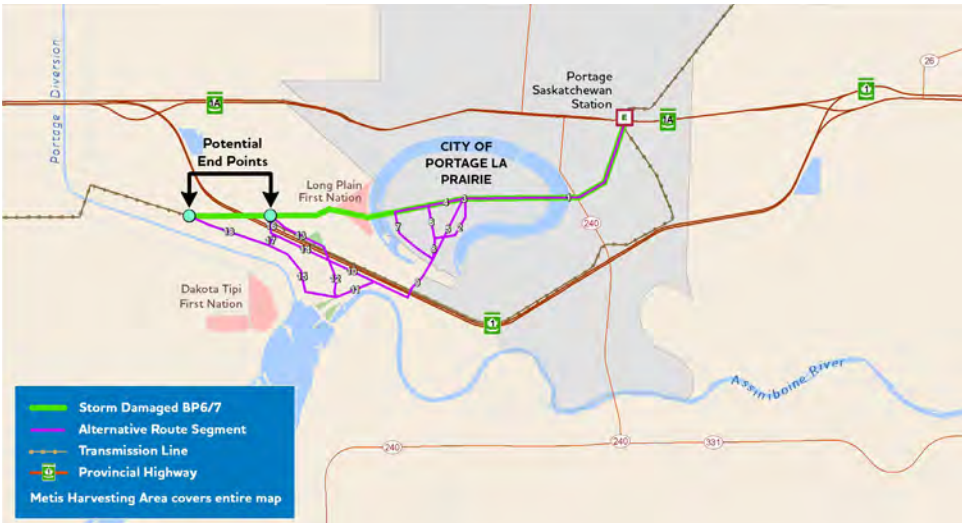
- October 26 at 7:00 pm
- October 27 at 4:00 pm
- November 3 at 12:00 pm
- November 4 at 7:00 pm

Email LEAprojects@hydro.mb.ca or call 1-877-343-1631 to register.

Stay connected

Learn more and sign-up for updates at **www.hydro.mb.ca/bp67** or connect with us: LEAprojects@hydro.mb.ca or 1-877-343-1631

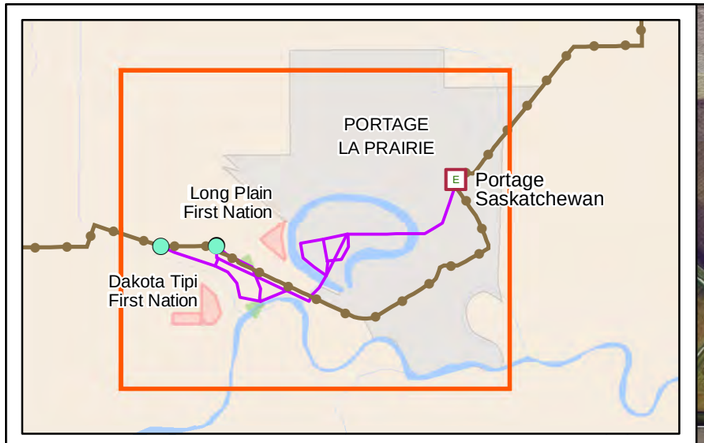
Manitoba Hydro



The sections of BP6/BP7 that need to be rebuilt and rerouted (in green) and alternative route segments (in purple). Feedback received through engagement will help determine the preferred route.

Available in accessible formats upon request.

Appendix C Alternative route segments map



Brandon–Portage la Prairie (BP6/BP7) Transmission Line Replacement Project

Project Infrastructure

- Potential End Point
- 12 Alternative Route Segment

Existing Infrastructure

- Electrical Station
- Transmission Line
- Trans Canada Highway
- 240 Road

Landbase

- City
- Provincial Park
- First Nation

Metis Harvesting Area covers entire map

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date: October 16, 2020

N

0 0.5 1 Kilometers
0 0.25 0.5 Miles

1:25,000

Alternative Segments

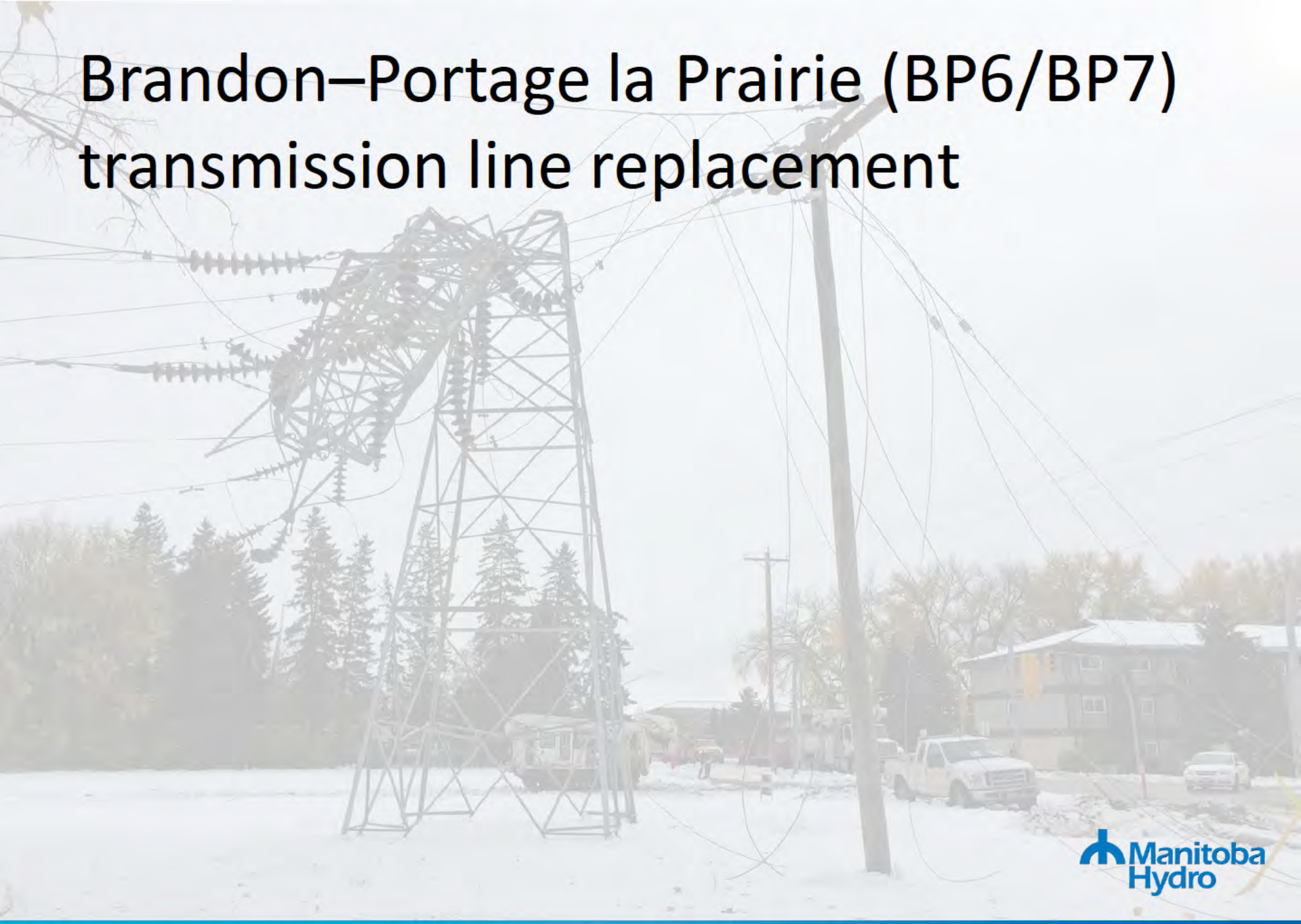
BP6/7 Overview

Draft: For Discussion Purposes Only

Available in accessible formats upon request

Appendix D Round 1 virtual information session presentation

Brandon–Portage la Prairie (BP6/BP7) transmission line replacement



Meeting outline

- Welcome
- Introductions
- Project presentation by Manitoba Hydro
- Discussion of alternative route segments
- Questions and answers
- Next steps and project timeline

Manitoba Hydro

Why is this project needed?

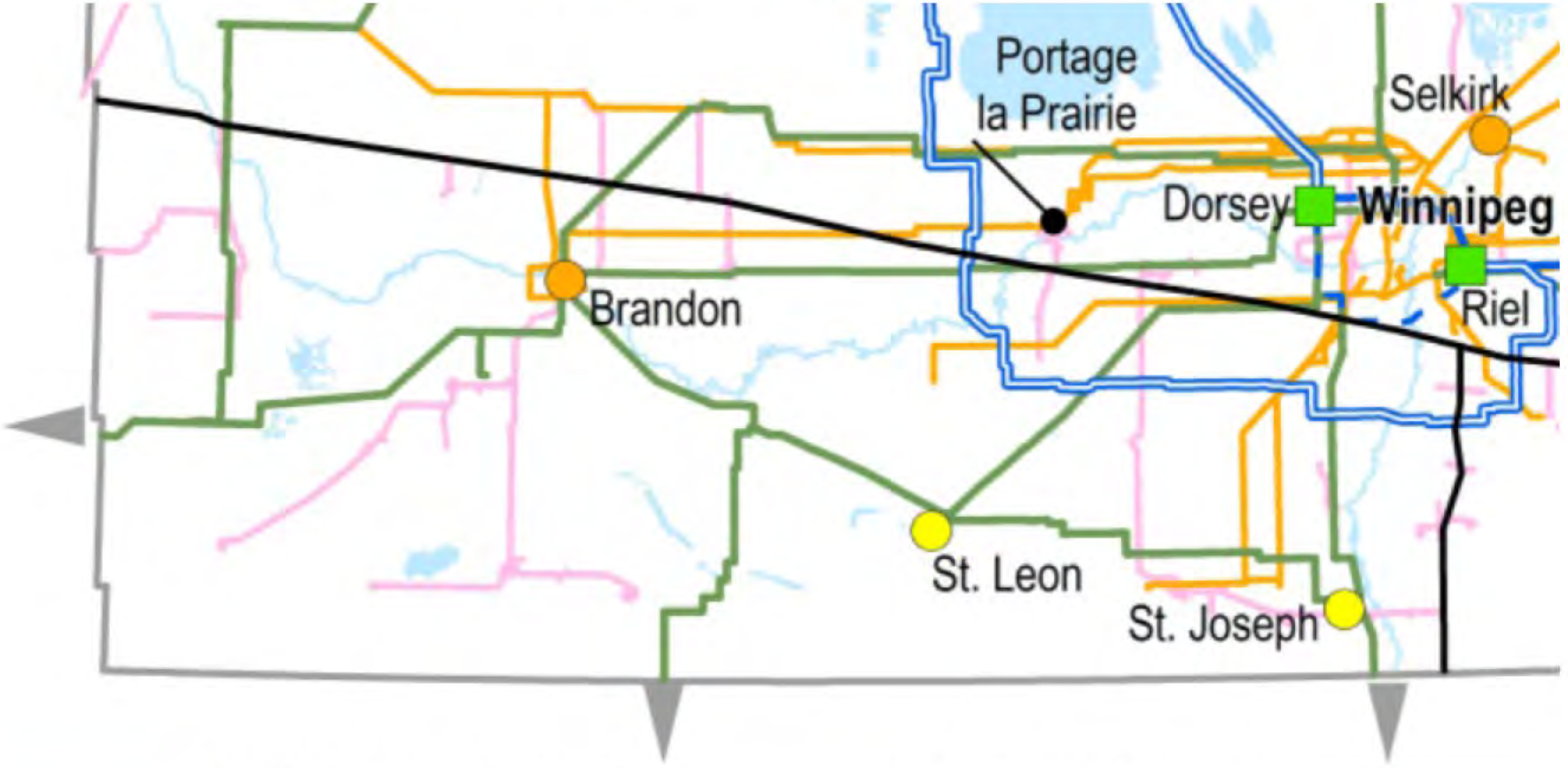
The October 2019 brought freezing rain, wet snow, and high winds that caused extensive damage to our system.

Our crews worked tirelessly and in challenging conditions to restore power to over 184,000 customers.

Damaged tower in Portage la Prairie

Manitoba Hydro

System purpose



Manitoba Hydro

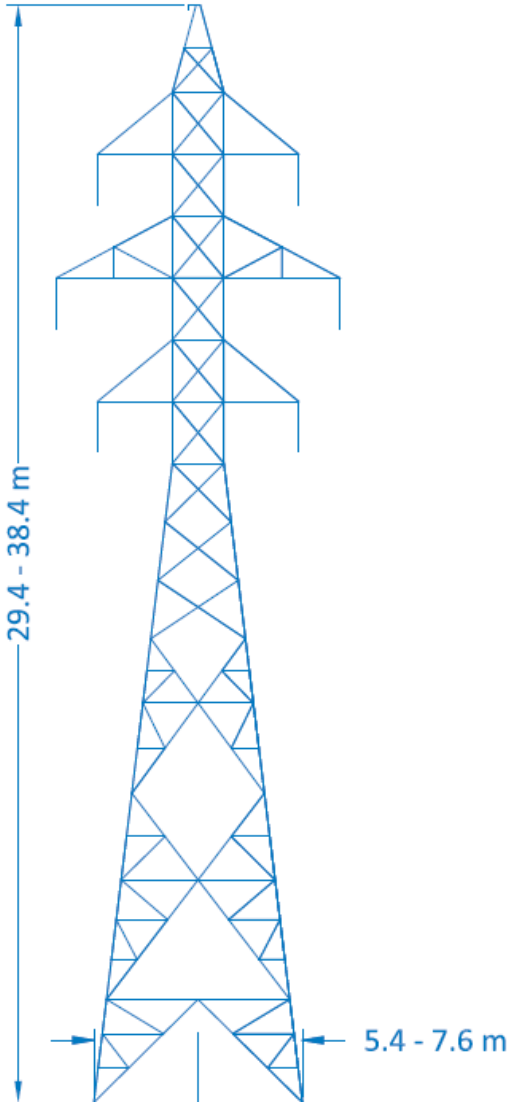
What will it look like?

Self supporting steel lattice towers

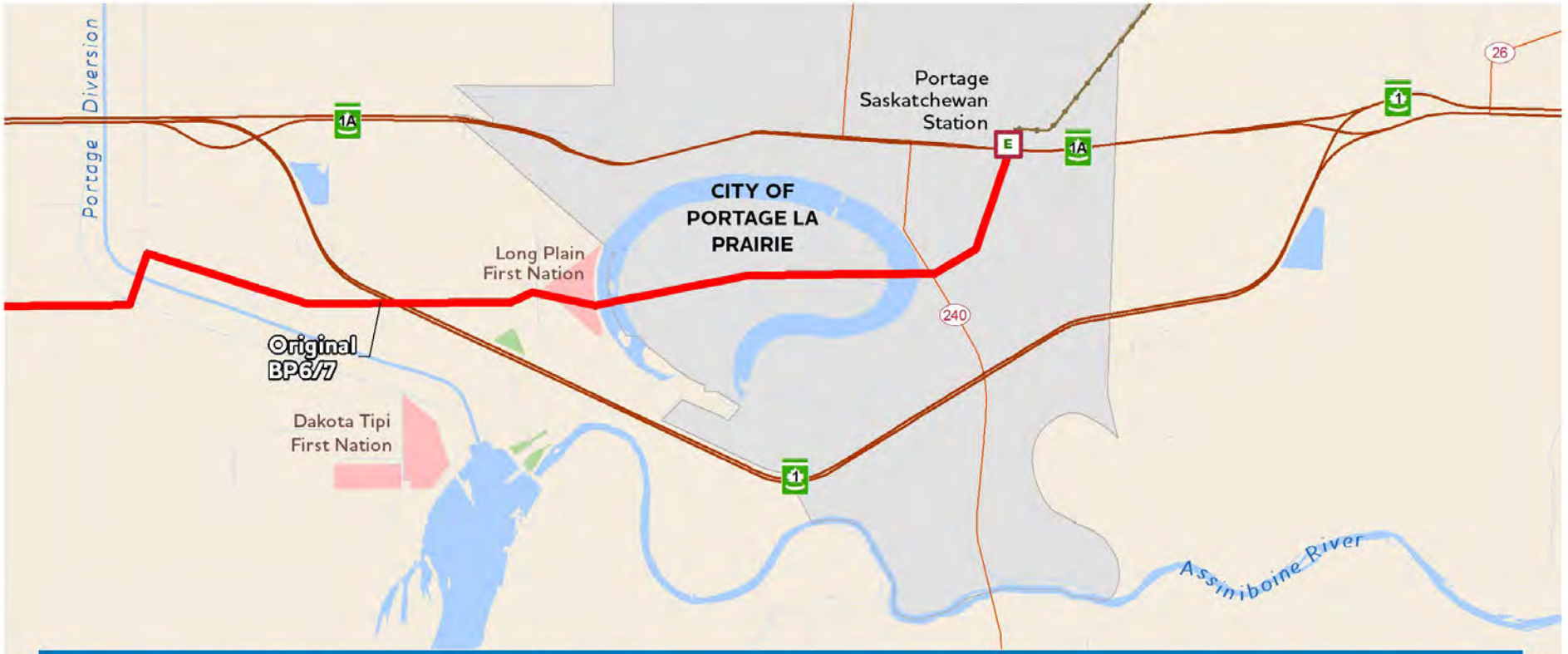
Two sets of 3 conductors

30-38 m tall

5.5 – 8 m wide at base

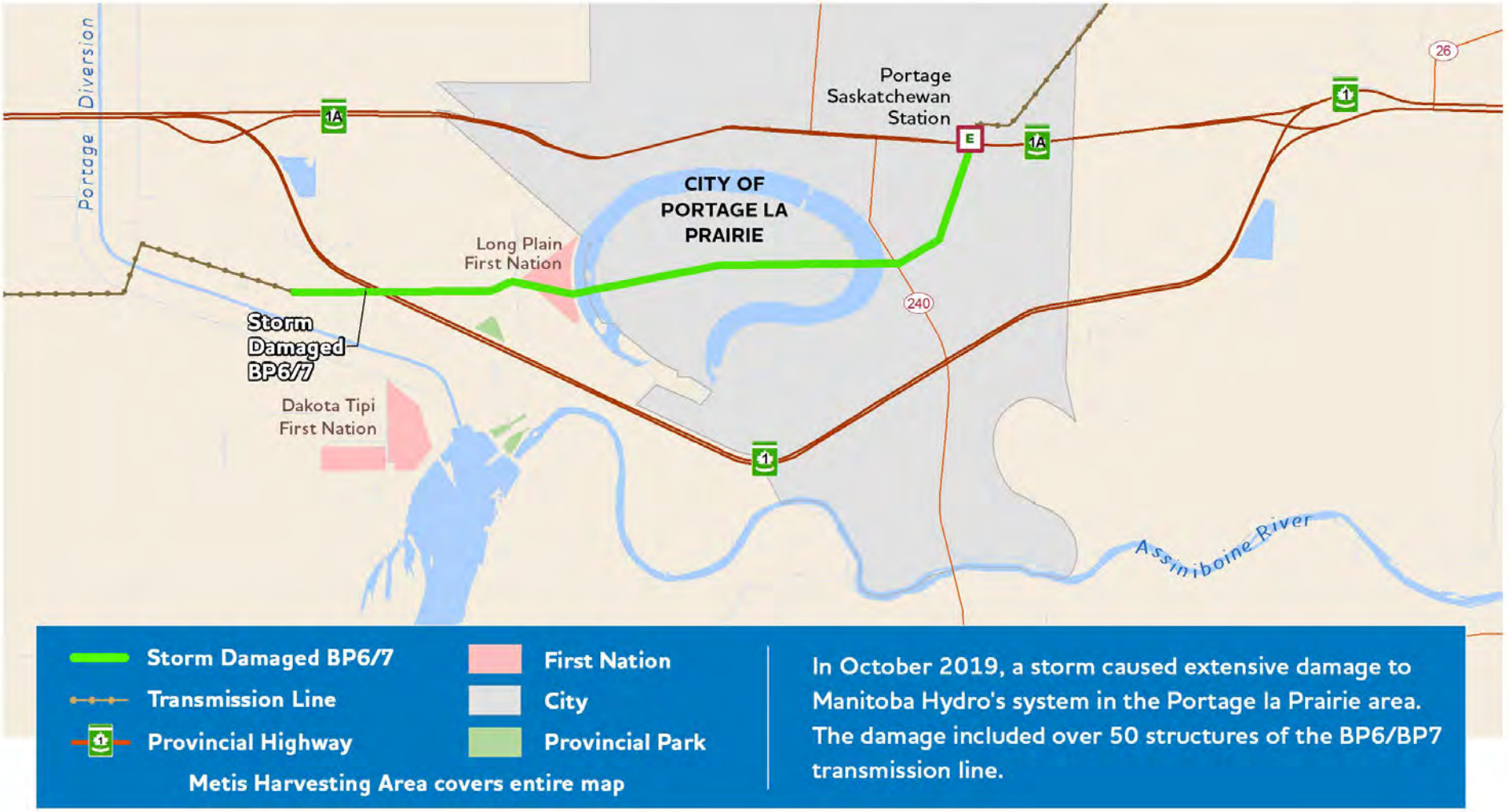


Manitoba Hydro

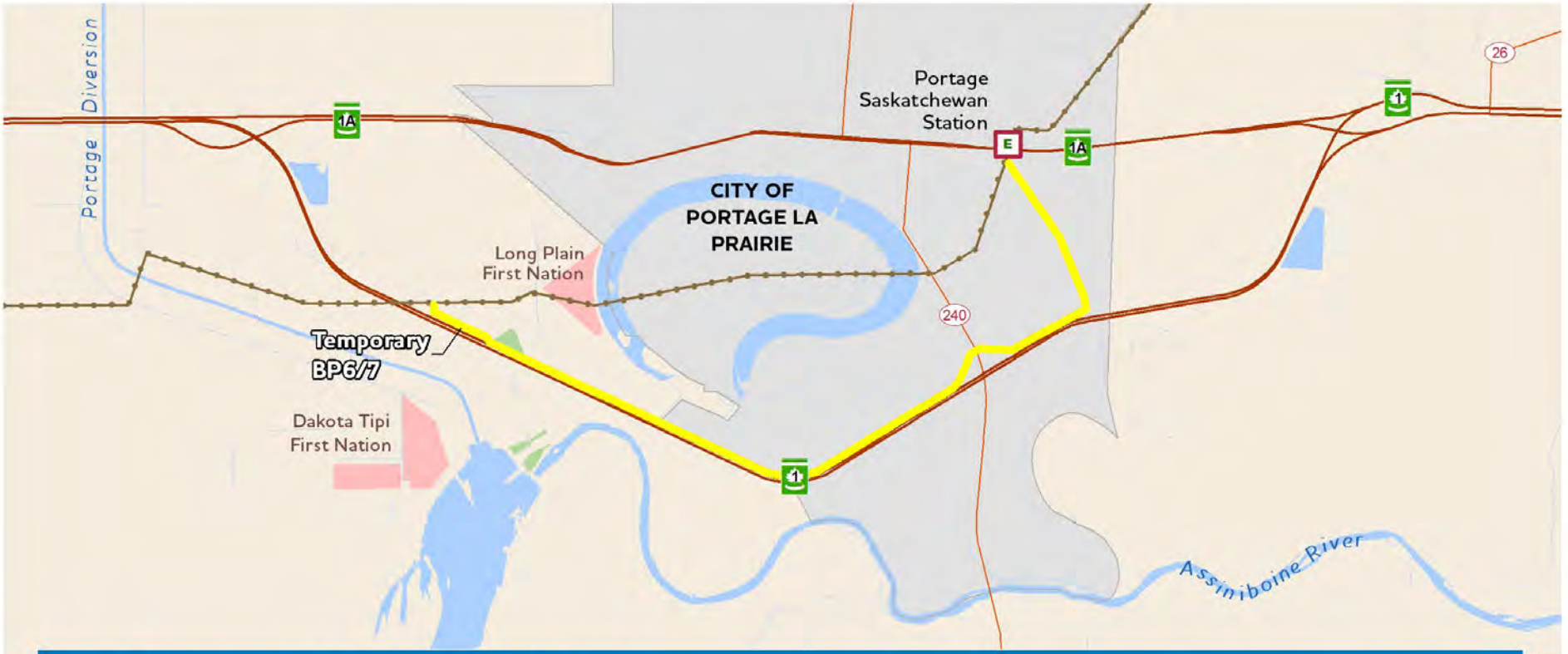


Original BP6/7
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map

The original BP6/BP7 transmission line was built between 1949 – 1964. The purpose of this 115kV transmission line is to carry power from Portage la Prairie to Brandon.

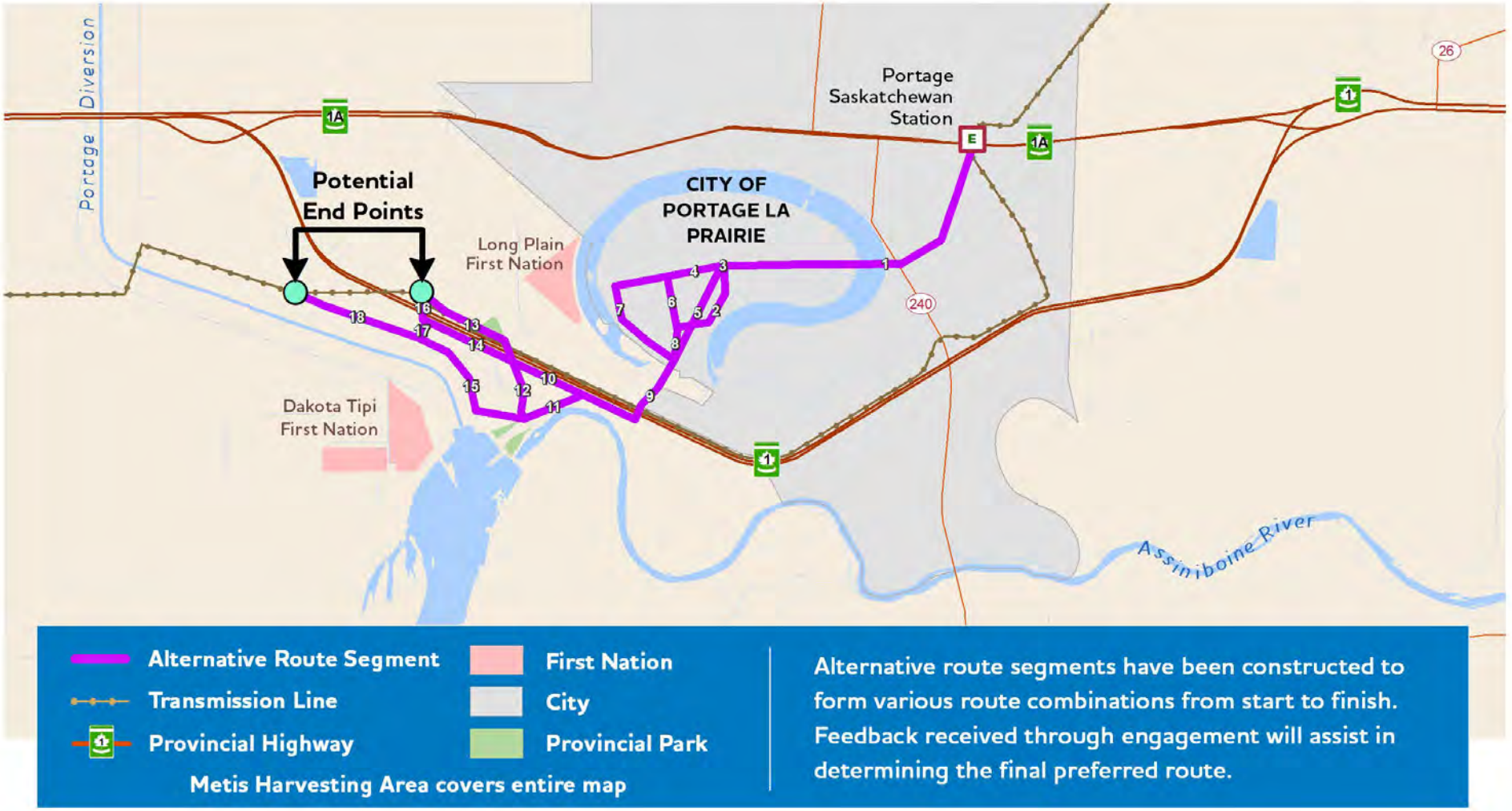


In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area. The damage included over 50 structures of the BP6/BP7 transmission line.



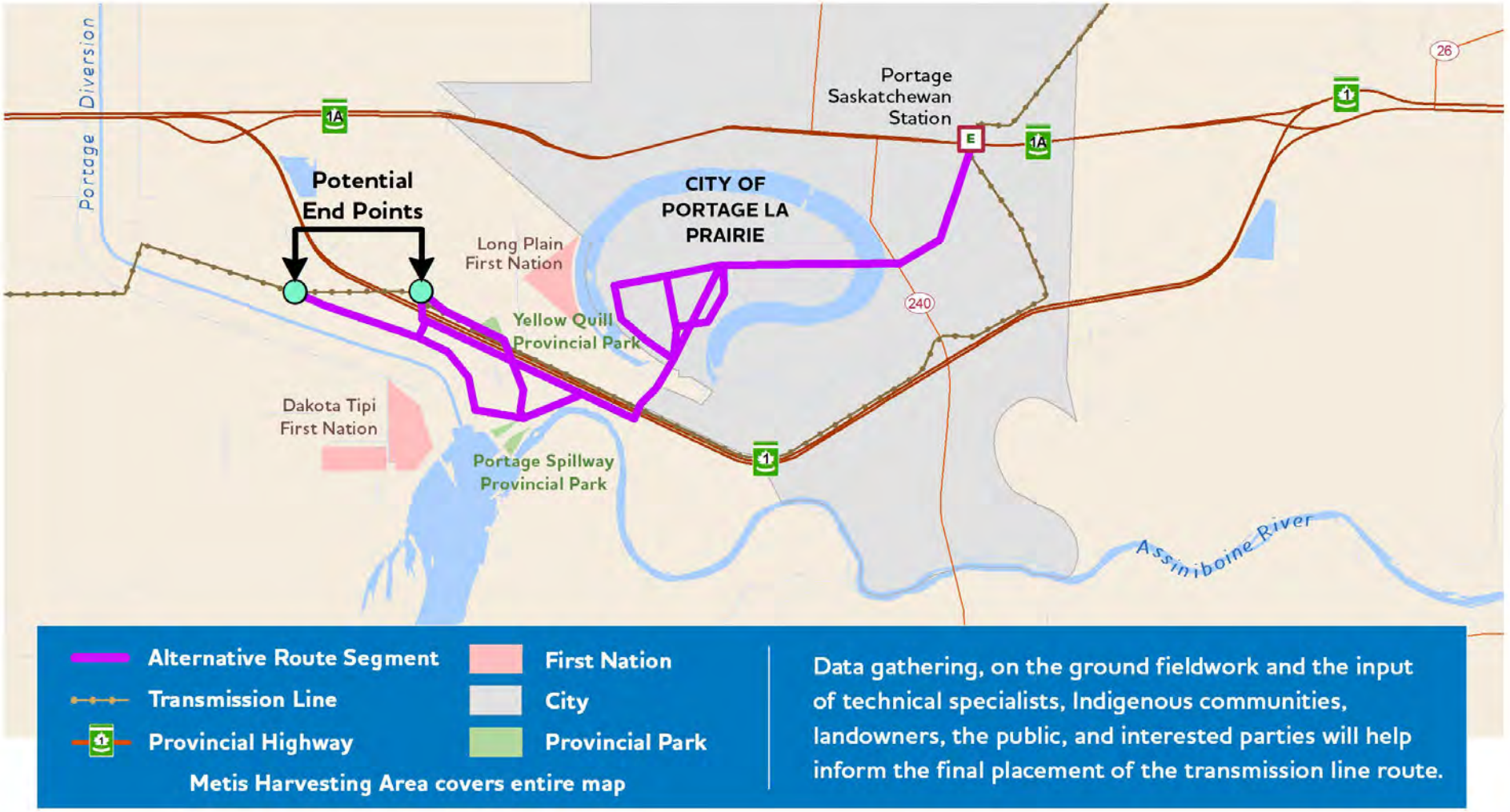
Temporary BP6/7
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map

A temporary single-circuit wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability but we need to plan and rebuild a permanent replacement for the damaged sections.



Alternative Route Segment
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map

Alternative route segments have been constructed to form various route combinations from start to finish. Feedback received through engagement will assist in determining the final preferred route.


Portage Diversion
Potential End Points
Long Plain First Nation
CITY OF PORTAGE LA PRAIRIE
Portage Saskatchewan Station
Yellow Quill Provincial Park
Dakota Tipi First Nation
Portage Spillway Provincial Park
Assiniboine River
1A
1
E
240
26
Alternative Route Segment
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
Data gathering, on the ground fieldwork and the input of technical specialists, Indigenous communities, landowners, the public, and interested parties will help inform the final placement of the transmission line route.

Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
  - online feedback portal
  - map

How does information inform decisions?

Design

Location

Mitigation

We are here

Round 1

- Alternative route segments: fall 2020

Round 2

- Preferred route: winter 2020

Anticipated next steps

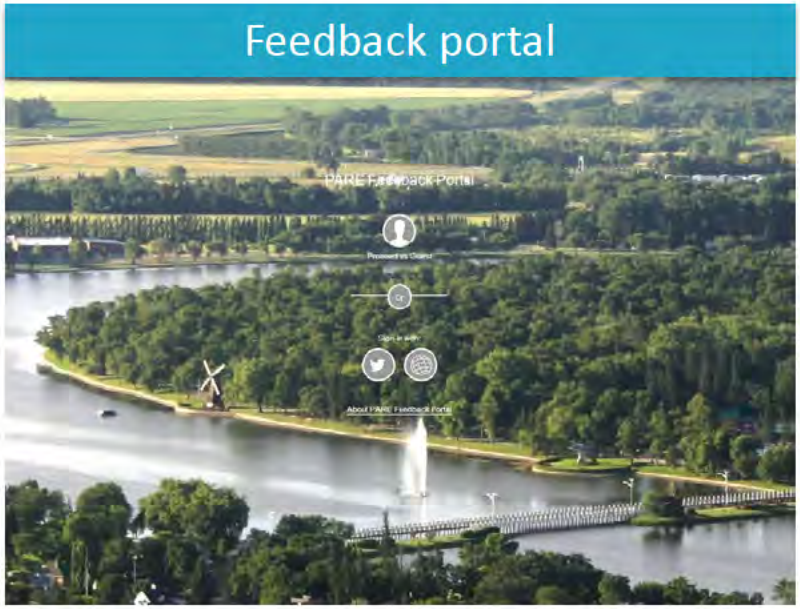
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

Manitoba Hydro

We want to hear from you

Online survey and feedback portal

Tell us what you think about the proposed alternative route segments. The survey closes on November 20.



www.hydro.mb.ca/bp67

Thank you

The project team wants to hear from you.

For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

Available in accessible formats upon request.

Appendix E Round 1 what we heard summary

Brandon–Portage la Prairie (BP6/BP7) transmission line replacement project

Engagement summary

Portage la Prairie and surrounding communities were some of the hardest hit by the powerful storm that struck southern Manitoba in October 2019. Now, work is continuing on some of the large-scale repairs and rebuilds in the area, including a double circuit transmission line between Brandon and Portage la Prairie (referred to as BP6/BP7). To learn more, visit www.hydro.mb.ca/bp67

This fall, landowners, Indigenous communities, local residents, and interested parties were invited to participate in an engagement process for the project. This feedback, along with input from other studies, will help inform final routing and design, which we expect to share more details on in the coming months. The following are some key insights from our engagement.

Engagement activities

Online survey & feedback portal

4 **virtual information sessions**

10 **virtual meetings with interested parties**

11 **virtual meetings with four Indigenous communities and one organization**

Key engagement themes

Proximity to homes

Participants shared concerns about impacts to their homes and neighbourhoods, such as decreased property values and loss of natural habitat.

Health and safety

Participants shared concerns about living near high voltage transmission lines and traffic collision risks with routing near the Trans-Canada Highway.

Culture and heritage

Participants shared concerns about potential cultural and archaeological sites on Crescent Island and near Fort la Reine and the Yellowquill Trail.

Traditional land and harvesting

Participants suggested measures be taken to protect medicinal vegetation in the area and wildlife populations that are sources of food and for traditional practices.

Recreational activities

Participants shared concerns about potential impacts to recreational areas and activities, such as the local dog park and fishing areas.

Key survey findings

Personal property

50% said impacts to their personal property is a top priority for them.

Project need

47% said the project being planned because of the October 2019 storm is a top consideration for them.

Reliability

38% agree the project is necessary to improve reliability of electricity to customers in the area.

The view

31% said impacts to the view from their home or look of their community is a top priority for them.

Environmental assessment underway

An environmental assessment report, including the final preferred route for the rebuilt sections of BP6/BP7, will be submitted to Manitoba Conservation and Climate for approval before construction work can begin.

For more information:

LEAprojects@hydro.mb.ca
1-877-343-1631
hydro.mb.ca/bp67

Available in accessible formats upon request.

Manitoba Hydro

Appendix F Round 2 information sheet

Brandon-Portage la Prairie (BP6-BP7)

Transmission line replacement project
Round 2: Preferred route

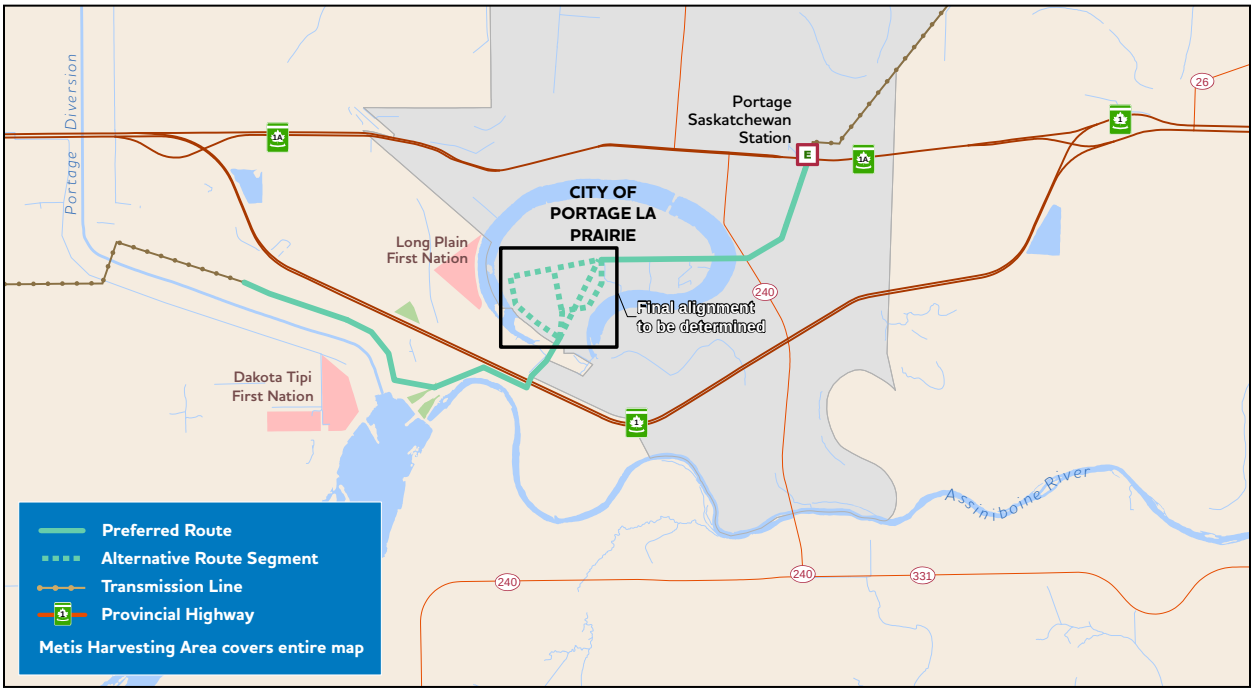
What is it and why do we need it?

Portage la Prairie and surrounding communities were some of the hardest hit by the powerful storm that ripped through southern Manitoba in October 2019. Now, work is continuing on some of the large-scale repairs and rebuilds in the area, including a double circuit transmission line between Brandon and Portage la Prairie (referred to as BP6/BP7).

Due to the extent of the damage, some sections of BP6/BP7 in Portage la Prairie need to be entirely rebuilt with permanent replacements to ensure it can continue to reliably serve the area's growing electricity needs into the future. Manitoba Hydro has considered different routes for these rebuilt sections as development beside the line has grown and requirements for right of-way widths have increased since it was first built over half a century ago.

Preferred route for BP6/BP7

Round 1 of Manitoba Hydro's engagement on this project kicked off in fall 2020, where several alternative route segments for BP6/BP7 were presented for feedback. Alternative routes were evaluated based on feedback and information collected through our environmental assessment processes to help us determine a preferred route. The preferred route aims to balance different interests and local concerns, and to limit overall effects of the transmission line. Read our What we heard summary at **www.hydro.mb.ca/bp67** for more detail on how local feedback was considered in the selection of the preferred route.



The preferred route (solid green line) and alternative route segments yet to be determined (in black box).

Have your say on the preferred route

Round 2 of engagement is now underway. We welcome you to ask questions, voice your concerns, and provide feedback on the preferred route to help inform our final route and plans.

Virtual information sessions

Join us for a virtual information session on:

- March 16, 2021 at 7:00 pm
- March 17, 2021 at 12:00 pm

To register, e-mail LEAprojects@hydro.mb.ca or call 1-877-343-1631.

Online survey

Go to **www.hydro.mb.ca/bp67** to complete our survey.

Online feedback portal

Check out our online feedback portal to comment on the preferred route and see what others are saying. Go to **www.hydro.mb.ca/bp67** to get started.

What's next?

Round 2 of engagement will conclude in March 2021, and any final refinements necessary will be made to the preferred route. The final preferred route for the rebuilt sections of BP6/BP7 will be presented in an environmental assessment report submitted to Manitoba Conservation and Climate for review and approval before construction work can begin. Part of this process includes a public review period for local residents, Indigenous communities, interested parties, and the public to share their concerns and ask questions about the report. Manitoba Hydro will continue to share information as these processes progress.

When will the work happen?

The tentative schedule (subject to change) is:

- Round 1 – Identify & evaluate alternative routes: fall 2020
- Round 2 – Select preferred route: March 2021
- File environmental assessment report for regulatory review: 2021
- Construction start, if regulatory approval is received: 2022

For more information:

Visit **www.hydro.mb.ca/bp67** to learn more and sign-up for updates. Send your questions to LEAprojects@hydro.mb.ca or call 1-877-343-1631.

Available in accessible formats upon request.

Manitoba Hydro

Appendix G Round 2 postcard

Preferred route selected for transmission line replacement in Portage la Prairie

Engagement underway for BP6/BP7 preferred route

Thank you to everyone who participated in our first round of engagement for the BP6/BP7 transmission line replacement project in Portage la Prairie. A preferred route has been identified that aims to balance local concerns and limit overall effects.

A second round of engagement is now underway. Share your thoughts or concerns on the preferred route to help inform our final route and plans.

We want to hear from you

Fill out our online survey or comment on the preferred route in our interactive feedback portal at: **www.hydro.mb.ca/bp67**

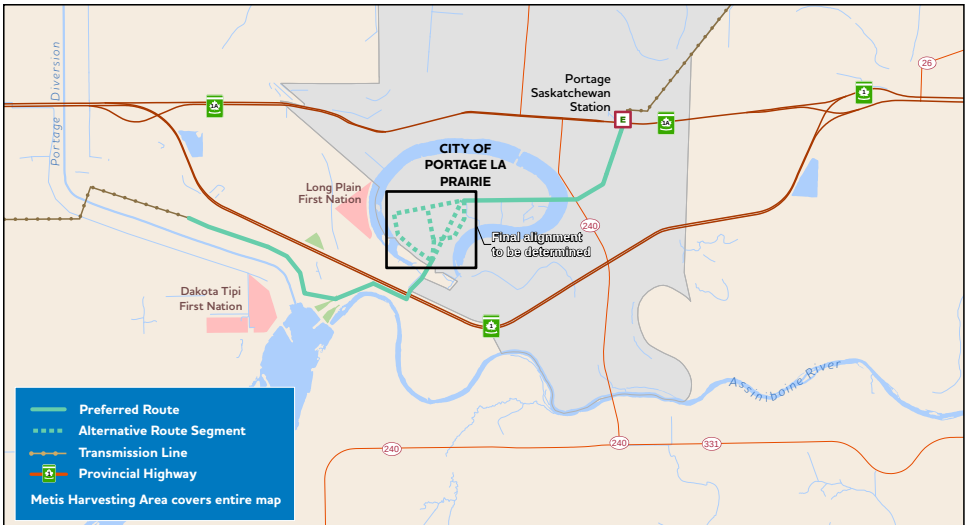
Join us for a virtual information session:

- March 16, 2021 at 7:00 pm
- March 17, 2021 at 12:00 pm

Email LEAprojects@hydro.mb.ca or call 1-877-343-1631 to register.

Stay connected

Learn more and sign-up for updates at www.hydro.mb.ca/bp67 or connect with us: LEAprojects@hydro.mb.ca or 1-877-343-1631

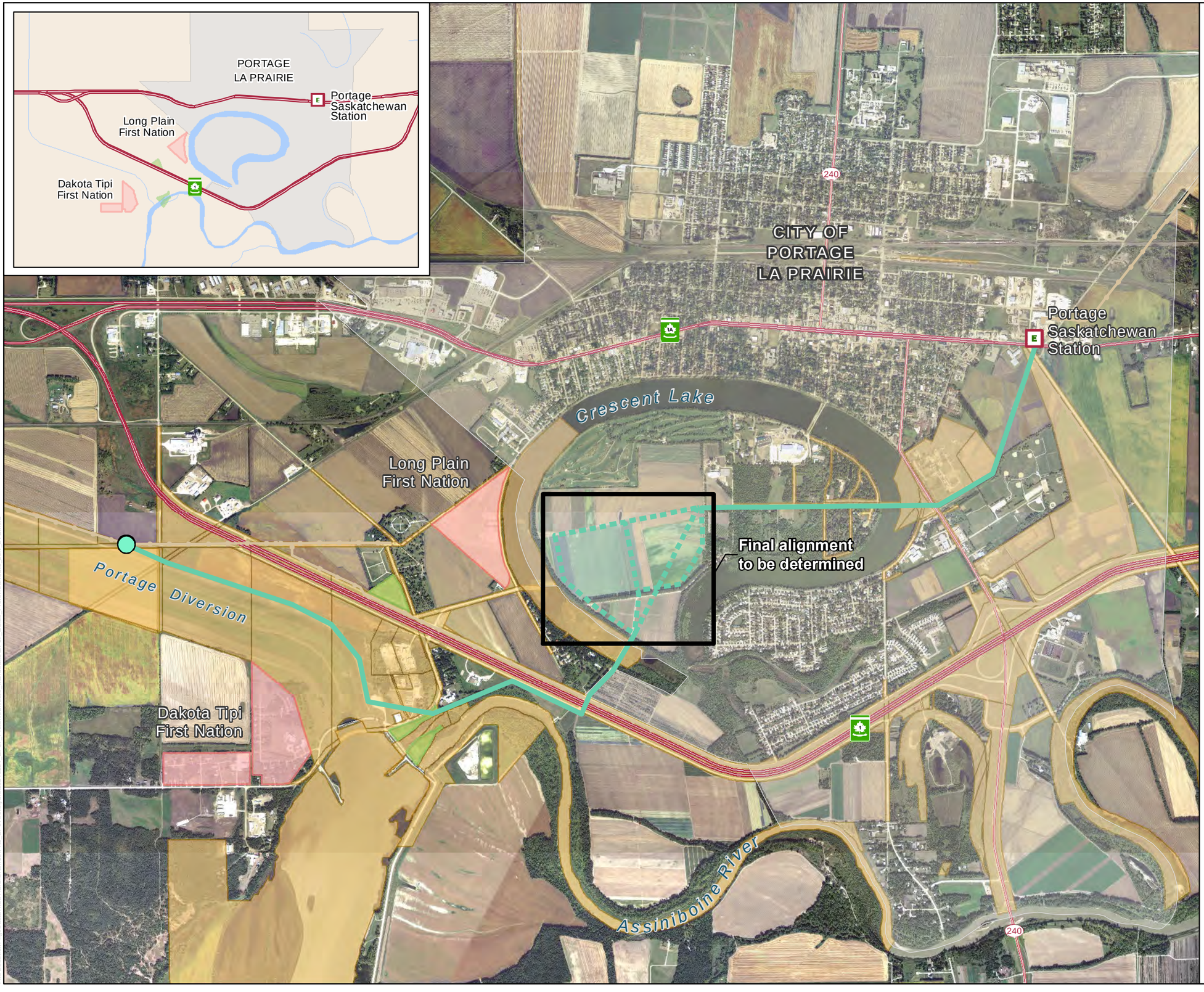


The preferred route (solid green line) and alternative route segments yet to be determined (in black box).

Available in accessible formats upon request.

Manitoba Hydro

Appendix H Preferred route map



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure

- Destination Point
- Alternative Route Segment
- Preferred Route Segment

Existing Infrastructure

- Electrical Station
- Transmission Line
- Trans Canada Highway
- Road

Landbase

- City
- Provincial Park
- First Nation
- Crown Land

Metis Harvesting Area covers entire map

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date: March 2, 2021

N

0 0.5 1 Kilometers
0 0.25 0.5 Miles

1:25,000

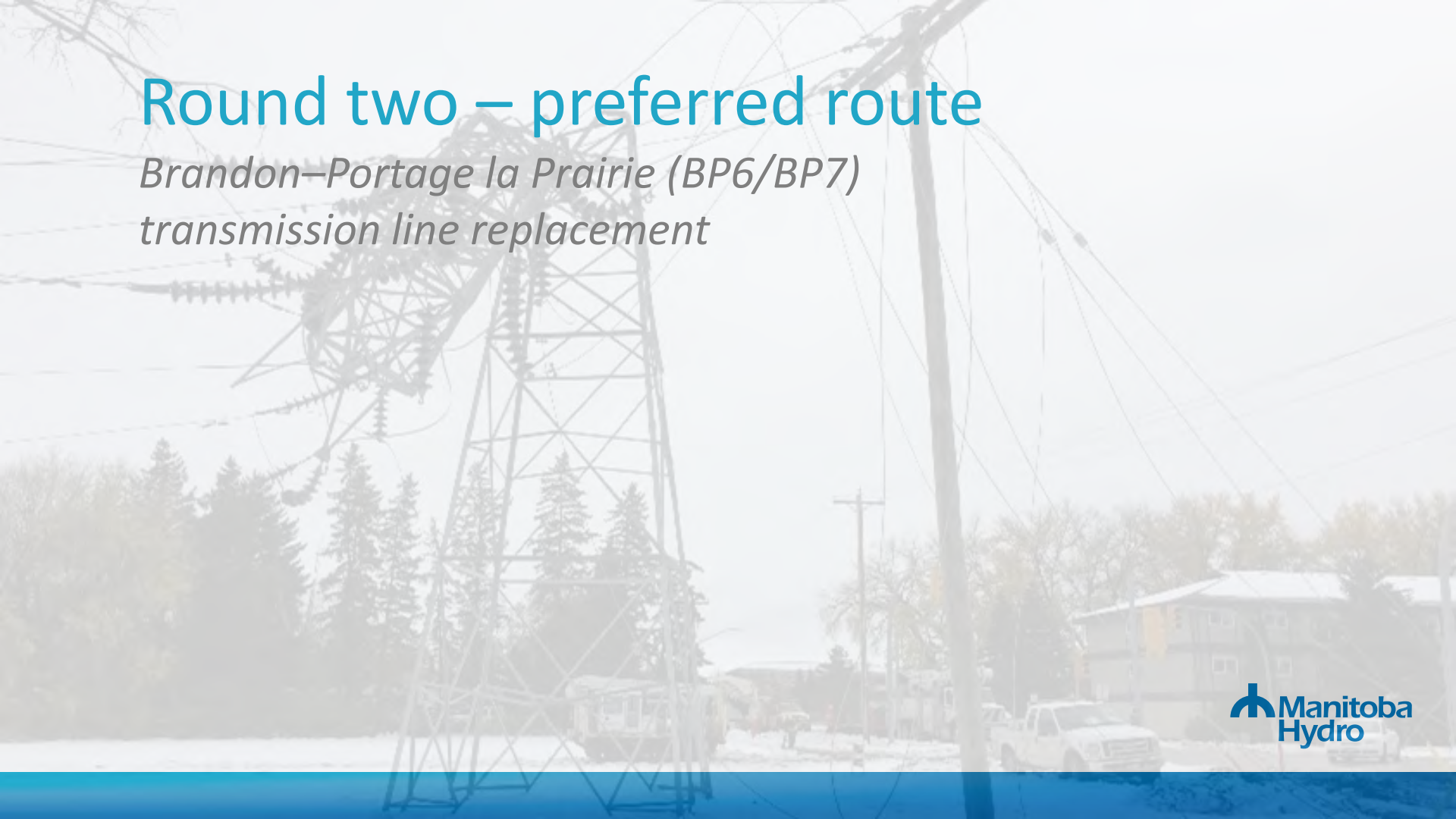
Preferred Route

Draft: For Discussion Purposes Only

Appendix I Round 2 virtual information session presentation

Round two – preferred route

Brandon–Portage la Prairie (BP6/BP7) transmission line replacement



Manitoba Hydro

Outline

- Project description
  - Tower design
- Round one engagement
  - What we heard
- How we consider routing feedback
- Preferred route
- Next steps

Manitoba Hydro

Why is this project needed?

The October 2019 brought freezing rain, wet snow, and high winds that caused extensive damage to our system. Due to the extent of the damage, some sections of BP6/BP7 in Portage la Prairie need to be entirely rebuilt with permanent replacements to ensure it can continue to reliably serve the area's growing electricity needs into the future.

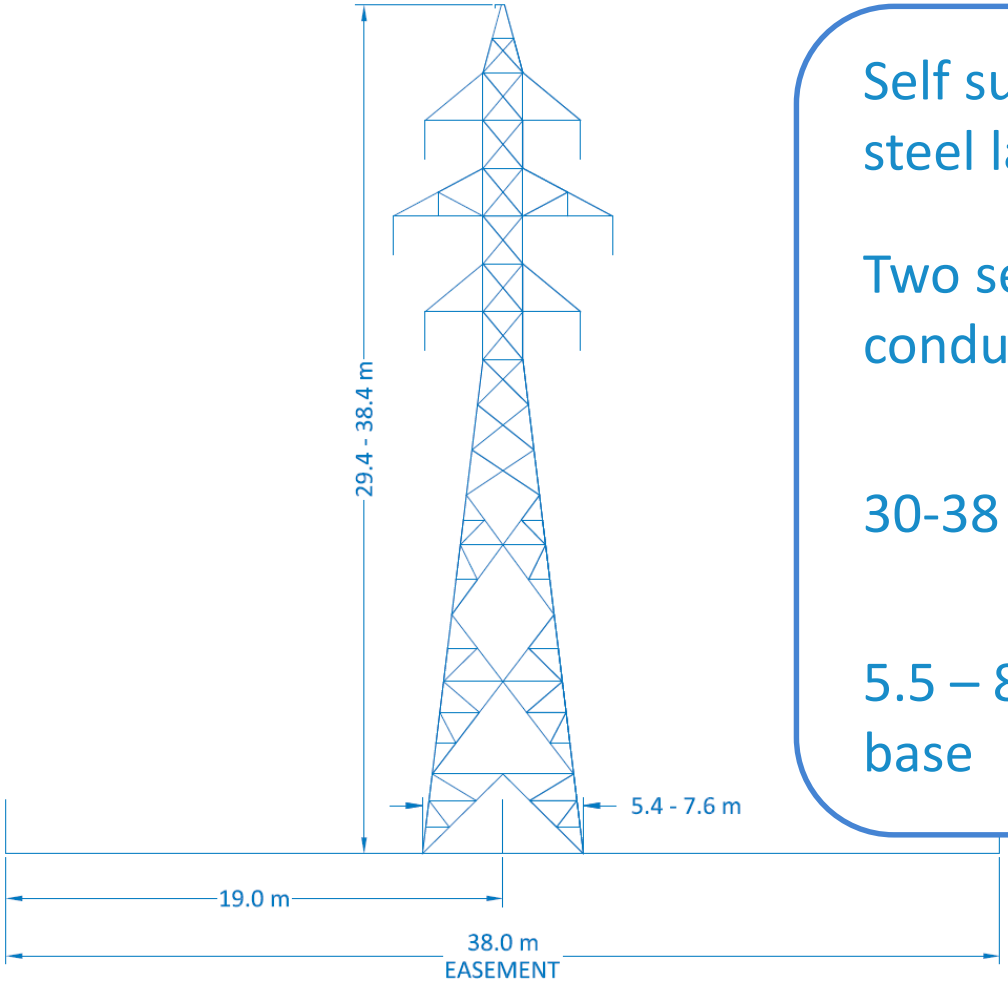
Manitoba Hydro has considered different routes for these rebuilt sections as development beside the line has grown and requirements for right of-way widths have increased since it was first built over half a century ago.

Damaged tower in Portage la Prairie

Manitoba Hydro

Tower design

Across field



Self supporting steel lattice towers

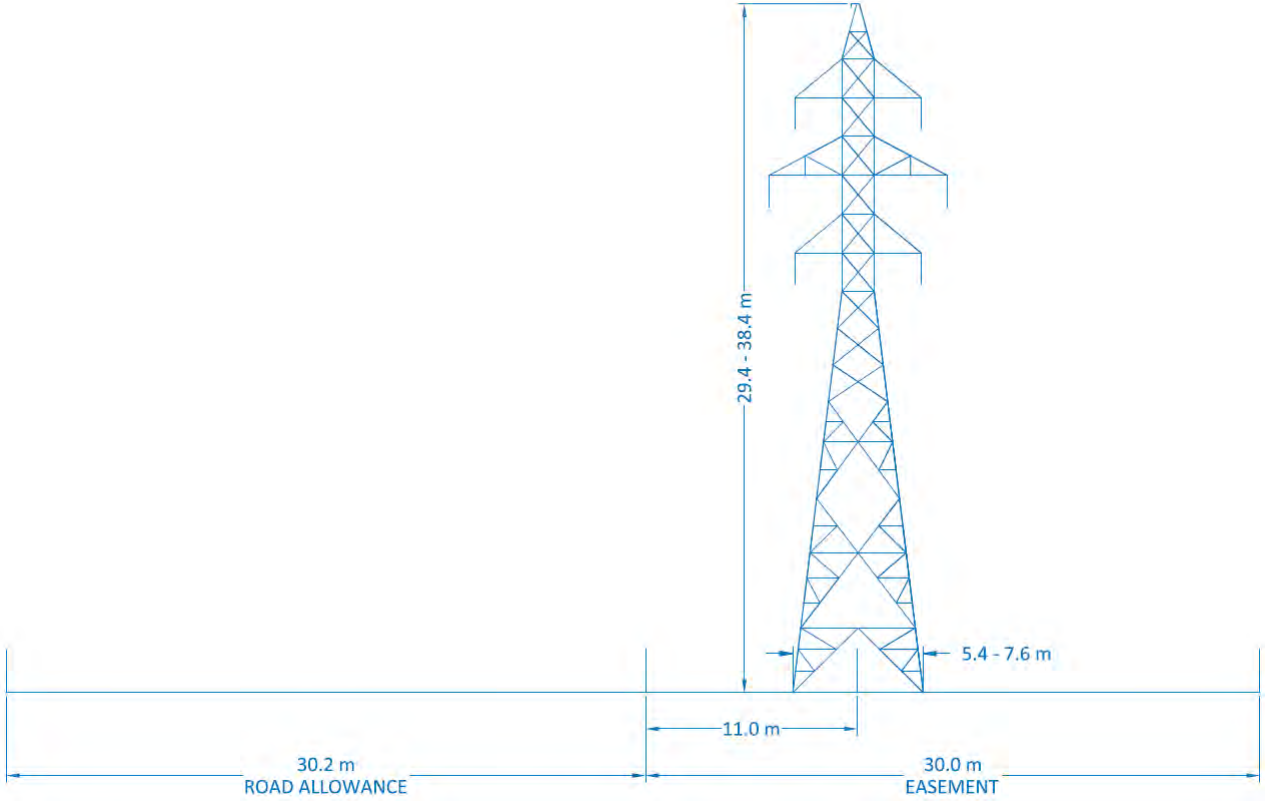
Two sets of 3 conductors

30-38 m tall

5.5 – 8 m wide at base

Manitoba Hydro

Tower design



Next to road allowance

Round one engagement

Engagement activities

Online survey & feedback portal

4 virtual information sessions

10 virtual meetings with interested parties

11 virtual meetings with four Indigenous communities and one organization

Manitoba Hydro

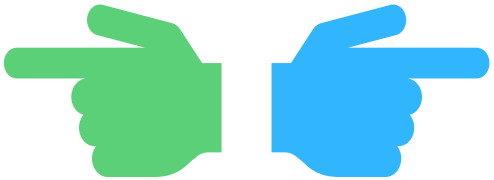
What we heard

Key concerns:

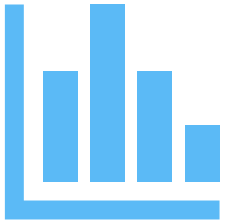
- Proximity to homes
- Health and safety
- Culture and heritage
- Traditional land and harvesting
- Recreational activities

Manitoba Hydro

How do we consider routing feedback?

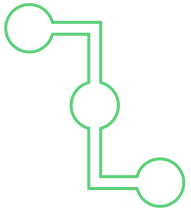


We sometimes hear opposing preferences



Dozens of routing options are considered by experts with different specialties.

The community ranking was determined by representatives from Indigenous communities and representatives from the rural municipality, city and planning district



The preferred route is routed in a manner that aims to limit overall effects. Those effects are considered in detail.

Manitoba Hydro

How did concerns influence what is assessed for the project?

We assess matters considered important to those affected by a project:

- Agriculture
- Economic opportunities
- Fish and fish habitat
- Human health
- Parks and recreation
- Property value and future planned development and visual quality
- Traditional practices, heritage and culture
- Vegetation
- Wildlife and wildlife habitat

Manitoba Hydro

We want to hear from you

Online survey and feedback portal

Tell us what you think about the preferred route. The survey closes on March 18.

www.hydro.mb.ca/bp67

Feedback portal

Manitoba Hydro

Next steps

Complete round 2 engagement

March 2021

Determine final preferred route and file environmental assessment report

Spring 2021

Provincial regulatory review process

2021

Manitoba Hydro

Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
  - online feedback portal
  - map

Manitoba Hydro

Thank you

The project team wants to hear from you.

For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

Manitoba Hydro

Available in accessible formats upon request

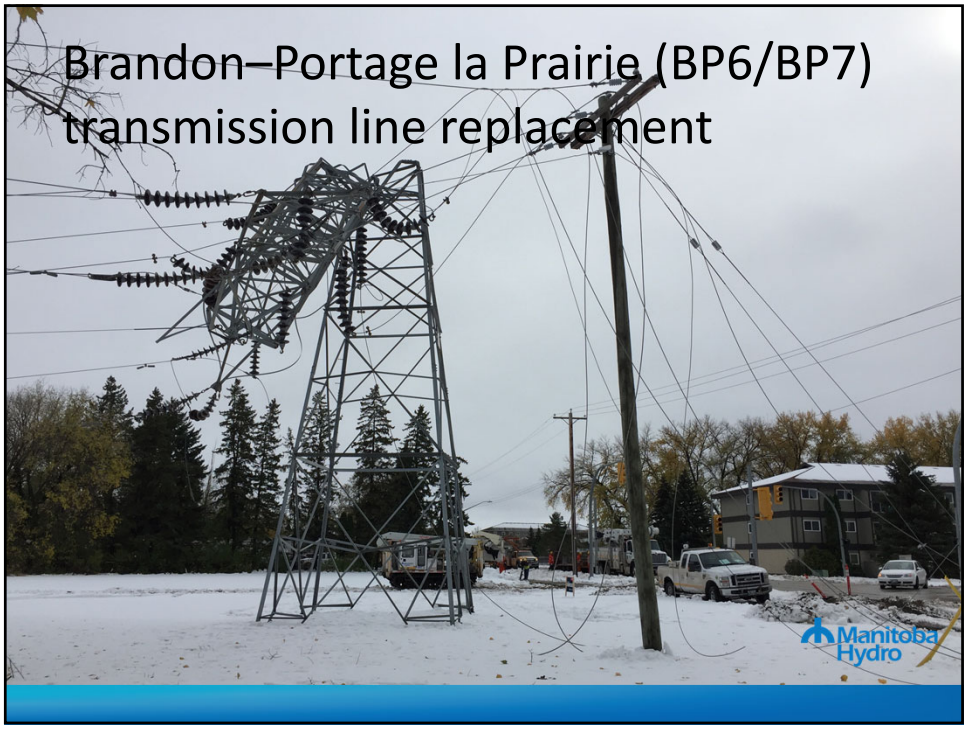
Appendix C

Indigenous Community Engagement

Round 1 engagement

The following presentation was shared during a meeting with Dakota Tipi First Nation on November 2, 2020

Attendees:
Dakota Tipi First Nation: Leanne Smoke and Darryl Taylor
Manitoba Hydro: Sarah Coughlin, Maria M'Lot and Ariane Dilay



1

Meeting outline

- Welcome
- Introductions
- Project presentation by Manitoba Hydro
- Discussion of alternative route segments
- Questions and answers
- Next steps and project timeline

Manitoba Hydro

2

Why is this project needed?

The October 2019 brought freezing rain, wet snow, and high winds that caused extensive damage to our system.

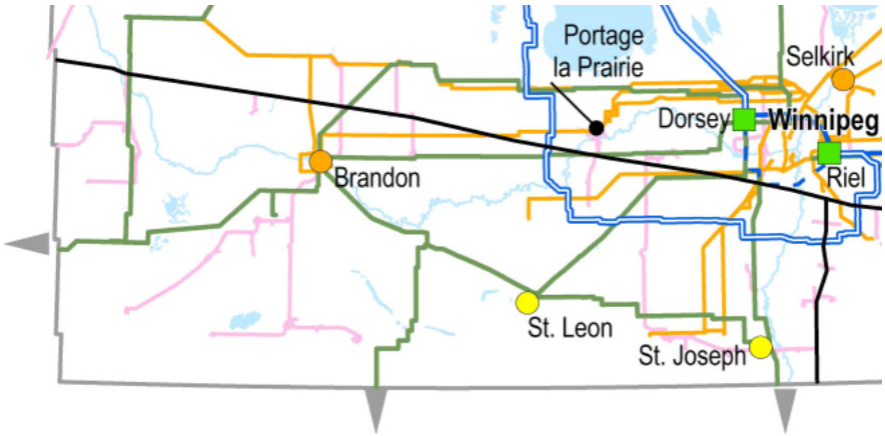
Our crews worked tirelessly and in challenging conditions to restore power to over 184,000 customers.

Damaged tower in Portage la Prairie

Manitoba Hydro

3

System purpose



Manitoba Hydro

4

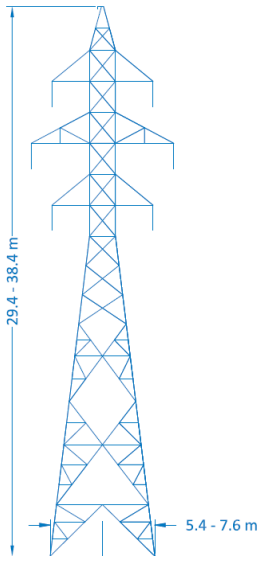
What will it look like?

Self supporting steel lattice towers

Two sets of 3 conductors

30-38 m tall

5.5 – 8 m wide at base



Manitoba Hydro

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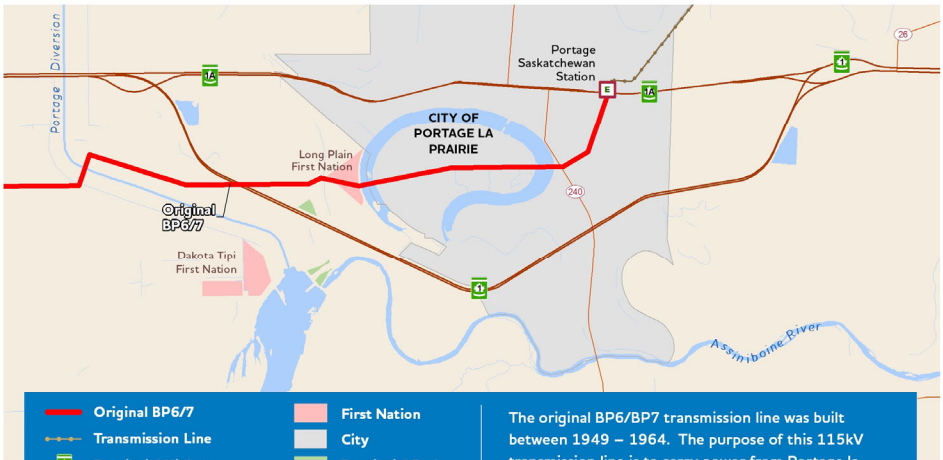

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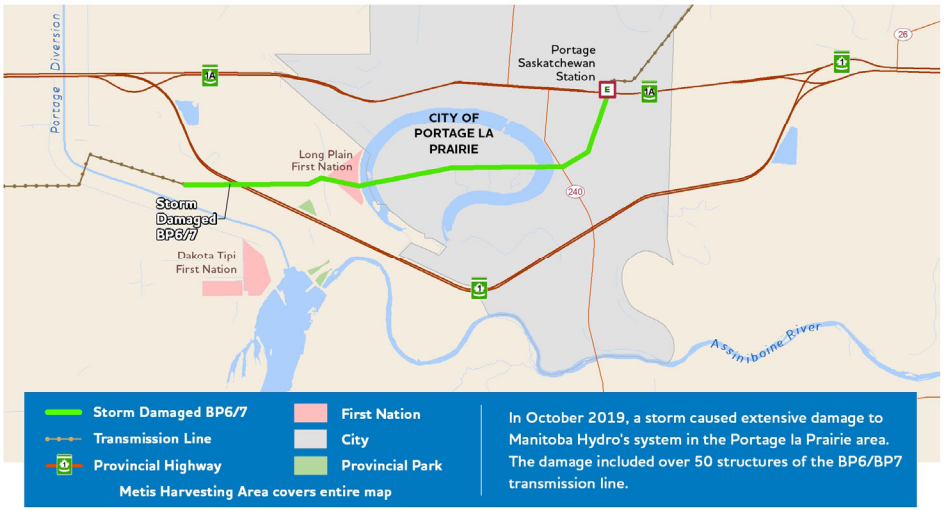
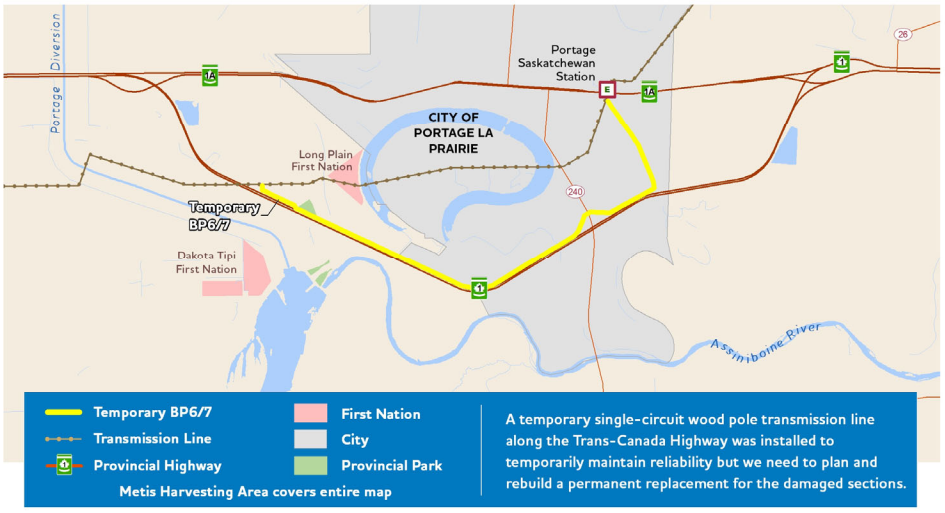

Portage Diversion
Portage Saskatchewan Station
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Storm Damaged BP6/7
Dakota Tipi First Nation
Assiniboine River
Storm Damaged BP6/7
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area. The damage included over 50 structures of the BP6/BP7 transmission line.

7


Portage Diversion
Portage Saskatchewan Station
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Temporary BP6/7
Dakota Tipi First Nation
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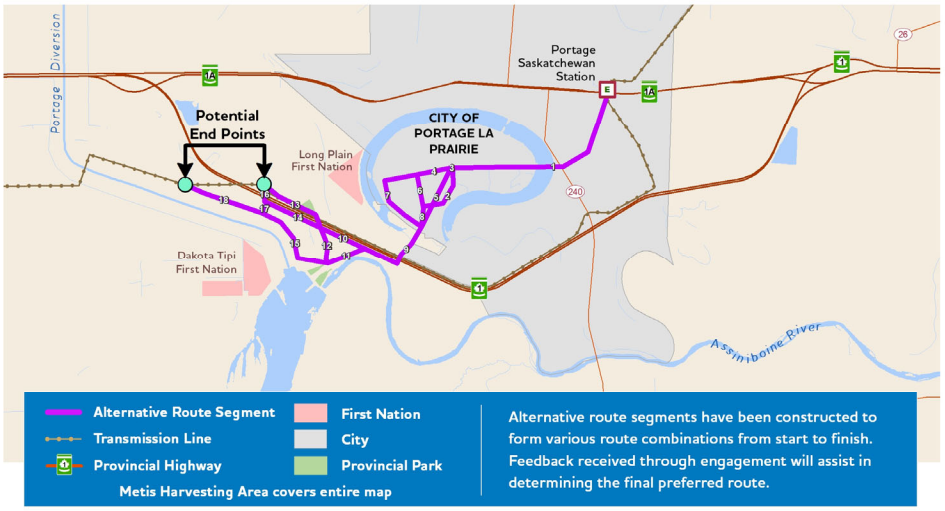
A temporary single-circuit wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability but we need to plan and rebuild a permanent replacement for the damaged sections.

8


Portage Diversion
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Potential End Points
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Long Plain First Nation
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Alternative Route Segment
Transmission Line
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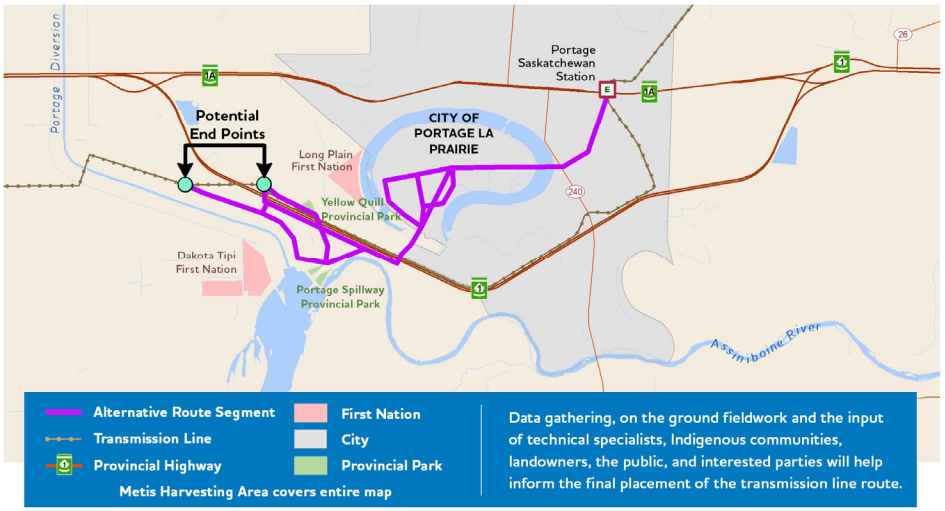
Metis Harvesting Area covers entire map
Alternative route segments have been constructed to form various route combinations from start to finish. Feedback received through engagement will assist in determining the final preferred route.

9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Long Plain First Nation
Yellow Quill Provincial Park
Dakota Tipi First Nation
Portage Spillway Provincial Park
Assiniboine River
Alternative Route Segment
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
Data gathering, on the ground fieldwork and the input of technical specialists, Indigenous communities, landowners, the public, and interested parties will help inform the final placement of the transmission line route.

10

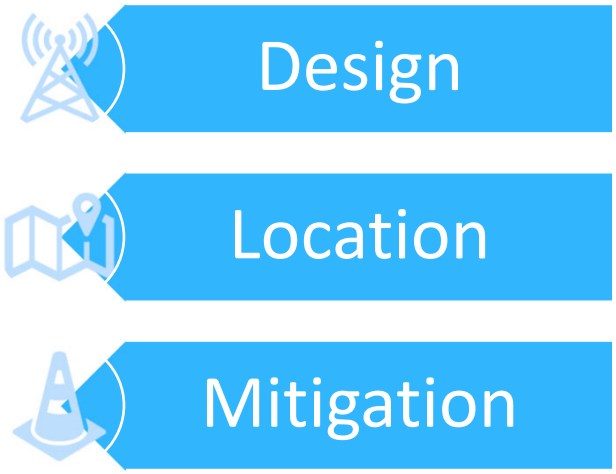
Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
  - online feedback portal
  - map

11

How does information inform decisions?



12

We are here

Round 1
- Alternative route segments: fall 2020

Round 2
- Preferred route: winter 2020

Anticipated next steps
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

Manitoba Hydro

13

Dakota Tipi First Nation

- Key concerns
  - Heritage/archaeological concerns in the region
  - Island Park is a particularly sensitive area
- Initial input on routing preferences?

14

Proposed Valued Components

- **Human Health** (covering topics such as EMF, Herbicides, traffic, COVID, worker safety)
- **Wildlife and Wildlife habitat** (covering topics such as birds, mammal, reptiles and amphibians)
- **Property Value and Future Planned Development and Visual Quality** (covering topics such as reliability, property values and visual impacts of the line)
- **Parks, Crown land and Recreation** (covering topics related to effects of the project on crown lands and parks)
- **Heritage**
- **Traditional practices and culture** (covering the impact of those practices considered important to Indigenous peoples)
- **Fish and Fish Habitat**
- **Vegetation**
- **GHG Climate change**
- **Economic opportunities**
- **Agriculture**

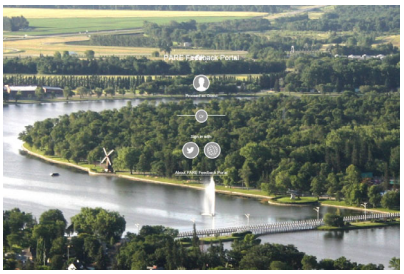
Manitoba Hydro

15

We want to hear from you

- Online survey and feedback portal (until November 20)
- Virtual meetings
- Phone calls
- Emails

Feedback portal



16

Thank you

We will share today's meeting notes

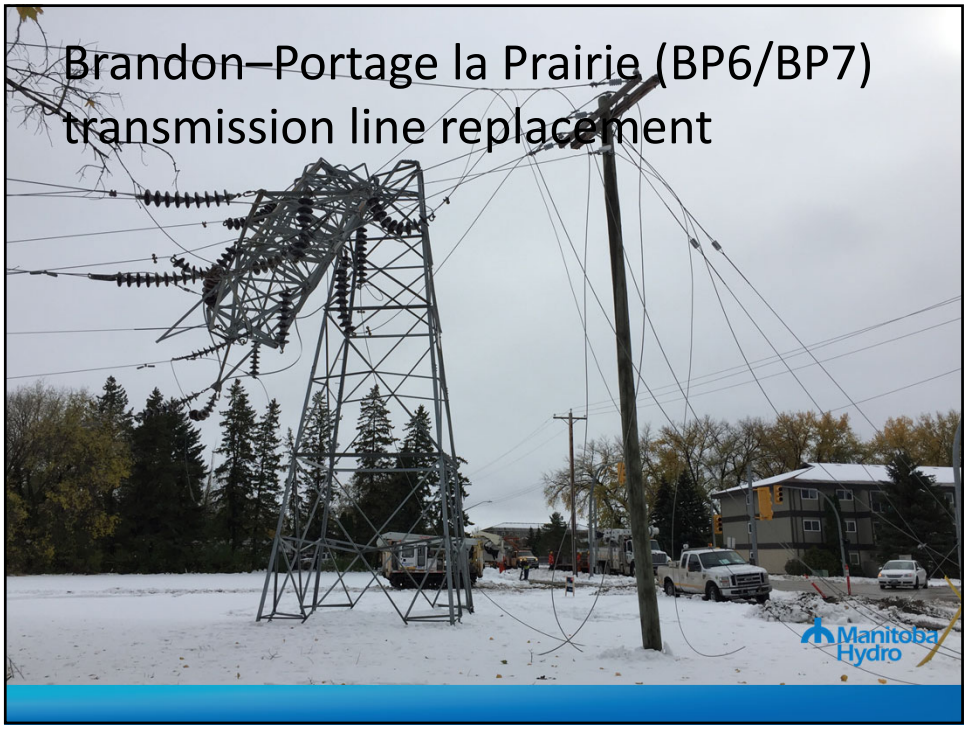
For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

18

Round 1 engagement

The following presentation was shared during a meeting with Peguis First Nation on November 3, 2020

Attendees:
Peguis First Nation: Heather McCorrister, Roberta Flett and Mike Sutherland
Manitoba Hydro: Sarah Coughlin, Maria M'Lot and Ariane Dilay



1

Meeting outline

- Welcome
- Refresh from August 17, 2020
- Project presentation by Manitoba Hydro
- Discussion of alternative route segments
- Questions and answers
- Next steps and project timeline

Manitoba Hydro

2

Meeting Minutes

Meeting:	BP 6&7 and Portage area works discussion
Meeting Purpose:	Share information about Portage area works and understand preferred method of engagement with Peguis First Nation
Meeting Date:	August 17, 2020
Meeting Time:	2:00pm
Meeting Location:	Microsoft Teams
Meeting Facilitator: **Attendees:**	Sarah Coughlin (MH) Roberta Flett (PFN), Mike Sutherland (PFN), Heather (PFN), Maria M'Lot (MH)
Minutes Issued By:	Ariane Dilay (MH)

Next Steps:
Manitoba Hydro will send Peguis First Nation potential dates for a tour of the Portage area at the end of September
Manitoba Hydro will send the next communication about BP 6&7 in early September
Manitoba Hydro will send information about the MMTP Closing Ceremony and contact Wayne Manningway to assist in the ceremony

Topic: Portage area projects	
Speaker:	Discussion:
MH	- Introduction and reason for the Portage la Prairie area projects - Manitoba Hydro shared information about upcoming work in the Portage la Prairie area, including the BP 6 &7 project, CN 9 and D54N - Manitoba Hydro referenced a map to describe the potential reroute area of BP 6&7 and the location of the other projects - MH asked Peguis First Nation value what they in the area and what to consider when routing - MH would like to know PFN's preferred way to engage on the BP 6&7 and

3

Why is this project needed?

The October 2019 brought freezing rain, wet snow, and high winds that caused extensive damage to our system.

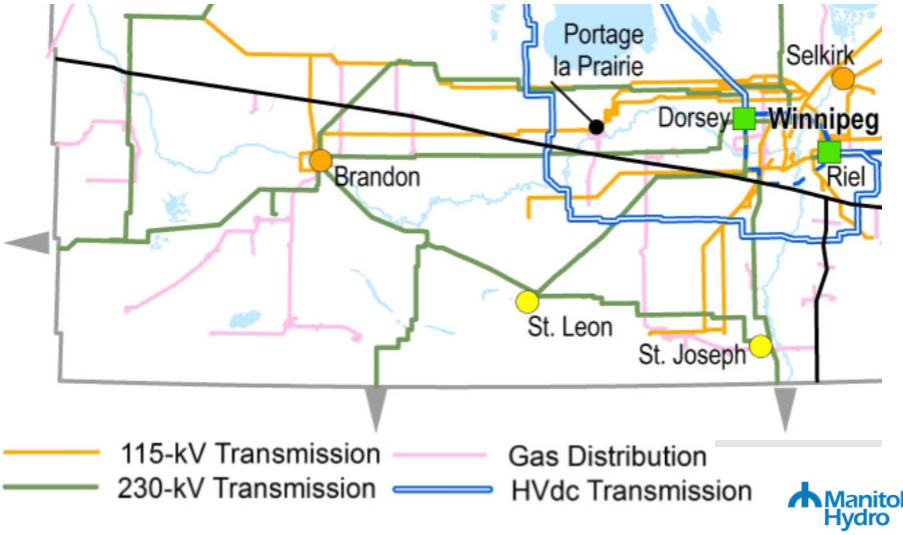
Our crews worked tirelessly and in challenging conditions to restore power to over 184,000 customers.

Damaged tower in Portage la Prairie

Manitoba Hydro

4

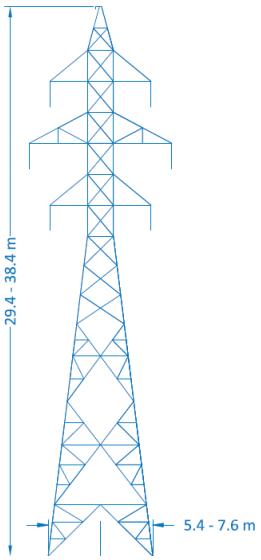
System purpose



5

What will it look like?

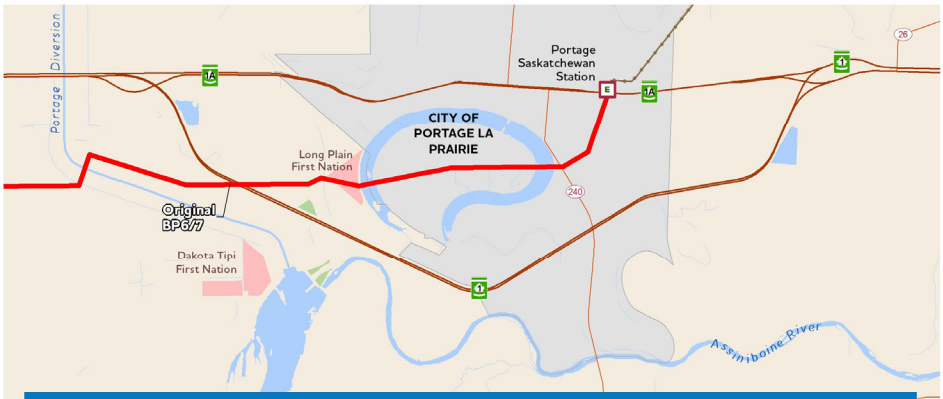
- Self supporting steel lattice towers
- Two sets of 3 conductors
- 30-38 m tall
- 5.5 – 8 m wide at base



Manitoba Hydro

6

Treaty 1 Territory



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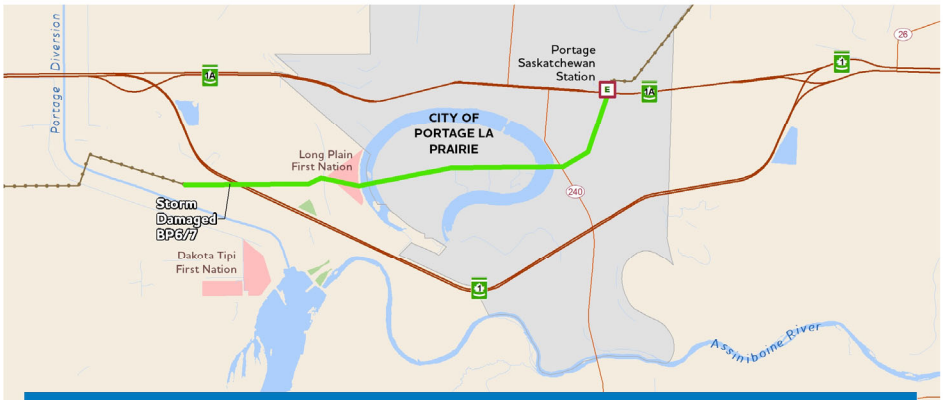

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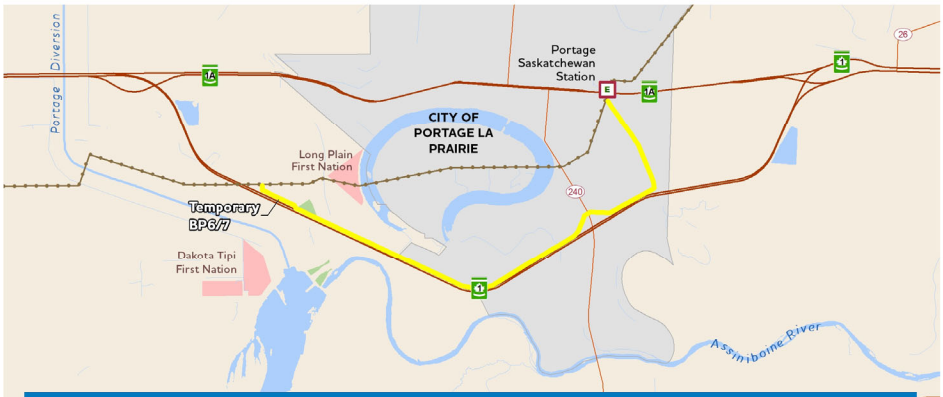

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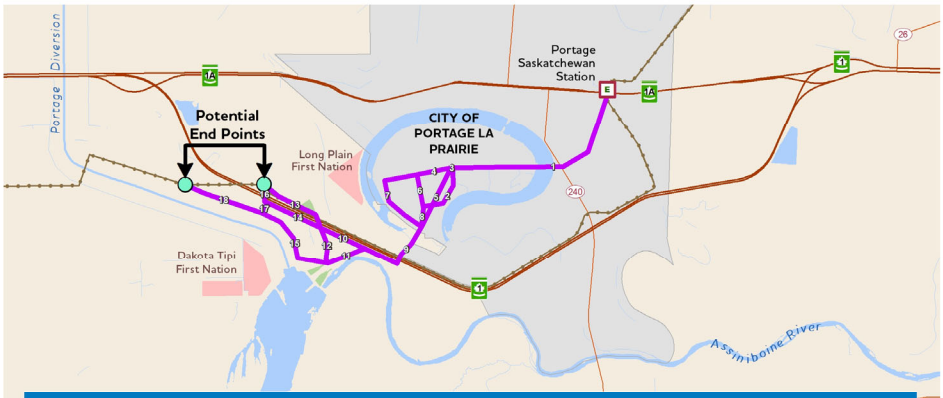

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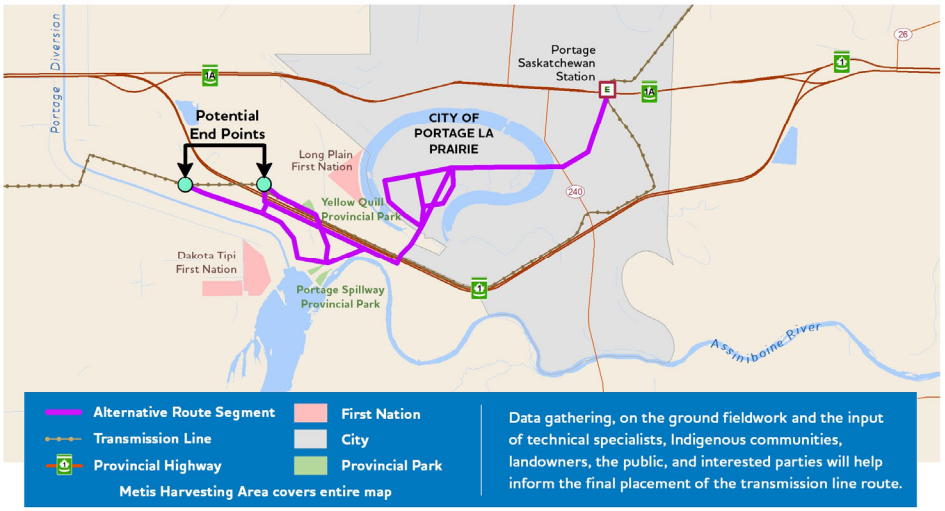

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Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
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  - map

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How does information inform decisions?

Design

Location

Mitigation

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Round 1
- Alternative route segments: fall 2020

Round 2
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Anticipated next steps
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

Manitoba Hydro

14

Peguis First Nation

- Understandings to date:
  - Last met August 17, 2020, introduced project
  - Peguis First Nation is interested in engagement on Portage area projects
  - Work through the Consultation office (Mike Sutherland and Roberta Flett)
  - Would like to be made aware right away of who the contractor is so we can start those partnerships earlier
  - Would also like the contractor to be made aware of who the interested communities are when it comes to opportunities
  - Interested in a tour
  - Wanted to speak again once routes options were available
- Initial input on routing preferences?

Manitoba Hydro

15

Proposed Valued Components

- **Human Health** (covering topics such as EMF, Herbicides, traffic, COVID, worker safety)
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- **Parks, Crown land and Recreation** (covering topics related to effects of the project on crown lands and parks)
- **Heritage**
- **Traditional practices and culture** (covering the impact of those practices considered important to Indigenous peoples – include ceremonies and respect to the spirits)
- **Fish and Fish Habitat**
- **Vegetation**
- **GHG Climate change**
- **Economic opportunities**
- **Agriculture**

Manitoba Hydro

16

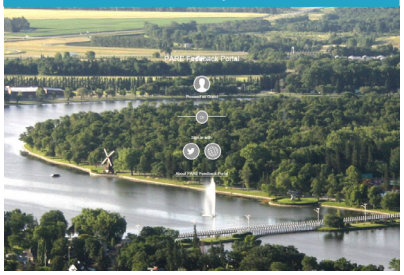
We want to hear from you

Online survey and feedback portal

Tell us what you think about the proposed alternative route segments. The survey closes on November 20.

www.hydro.mb.ca/bp67

Feedback portal



17

Thank you

The project team wants to hear from you.

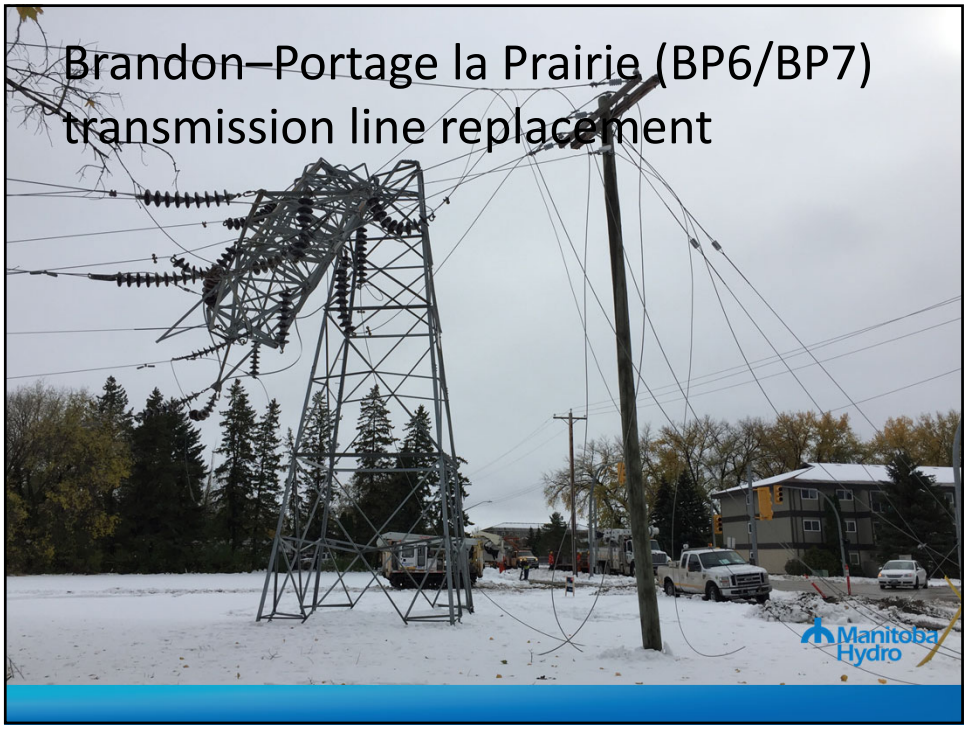
For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

19

Round1engagement

The following presentationwasshared during a meeting withLong Plain First Nation onNovember 6, 2020

Attendees:
Long Plain First Nation:Ralph Roulette Jr. and Shaun Peters
Manitoba Hydro: Maria M'Lot and Ariane Dilay



1

Meeting outline

- Welcome
- Introductions
- Project presentation by Manitoba Hydro
- Discussion of alternative route segments
- Questions and answers
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Manitoba Hydro

2

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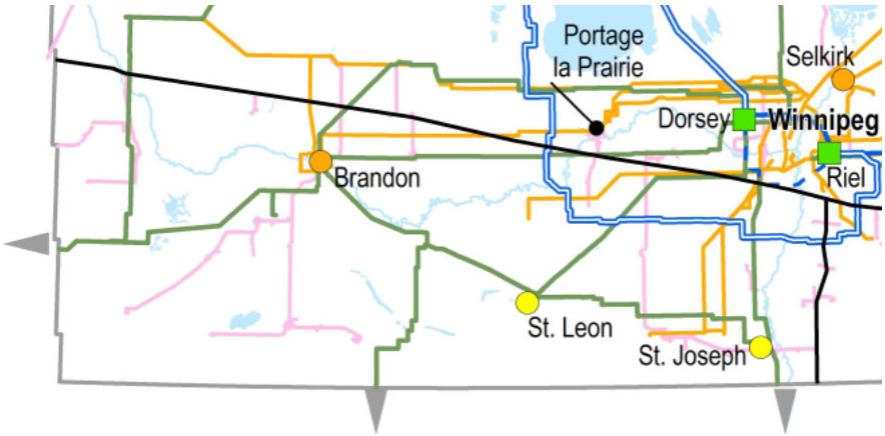
Damaged tower in Portage la Prairie

Manitoba Hydro

3

System purpose



Manitoba Hydro

4

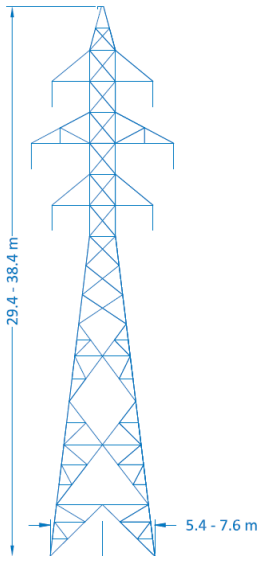
What will it look like?

Self supporting steel lattice towers

Two sets of 3 conductors

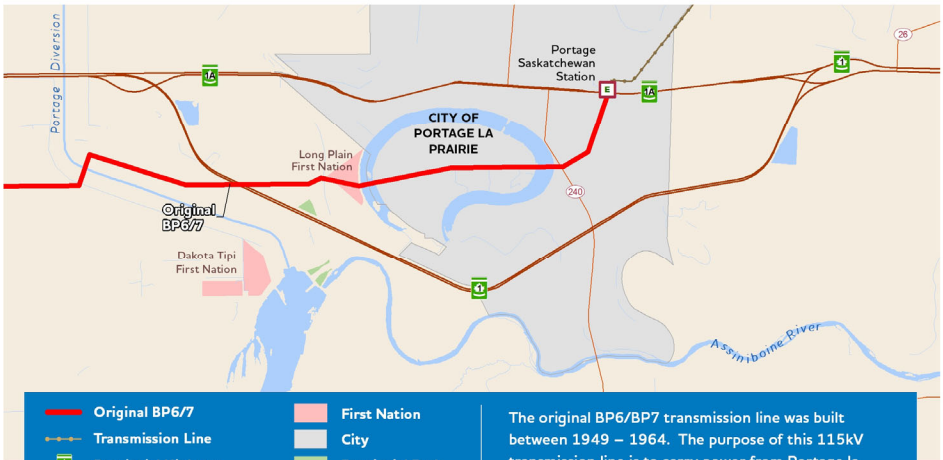
30-38 m tall

5.5 – 8 m wide at base



Manitoba Hydro

5



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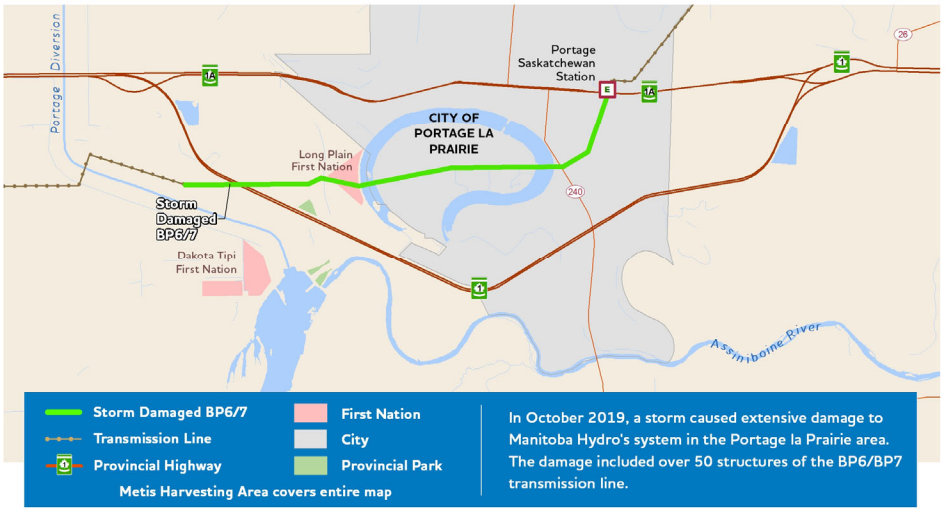
Portage Diversion
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CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Storm Damaged BP6/7
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Transmission Line
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Metis Harvesting Area covers entire map
In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area. The damage included over 50 structures of the BP6/BP7 transmission line.

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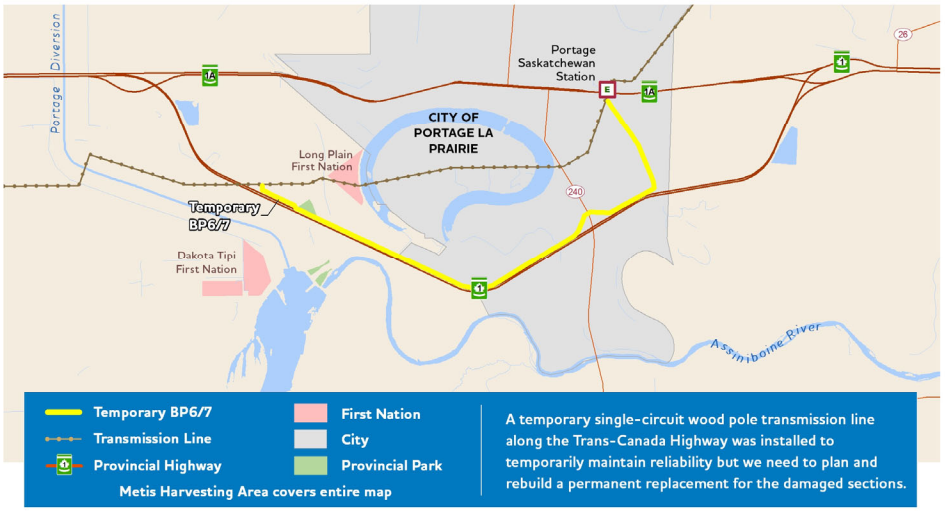
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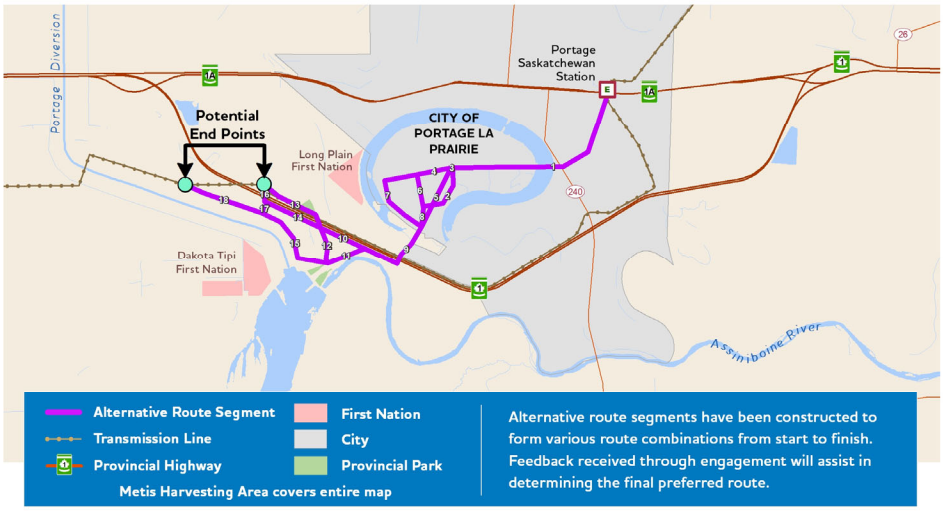
A temporary single-circuit wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability but we need to plan and rebuild a permanent replacement for the damaged sections.

8

What we've heard from Long Plain First Nation

- Substantial development in the area
- Your community plans for ongoing use and development of the area
- Transmission line along north side of Highway 1 would conflict with future planned residential and commercial development

9



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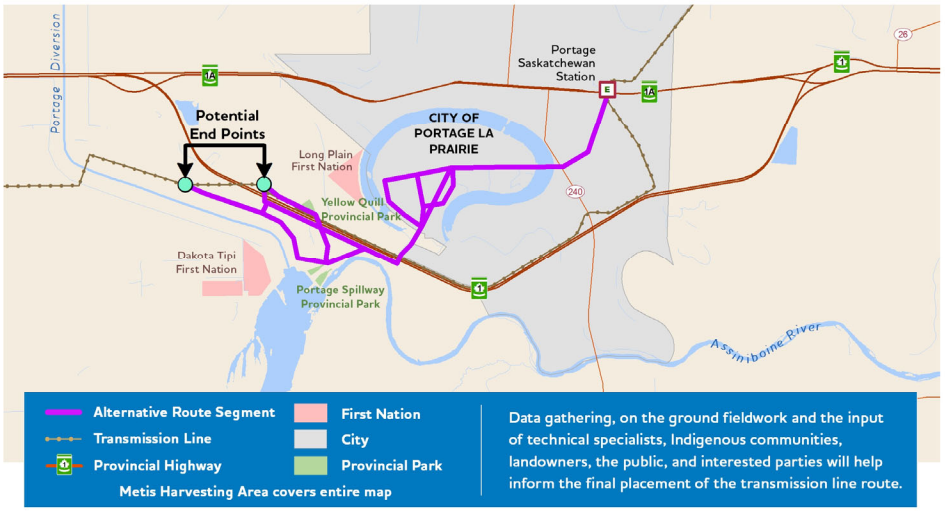

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- General questions and concerns?
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- File environmental assessment report: early 2021
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- Construction start, if regulatory review is received 2022

Manitoba Hydro

14

Long Plain First Nation

- Preliminary routing preferences
- Key concerns?

Coordinator position

- Thoughts on this?

Manitoba Hydro

15

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Manitoba Hydro

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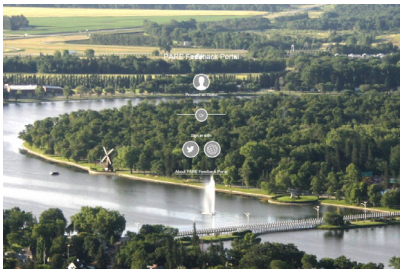
Feedback portal



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Thank you

We will share today's meeting notes and coordinator details

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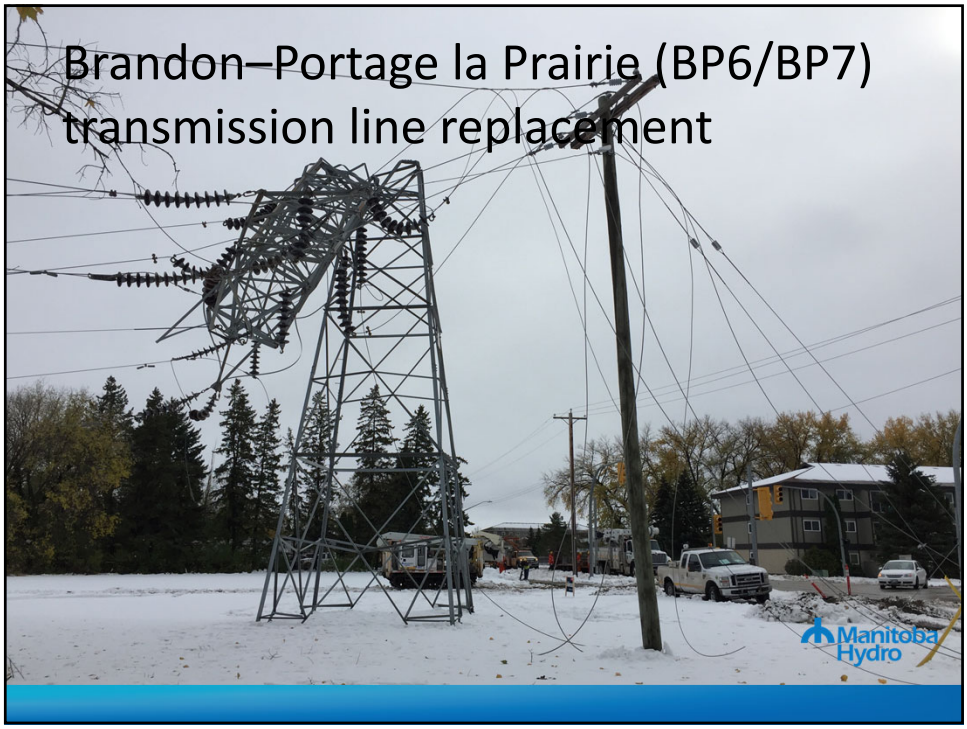
19

Round1engagement

Thefollowingpresentationwasshared during a meeting withthe Manitoba Metis Federation (MMF) on November9, 2020

Attendees:
MMF: Marci Riel and Jade Dewar
Manitoba Hydro: Sarah Coughlin, Maria M'Lot and Ariane Dilay



1

Meeting outline

- Welcome
- The Project
- Discussion of alternative route segments
- Questions and answers
- Next steps and project timeline

Manitoba Hydro

2

Communication to date

- August 4, 2020
  - Introduced project
  - Asked how the MMF would like to be engaged
  - Shared project newsletter
- October 16, 2020
  - Introduced project feedback portal and survey
- General discussion about better ways to engage on a series of projects in the Portage area

Manitoba Hydro

3

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Damaged tower in Portage la Prairie

Manitoba Hydro

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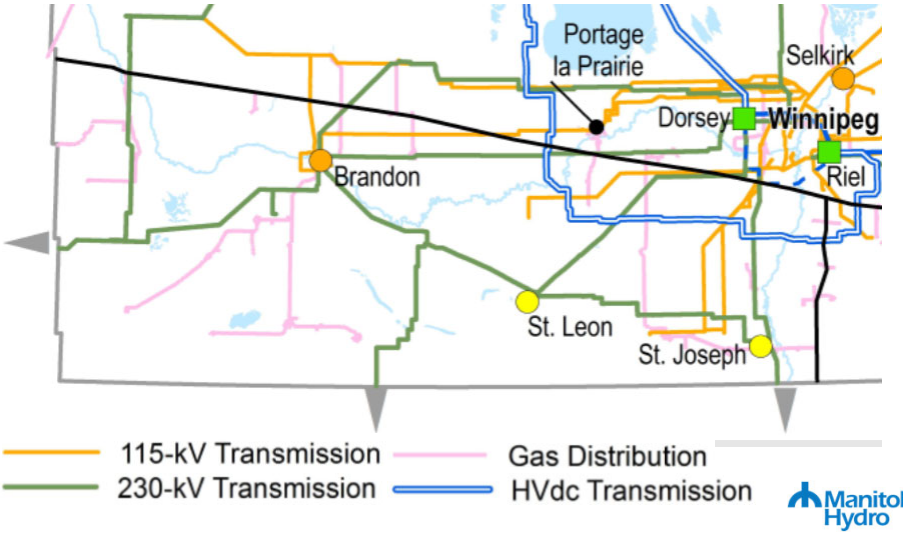
System purpose



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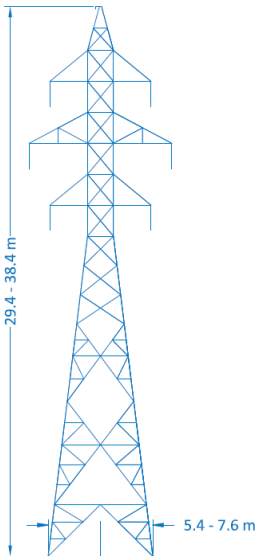
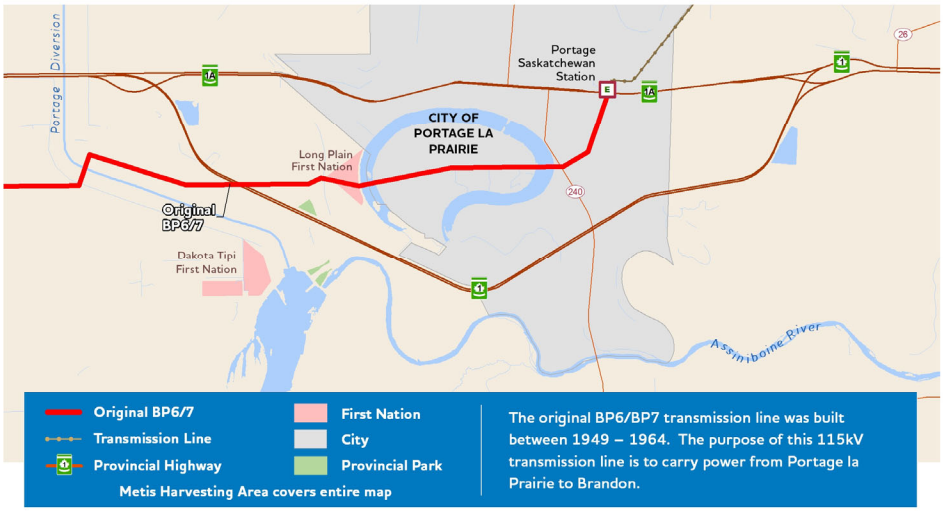


Manitoba Hydro

6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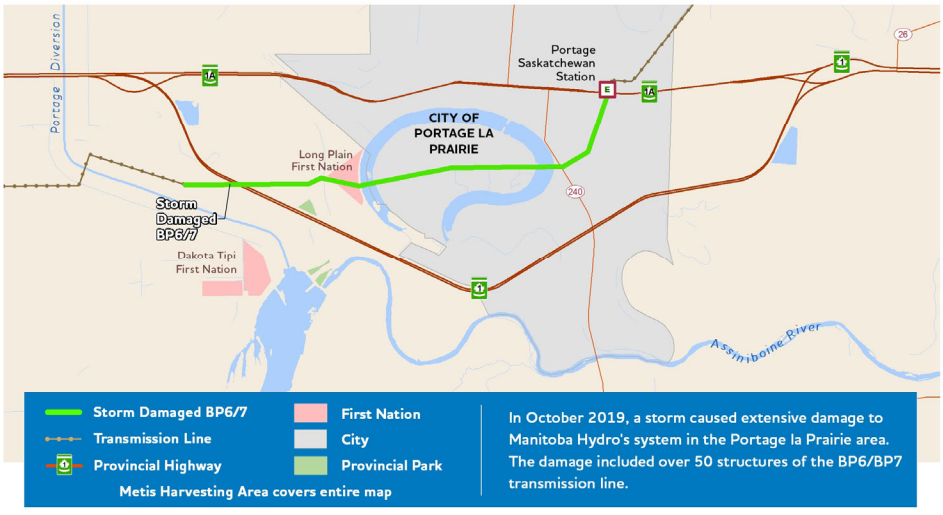
Metis Harvesting Area covers entire map
The original BP6/BP7 transmission line was built between 1949 – 1964. The purpose of this 115kV transmission line is to carry power from Portage la Prairie to Brandon.

7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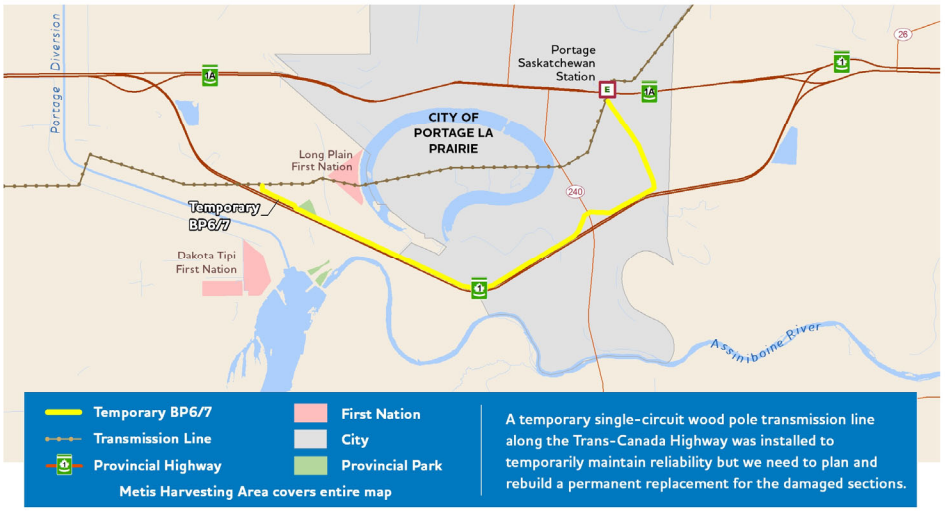
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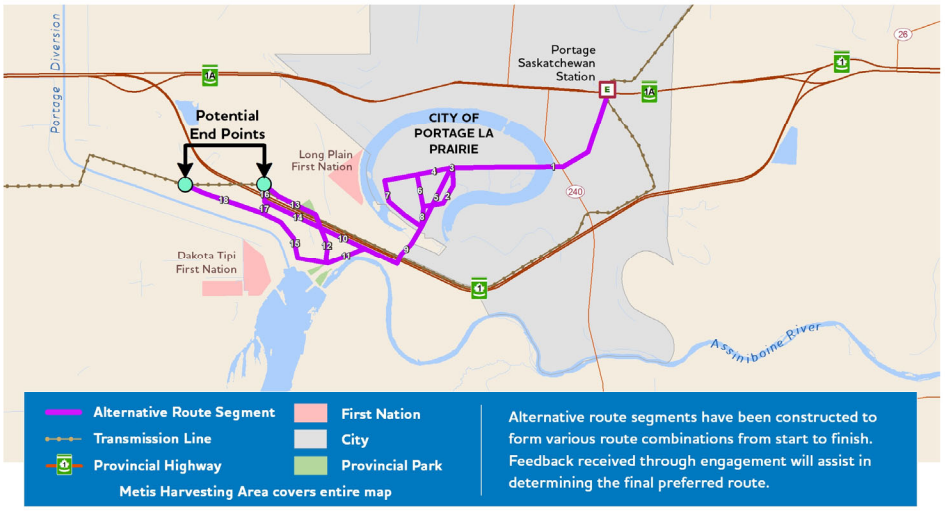
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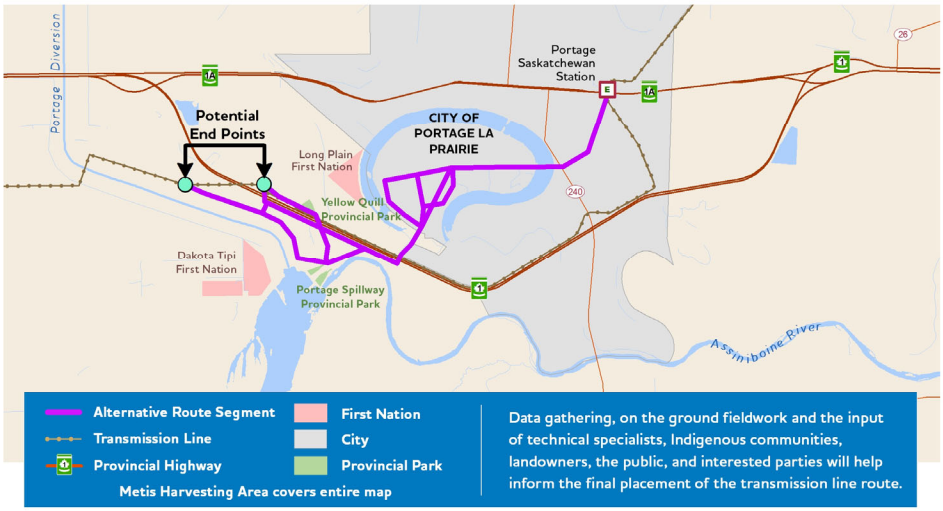
10



11

How does information inform decisions?

- Design
- Location
- Mitigation

12

Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
  - online feedback portal
  - map

13

We are here

Round 1
- Alternative route segments: fall 2020

Round 2
- Preferred route: winter 2020

Anticipated next steps
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

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14

MMF

- Understandings to date:
  - MMF is interested in engagement on Portage area projects
- Initial input on routing preferences?

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15

Proposed Valued Components

- **Human Health** (covering topics such as EMF, Herbicides, traffic, COVID, worker safety)
- **Wildlife and Wildlife habitat** (covering topics such as birds, mammal, reptiles and amphibians)
- **Property Value and Future Planned Development and Visual Quality** (covering topics such as reliability, property values and visual impacts of the line)
- **Parks, Crown land and Recreation** (covering topics related to effects of the project on crown lands and parks)
- **Heritage**
- **Traditional practices and culture** (covering the impact of those practices considered important to Indigenous peoples – include ceremonies and respect to the spirits)
- **Fish and Fish Habitat**
- **Vegetation**
- **GHG Climate change**
- **Economic opportunities**
- **Agriculture**

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16

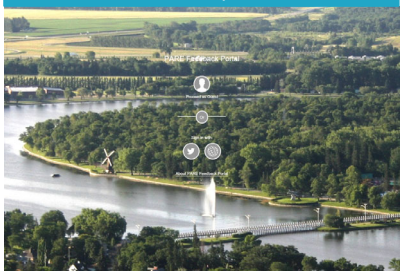
We want to hear from you

Online survey and feedback portal

Tell us what you think about the proposed alternative route segments. The survey closes on November 20.

www.hydro.mb.ca/bp67

Feedback portal



17

Thank you

The project team wants to hear from you.

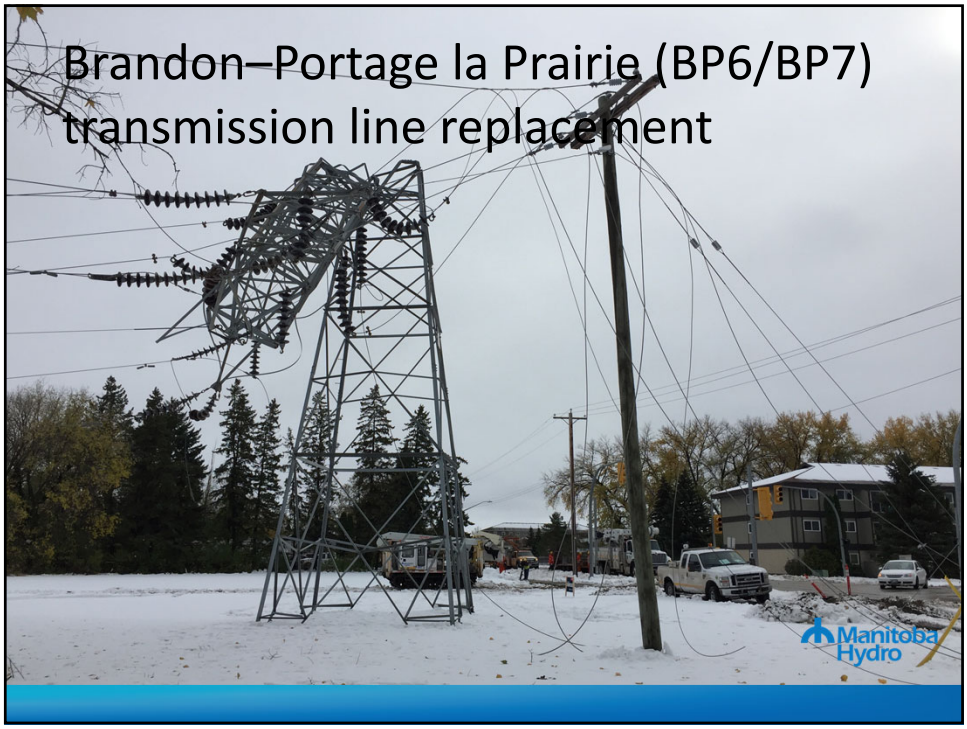
For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

18

Round 1 engagement

The following presentation was shared during a meeting with the Portage Urban Indigenous Peoples Coalition (PUIPC) on November 9, 2020

Attendees:
PUIPC: Cornell Pashe and Darryl Taylor
Manitoba Hydro: Maria M'Lot and Ariane Dilay



1

Meeting outline

- Welcome
- Introductions
- Project presentation by Manitoba Hydro
- Discussion of alternative route segments
- Questions and answers
- Next steps and project timeline

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2

Why is this project needed?

The October 2019 brought freezing rain, wet snow, and high winds that caused extensive damage to our system.

Our crews worked tirelessly and in challenging conditions to restore power to over 184,000 customers.

Damaged tower in Portage la Prairie

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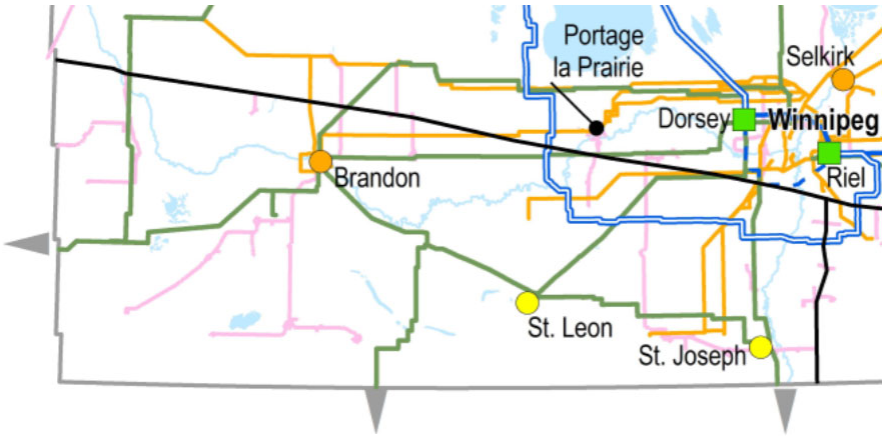
3

System purpose



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4

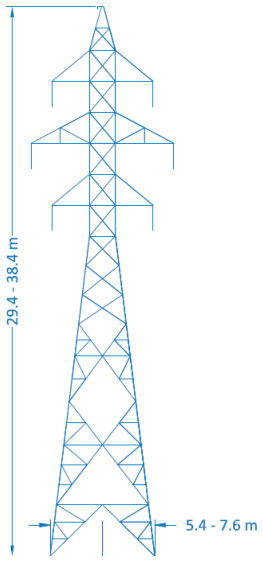
What will it look like?

Self supporting steel lattice towers

Two sets of 3 conductors

30-38 m tall

5.5 – 8 m wide at base



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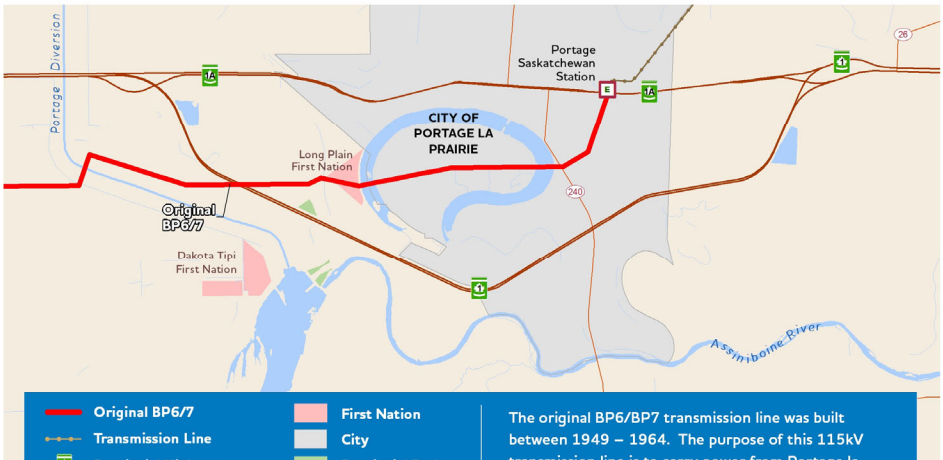

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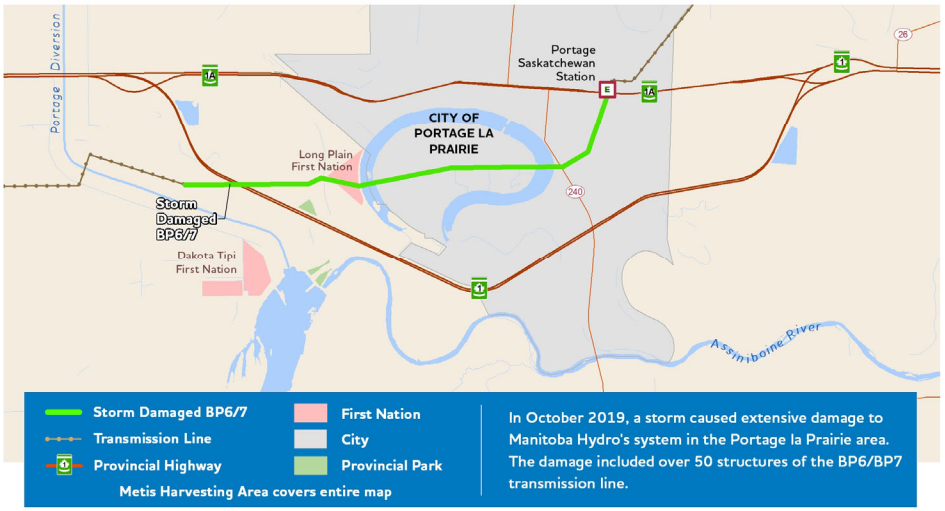
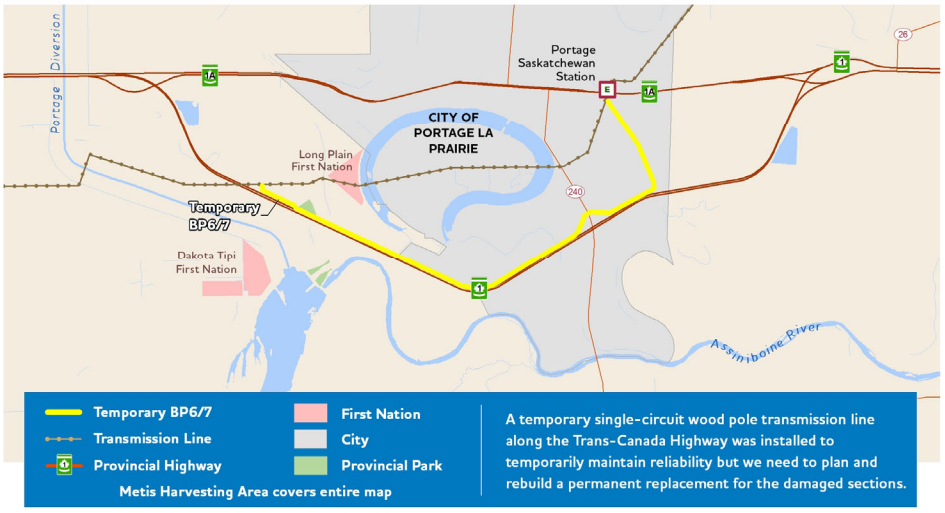
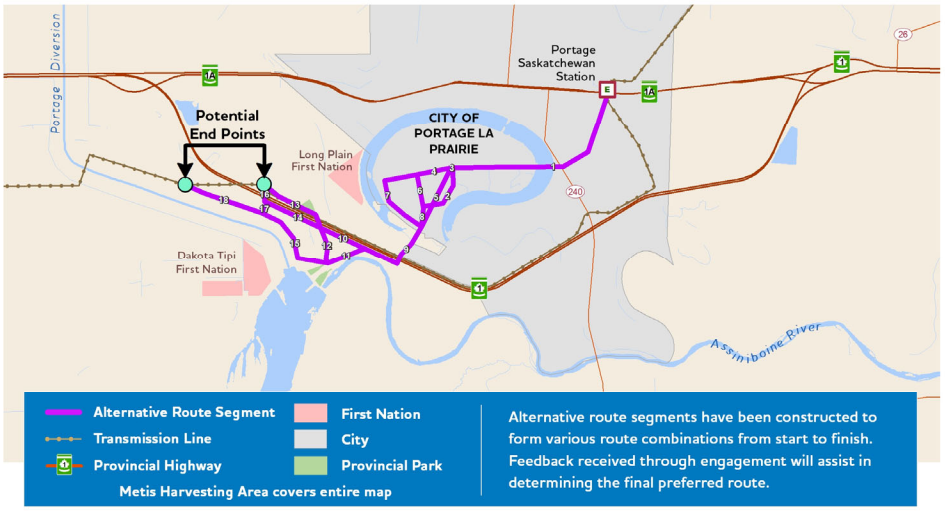

Portage Diversion
Portage Saskatchewan Station
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Storm Damaged BP6/7
Dakota Tipi First Nation
Assiniboine River
Storm Damaged BP6/7
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
In October 2019, a storm caused extensive damage to Manitoba Hydro's system in the Portage la Prairie area. The damage included over 50 structures of the BP6/BP7 transmission line.

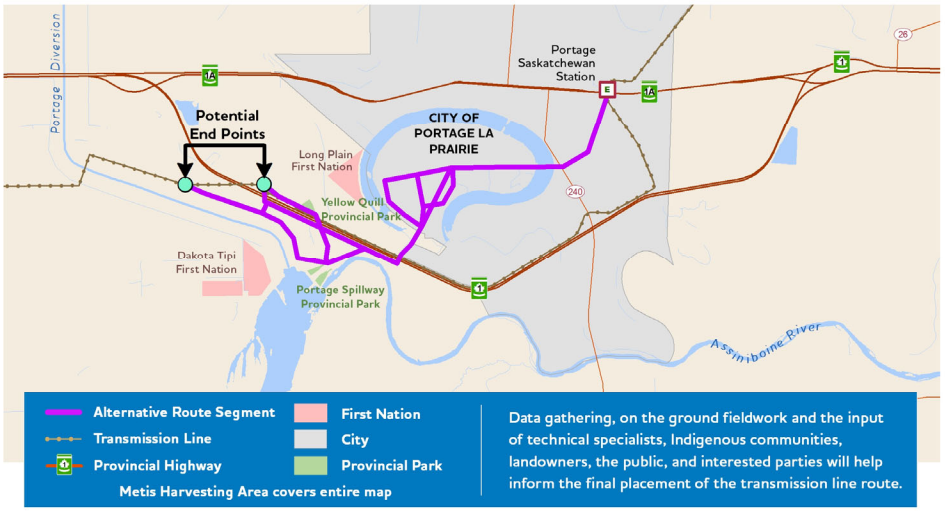
7


Portage Diversion
Portage Saskatchewan Station
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Temporary BP6/7
Dakota Tipi First Nation
Assiniboine River
Temporary BP6/7
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
A temporary single-circuit wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability but we need to plan and rebuild a permanent replacement for the damaged sections.

8


Portage Diversion
Portage Saskatchewan Station
Potential End Points
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Dakota Tipi First Nation
Assiniboine River
Alternative Route Segment
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
Alternative route segments have been constructed to form various route combinations from start to finish. Feedback received through engagement will assist in determining the final preferred route.

9


Portage Diversion
Portage Saskatchewan Station
Potential End Points
CITY OF PORTAGE LA PRAIRIE
Long Plain First Nation
Yellow Quill Provincial Park
Dakota Tipi First Nation
Portage Spillway Provincial Park
Assiniboine River
Alternative Route Segment
Transmission Line
Provincial Highway
First Nation
City
Provincial Park
Metis Harvesting Area covers entire map
Data gathering, on the ground fieldwork and the input of technical specialists, Indigenous communities, landowners, the public, and interested parties will help inform the final placement of the transmission line route.

10

Discussion

- General questions and concerns?
- Location specifics - segments

- Resources
  - online feedback portal
  - map

11

What we've heard from PUIPC

- Key concerns and routing preferences
  - Heritage: Fort in the area south of highway 1, burials in the Portage area and on Crescent Island, old cemetery along Lot 99 that has washed away, Old Yellowstone Trail was a travel route
  - Crescent Island: used widely by many groups, historical value, intact Assiniboine forest, birds, white tailed deer, and important grave sites

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12

Proposed Valued Components

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- **Economic opportunities**
- **Agriculture**

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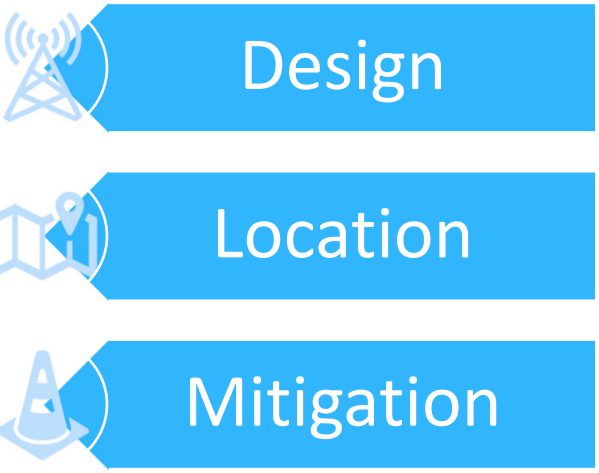
13

How does information inform decisions?



14

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- Alternative route segments: fall 2020

Round 2
- Preferred route: winter 2020

Anticipated next steps
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

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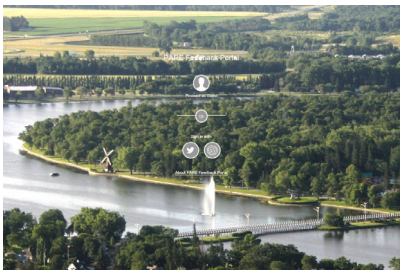
15

We want to hear from you

- Online survey and feedback portal (until November 20)
- Virtual meetings
- Phone calls
- Emails

Feedback portal



16

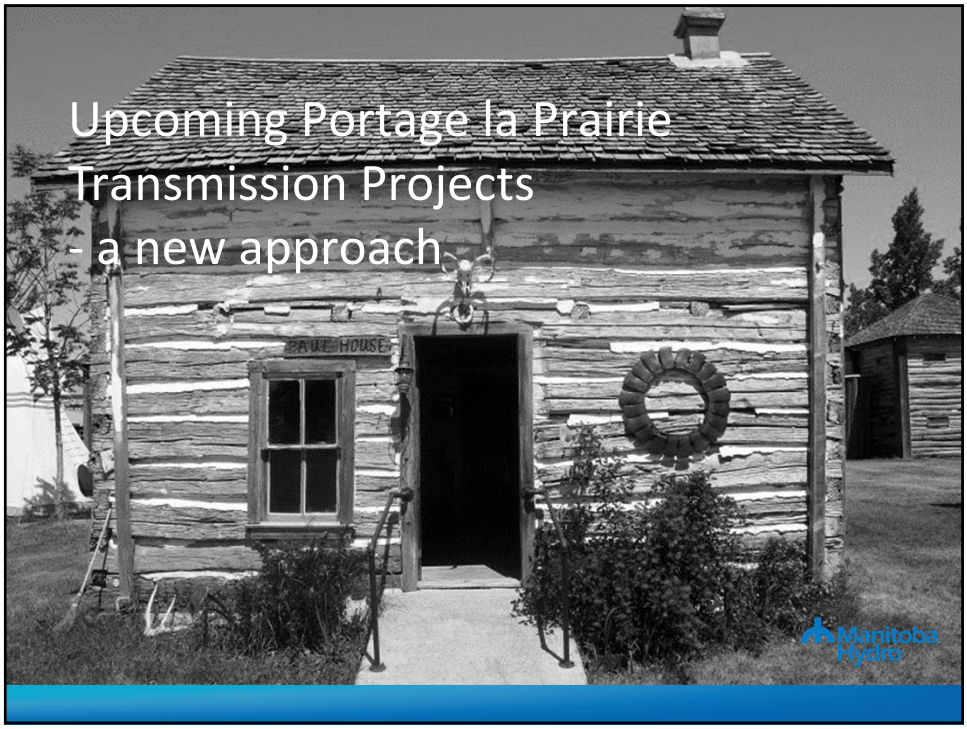
Thank you

We will share today's meeting notes

For more information about BP6/BP7 and to sign up for email notices, please visit www.hydro.mb.ca/bp67

18

The following presentation was shared during an ICAC introductory meeting with Long Plain First Nation on January 13, 2021, Dakota Tipi First Nation on December 7, 2020 and the MMF on December 11, 2020



1

Upcoming work:

Repairs due to the October 2019 storm damage:

- Parkdale–Neepawa (CN9)
- Brandon–Portage la Prairie (BP6/BP7)
- Dorsey–Neepawa (D54N)

Portage Area Capacity Enhancement (PACE) – Improving system reliability:

- Potential Dorsey to Portage 230 KV transmission line
- Potential new Portage la Prairie station

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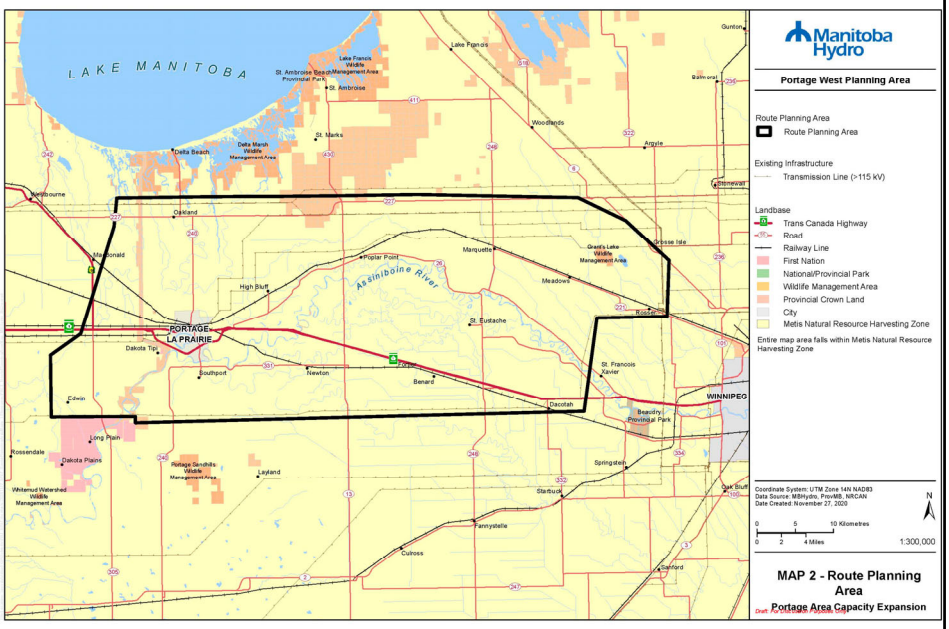
2



3

In previous projects

- Smaller projects and repair projects (i.e., BP6&7, CN9, D54N) MH would inform communities of upcoming work and seek information on any concerns
- Larger projects (i.e., Dorsey to Portage T-line) fund Indigenous knowledge studies or other forms of supported engagement

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4

Challenges

- Project-by-project approach
- Indigenous knowledge studies often completed by third party
- Sometimes reports are submitted past key dates
- Siloed viewpoints

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5

Opportunity

- Some have expressed desire to grow internal support for project engagement work, but resources are limiting
- Continuity between projects aids in knowledge-sharing across projects
- Ability to learn each other's processes more clearly

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6

Indigenous Community and Assessment Coordinator

- Part time position
- Deliverable-based (no timesheets)
- Help facilitate communication between Hydro and the community.
- Help build skills in Indigenous knowledge within
- Assist in providing access to information regarding the Portage Area projects;
- Have a dedicated resource that would help move forward the engagement needs of the community with Hydro
  - Prepare routing briefs
  - Conduct interviews
  - Prepare an Indigenous knowledge study (or part of one)
- Help Hydro better understand and address any concerns raised in its engagement process and help try to resolve any issues identified

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7

Phase 1 – BP6&7

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8

Check In

5. Is this working meeting?

- Is the position working for both parties?
  - Effective at information sharing
- Discuss training needs

6. Training Workplan and budget

- Develop training budget, schedule and workplan
- Coordinate with MH

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9

Phase 2 – Portage Area Enhancement Projects (Potential T-line and Station)

8. Routing Brief

- Conduct 10 interviews
- Map any important sites and use of area
- Understand routing preferences

9. Prepare a Section of EA from perspective of your community

- Describe your community
- Describe potential effects of the project to your community
- Suggest mitigation measures

10. Review Traditional Practices and Culture Chapter

- Review a MH-prepared chapter that has considered input from Indigenous communities

7. Attend meeting with Project Team, other Coordinators, leadership, members

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Schedule

- First routing brief January 15, 2021
- Input for EIS February 15, 2021
- Review chapter February 26, 2021

Phase 2 – dates not yet set (spring 2021-2022)

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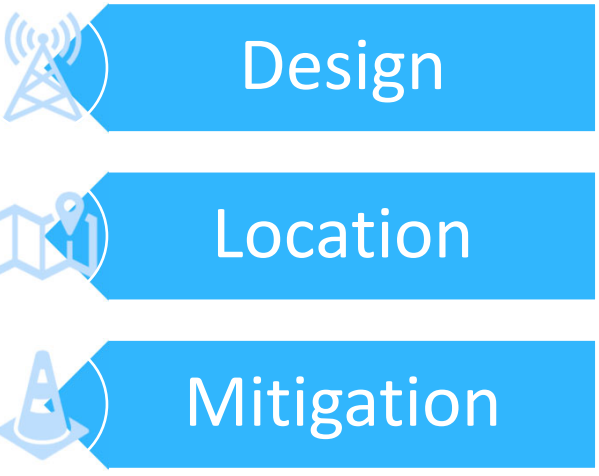
11

Coordinators information will inform the project



12

Thank you

13

The following presentation was shared during a community route ranking background meeting on February 10 and 11, 2021

Attendees on February 10, 2021:
Dakota Tipi First Nation: Darryl Taylor
Long Plain First Nation: Ralph Roulette Jr. and Shaun Peters
Portage la Prairie Planning District: Kinelm Brookes and Randy Fraser
The RM of Portage la Prairie: Kyle Hamilton
Manitoba Hydro: Maggie Bratland, Sarah Coughlin, Maria M'Lot, Lindsay Thompson and Ariane Dilay

Attendees on February 11, 2021:
Portage Urban Indigenous Peoples Coalition (PUIPC): Cornell Pashe
Manitoba Metis Federation (MMF): Tayler Fleming
City of Portage la Prairie: Jocelyn Lequier-Jobin
Manitoba Hydro: Maggie Bratland, Maria M'Lot and Lindsay Thompson

Community Ranking in Transmission Line Routing

Process overview

Maggie Bratland, Senior Environmental Specialist
Licensing and Environmental Assessment

Manitoba Hydro

1

Agenda

- Introductions
- Review of agenda and meeting purpose
- Background on transmission line routing and the BP 6/7 Project Timeline
  - How the MH process works
  - What we are proposing that is different this time
  - How community engagement informs the outcome
- What we heard during engagement to date
- Process discussion
- Wrap up

2

Objectives

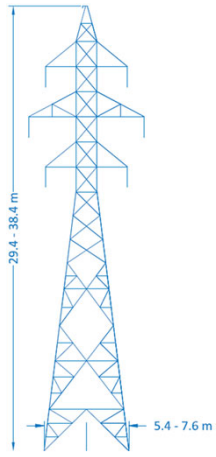
- Share background on how we make routing decisions and answer questions
- You leave feeling like you understand how your participation will inform the routing process
- What do you hope to take away from today?

Goals of transmission line routing

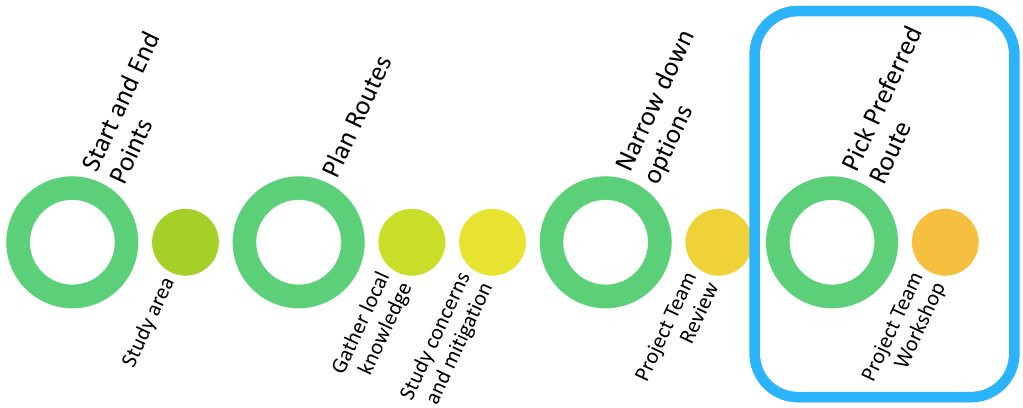
Determine a route for a transmission line

Balance multiple perspectives

Limit overall effect



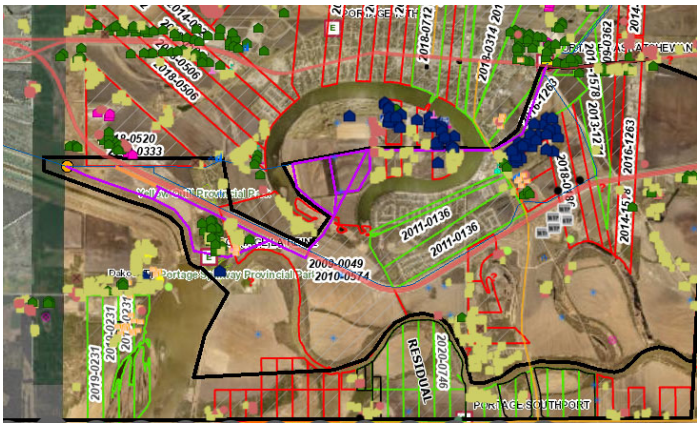
Steps in the Routing Process



5

The Challenge of Routing a Transmission Line

- Connect the start and end point
- Thread a needle through many constraints
- Many diverse interests , land uses and perspectives to consider



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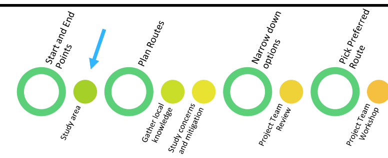

First we study the area

- Look for homes and other buildings
- Examine land use
- Identify existing linear infrastructure like pipelines, roads
- Map out areas of least preference

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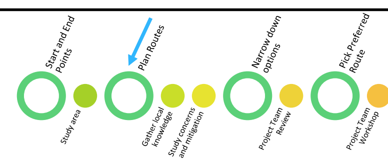
Manitoba Hydro BP 6/7 Community Ranking Discussion Feb 10, 11 2021

7



Routes are drawn to try and limit effects

Avoid or limit effects to **residences**

Avoid or limit effects to **land of importance to indigenous communities**

Avoid or limit **environmental effects**

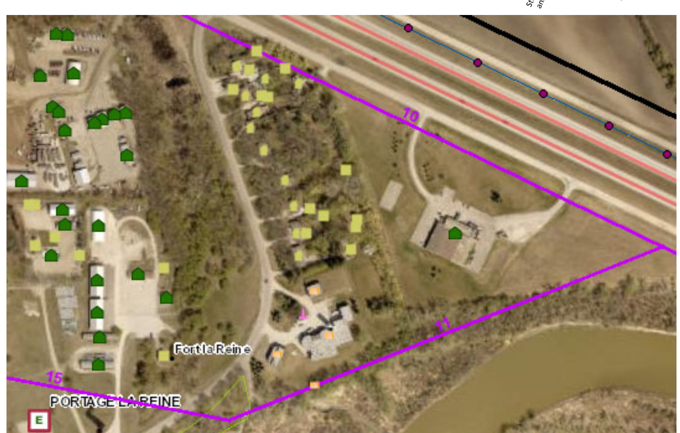
Utilize existing transmission facilities

Parallel or follow existing linear developments

Avoid or limit effects to **recreational areas**

Avoid or limit effects to **agricultural operations**

Consider length and cost of proposed facilities



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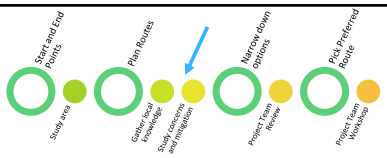
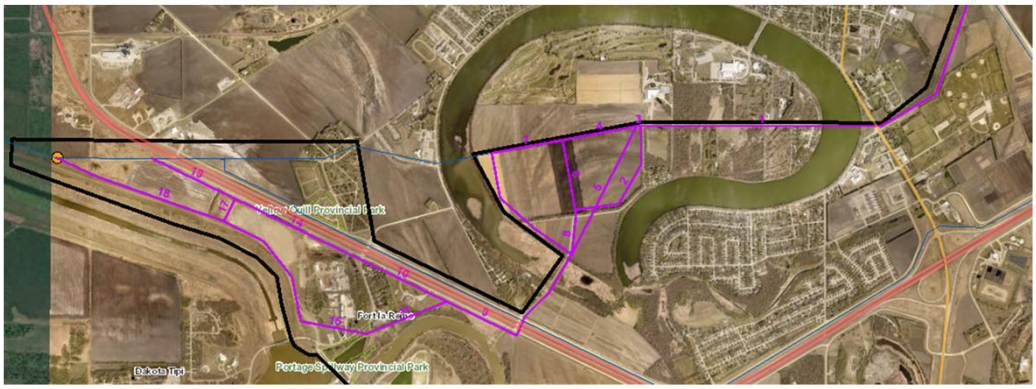
Manitoba Hydro BP 6/7 Community Ranking Discussion Feb 10, 11 2021

8

Routes discussed in engagement and studied





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Engagement and Further Study

- Gather local knowledge
- Build understanding of concerns and ways to mitigate

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Management of potential effects

- ***Mitigate*** – finding ways to limit the degree of potential effects when a specific impact cannot be avoided.
- Try to avoid effects that are difficult to mitigate.
- If cannot mitigate , may need to compensate (ex. Purchase home)

- How **effective** is the mitigation?
- Effect - Mitigation = Residual
- Goal is **small residual**

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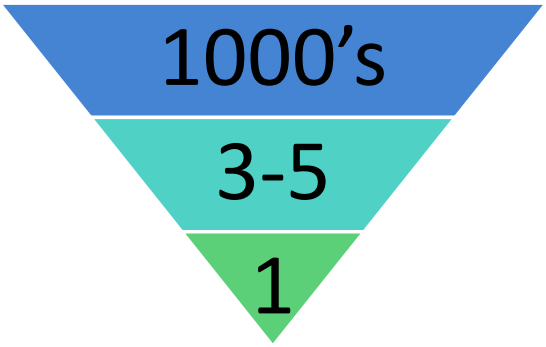
Project Team Selects 'Finalists'

- Using information from further study and engagement
- A set of criteria help compare dozens, sometimes thousands of alternatives
- Helps keep things 'straight'



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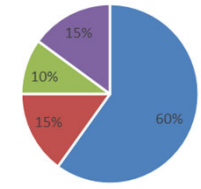
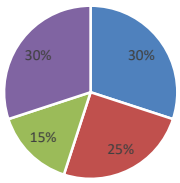
Criteria used to select finalists

Engineering Criteria



- Construction/Design Costs (60%)
- Seasonal Construction + Maintenance Restrictions (15%)
- Accessibility (10%)
- Proximity to infrastructure (15%)

Natural Environment Criteria



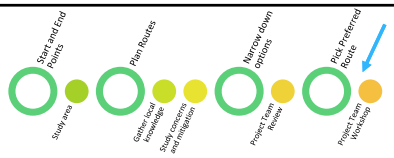
- Crown Land (natural coding) (30%)
- Wetlands (25%)
- Natural Forests (15%)
- Stream/River Crossings (30%)

Built Environment

- Relocated Residences - Within ROW (30%)
- Potential Relocated Residences EOROW to 100m (18%)
- Proposed Developments - Within ROW (16%)
- Diagonal Crossings of Agriculture Crop Land (Km) (11%)
- Proximity to Residences (100-400m) - EOROW (6%)
- Special Features (5%)
- Historic / Cultural Resources (250m)-EOROW (5%)
- Current Agricultural Land Use (Value) – ROW (4%)

13

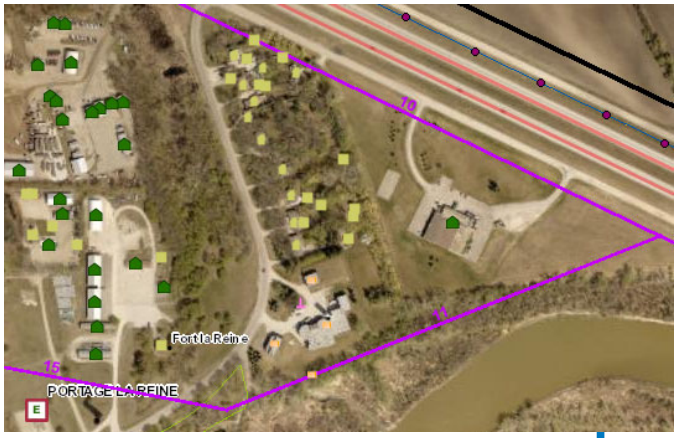
Preferred route picked from set of finalists



All of the information gathered considered

Routes compared against one another using a set of criteria and weighting

Using a 'model' makes the decision more structured, and clear.



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14

Comparing Routes

- If a route is the **best** option, it gets a **1**
- If all routes are **equally good**, they all get a **1**
- If a route is the **worst** of all the options, it gets a **3**
- If the route is similar to the best option but not quite as good – gets a number larger than 1 , by as much to **represent the difference**

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Compare 3 options for dessert

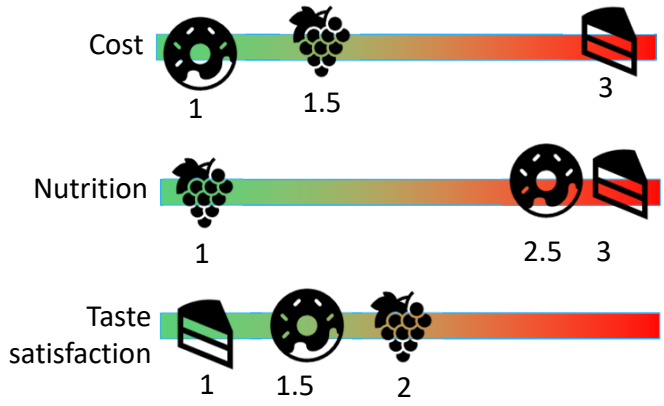
- cake
- fruit
- donut

Your **criteria** are:

Cost

Nutrition and

Taste satisfaction



How important is each criteria?

What should we choose?

Criteria	%	Cake	Donut	Fruit
Cost	40%	3	1	1.5
Nutrition	30%	3	2.5	1
Expected taste sati	10%	1	1.5	2
		2.2	1.3	1.1

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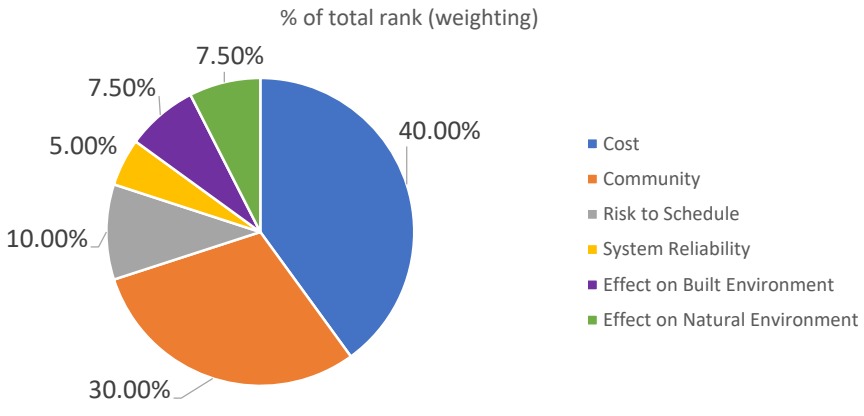
17

BP 6/7 Criteria and Weightings



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18

We are here

Round 1
- Alternative route segments: fall 2020

Round 2
- Preferred route: March 2020

Anticipated next steps
- File environmental assessment report: early 2021
- Regulatory review: 2021
- Construction start, if regulatory review is received 2022

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19

Next Steps

- Review engagement feedback and project timeline
- Discuss process for ranking route finalists from Community perspective

20

The following presentation was shared during a community route ranking meeting on February 18, 2021

Attendees:
Dakota Tipi First Nation: Darryl Taylor
Long Plain First Nation: Ralph Roulette Jr. and Shaun Peters
Portage la Prairie Planning District: Kinelm Brookes and Randy Fraser
The RM of Portage la Prairie: Kyle Hamilton
Manitoba Metis Federation (MMF): Jade Dewar
City of Portage la Prairie: Jocelyn Lequier-Jobin
Portage Urban Indigenous Peoples Coalition (PUIPC): Cornell Pashe
Manitoba Hydro:Maggie Bratland, Sarah Coughlin, Maria M'Lot, Lindsay Thompson, John Huilleryand Ariane Dilay

Agenda

- Introductions and acknowledgement
- Quick review of last meeting
- Objectives for Today
- Route ranking exercise
- Break
- Review Results
- Wrap up

1

Attendees

- City of Portage la Prairie: Jocelyn Lequier-Jobin
- Planning District: Randy Fraser; Kinelm Brookes
- Long Plain First Nation: Ralph Roulette, Shaun Peters
- Dakota Tipi First Nation: Darryl Taylor
- Manitoba Metis Federation: Jade Dewar; Tayler Fleming
- RM of Portage: Kyle Hamilton
- Portage Urban Indigenous Peoples Coalition: Cornell Pashe
- Manitoba Hydro: Maggie Bratland, Sarah Coughlin, Ariane Dilay, John Huillery, Maria M'Lot, Lindsay Thompson

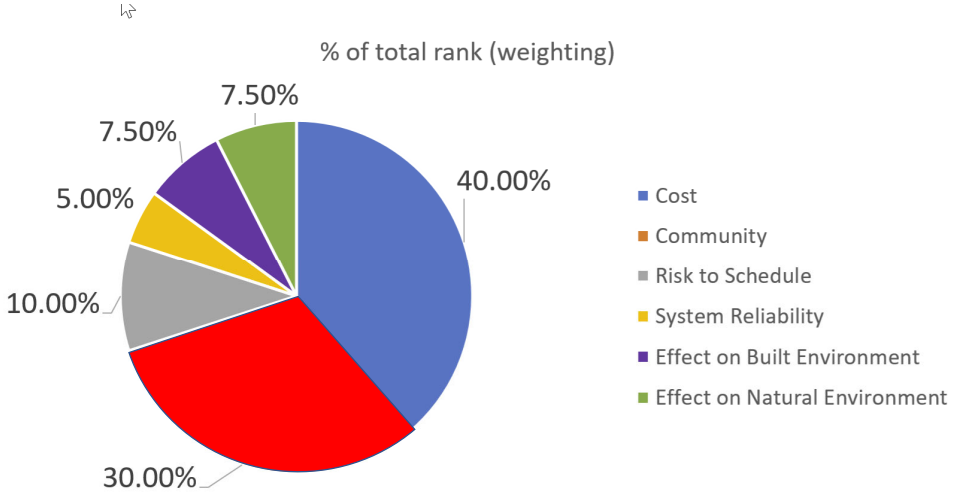
2

Review from Last Week

- How do we thread the needle through the many constraints across the landscape?
- We work to balance multiple perspectives (Engineered, Build and Natural)
- We consider things like
  - Can a concern be mitigated?
  - Cake, doughnuts, fruit?
- As Community, we represent 30% of the total weight of the decision

3

BP 6/7 Criteria and Weightings



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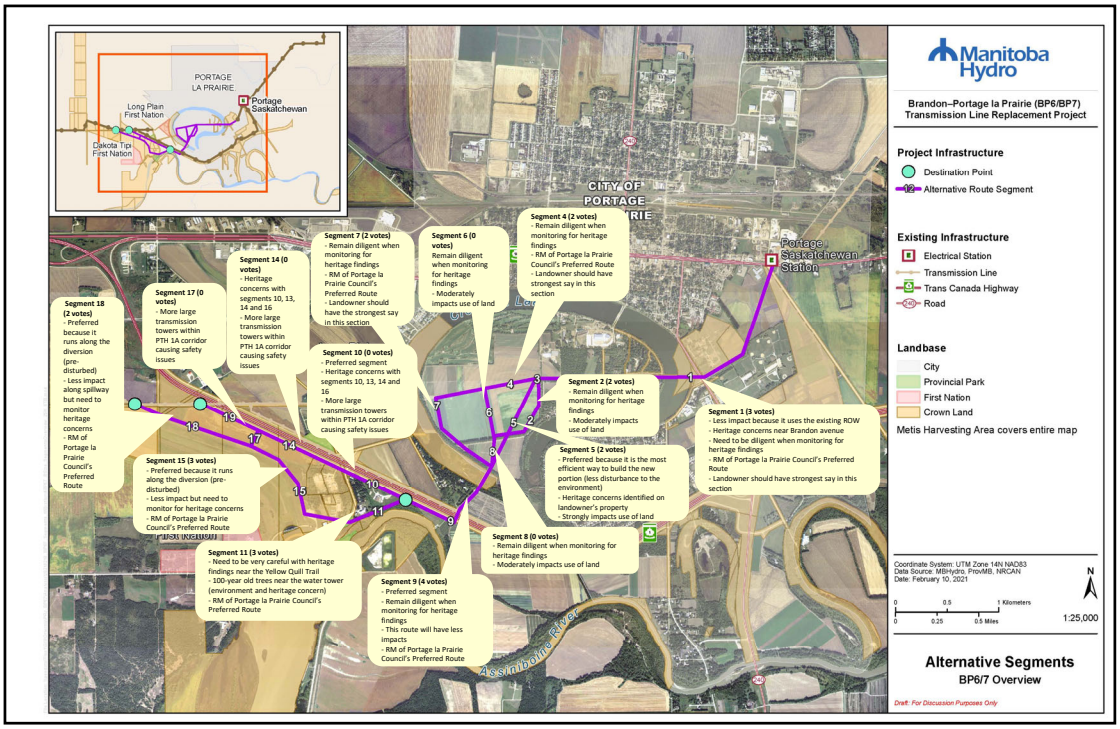


5

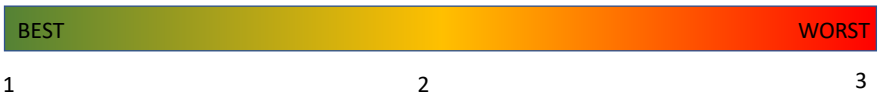
Objectives for Today

Score the four routes from best to least preferred on a scale between 1 and 3

6

When grading routes

- If a route is the **best** option, it gets a **1**
- If all routes are **equally good**, they all get a **1**
- If a route is the **worst** of all the options, it gets a **3**
- If the route is similar to the best option but not quite as good – gets a number larger than 1 , by as much to **represent the difference**



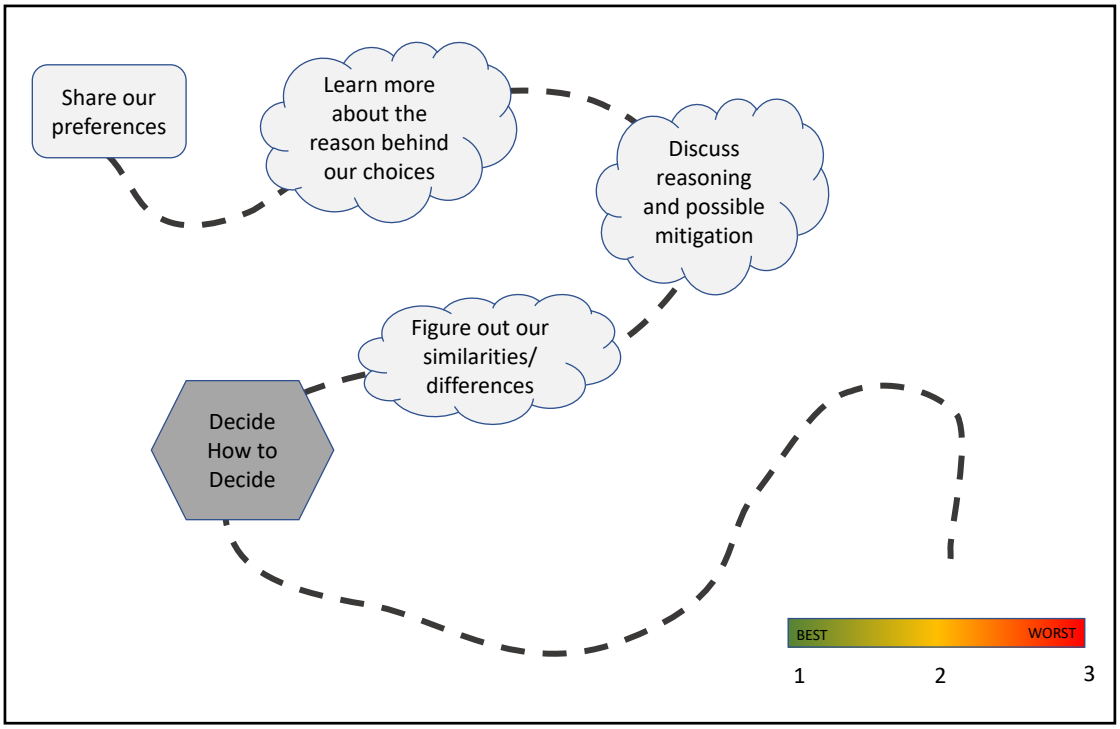
7

Objectives for Today

Score the four routes from best to least preferred on a scale between 1 and 3

Understand each others perspective a little better

8

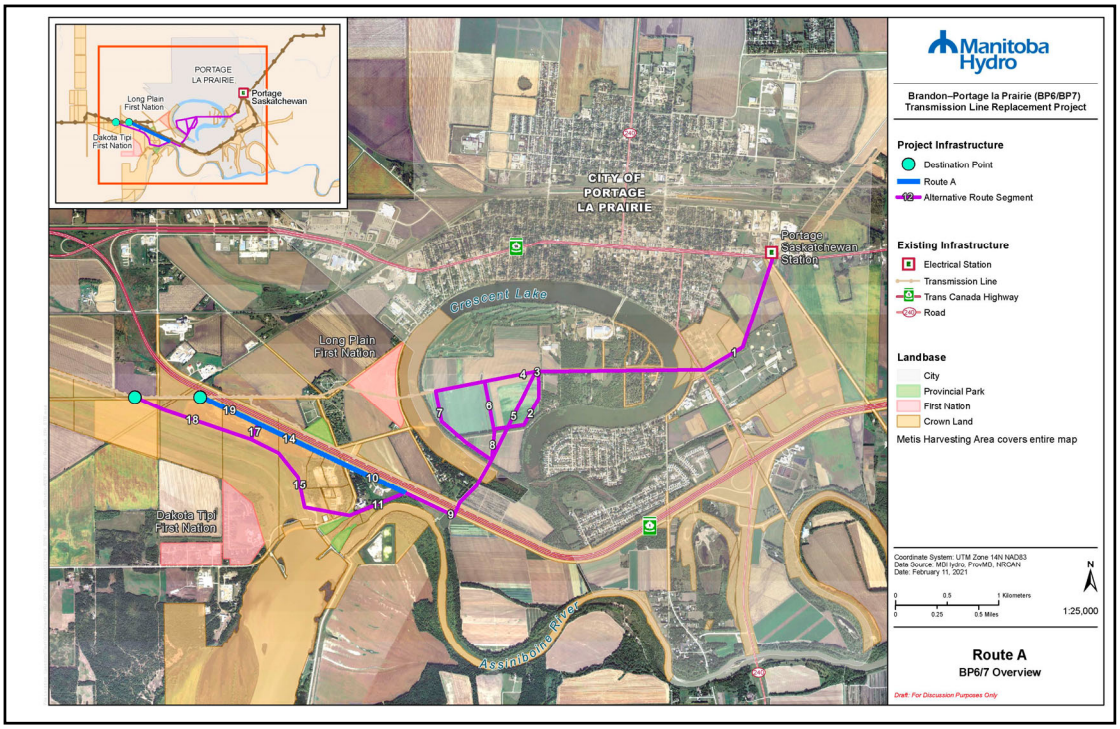


9

Poll Everywhere Question

- Grab link

10


PORTAGE LA PRAIRIE
Portage Saskatchewan
Long Plain First Nation
Dakota Tipi First Nation
CITY OF PORTAGE LA PRAIRIE
Portage Saskatchewan Station
Crescent Lake
Long Plain First Nation
Dakota Tipi First Nation
Assiniboine River
Manitoba Hydro
Brandon–Portage la Prairie (BP6/BP7) Transmission Line Replacement Project
Project Infrastructure
Destination Point
Route A
Alternative Route Segment
Existing Infrastructure
Electrical Station
Transmission Line
Trans Canada Highway
Road
Landbase
City
Provincial Park
First Nation
Crown Land
Metis Harvesting Area covers entire map
Coordinate System: UTM Zone 14N NAD83
Data Source: MDI hydro, ProvMD, NRCAN
Date: February 11, 2021
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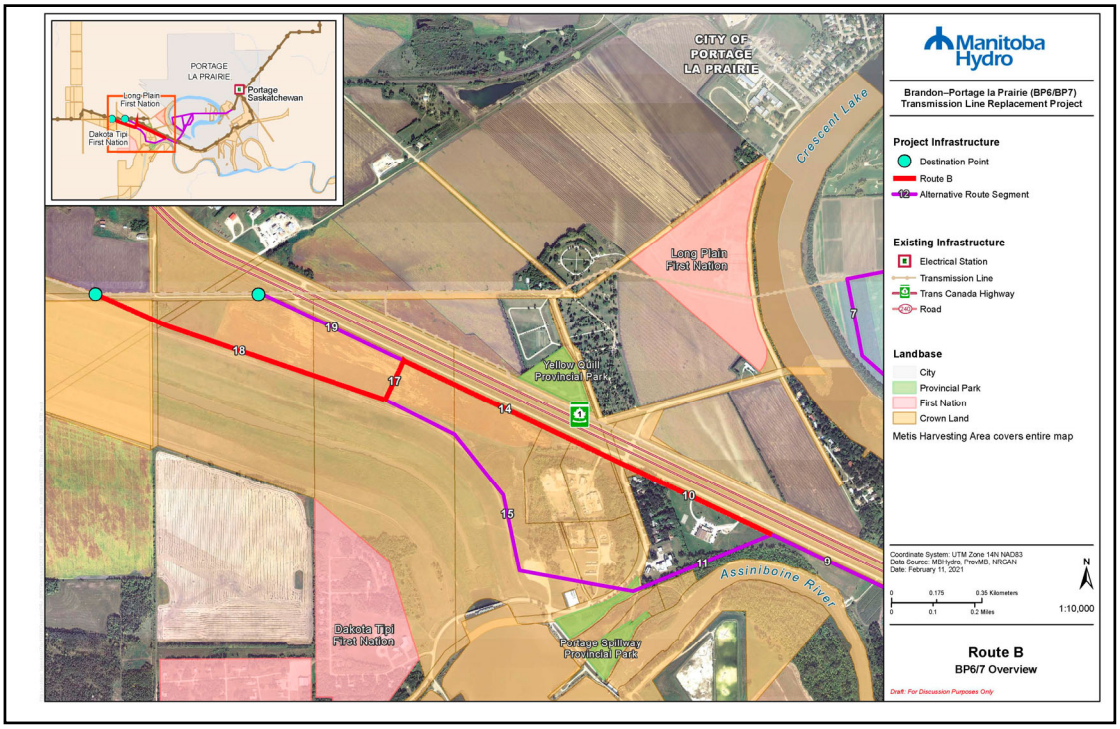
Route A
BP6/7 Overview
Draft: For Discussion Purposes Only

11


PORTAGE LA PRAIRIE
Portage Saskatchewan
Long Plain First Nation
Dakota Tipi First Nation
CITY OF PORTAGE LA PRAIRIE
Crescent Lake
Long Plain First Nation
Yellow Quill Provincial Park
Dakota Tipi First Nation
Portage Spillway Provincial Park
Assiniboine River
Manitoba Hydro
Brandon–Portage la Prairie (BP6/BP7) Transmission Line Replacement Project
Project Infrastructure
Destination Point
Route B
Alternative Route Segment
Existing Infrastructure
Electrical Station
Transmission Line
Trans Canada Highway
Road
Landbase
City
Provincial Park
First Nation
Crown Land
Metis Harvesting Area covers entire map
Coordinate System: UTM Zone 14N NAD83
Data Source: MDI hydro, ProvMD, NRCAN
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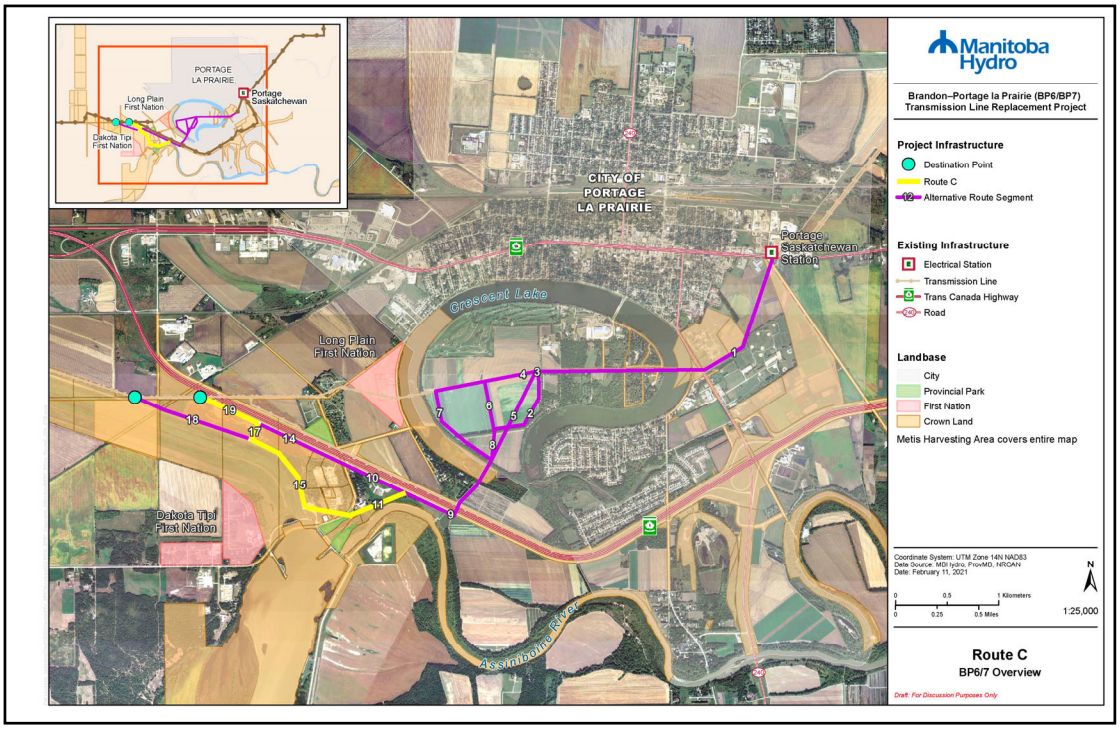
Route B
BP6/7 Overview
Draft: For Discussion Purposes Only

12


PORTAGE LA PRAIRIE
Portage Saskatchewan
Long Plain First Nation
Dakota Tipi First Nation
CITY OF PORTAGE LA PRAIRIE
Portage Saskatchewan Station
Crescent Lake
Long Plain First Nation
Dakota Tipi First Nation
Assiniboine River
Manitoba Hydro
Brandon–Portage la Prairie (BP6/BP7) Transmission Line Replacement Project
Project Infrastructure
Destination Point
Route C
Alternative Route Segment
Existing Infrastructure
Electrical Station
Transmission Line
Trans Canada Highway
Road
Landbase
City
Provincial Park
First Nation
Crown Land
Metis Harvesting Area covers entire map
Coordinate System: UTM Zone 14N NAD83
Data Source: MDI hydro, ProvMD, NRCAN
Date: February 11, 2021
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0 0.25 0.5 Miles
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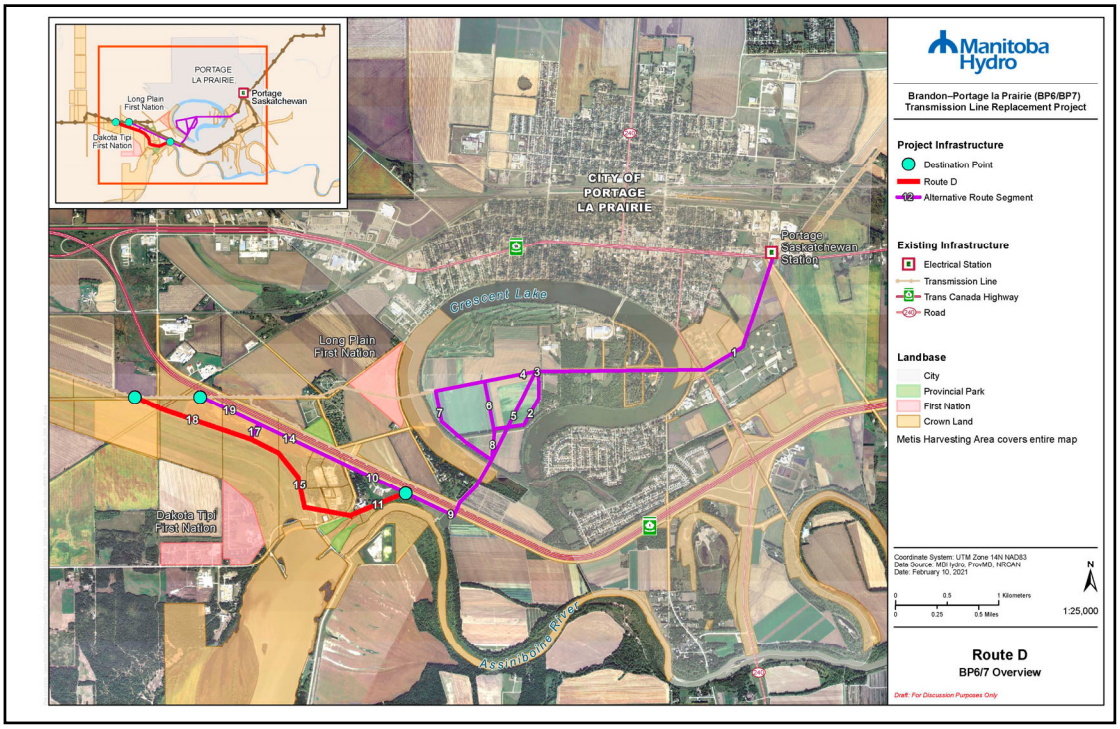
Route C
BP6/7 Overview
Draft: For Discussion Purposes Only

13


PORTAGE LA PRAIRIE
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Brandon–Portage la Prairie (BP6/BP7) Transmission Line Replacement Project
Project Infrastructure
Destination Point
Route D
Alternative Route Segment
Existing Infrastructure
Electrical Station
Transmission Line
Trans Canada Highway
Road
Landbase
City
Provincial Park
First Nation
Crown Land
Metis Harvesting Area covers entire map
Coordinate System: UTM Zone 14N NAD83
Data Source: MDI hydro, ProvMD, NRCAN
Date: February 10, 2021
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0 0.25 0.5 Miles
1:25,000
Route D
BP6/7 Overview
Draft: For Discussion Purposes Only

14

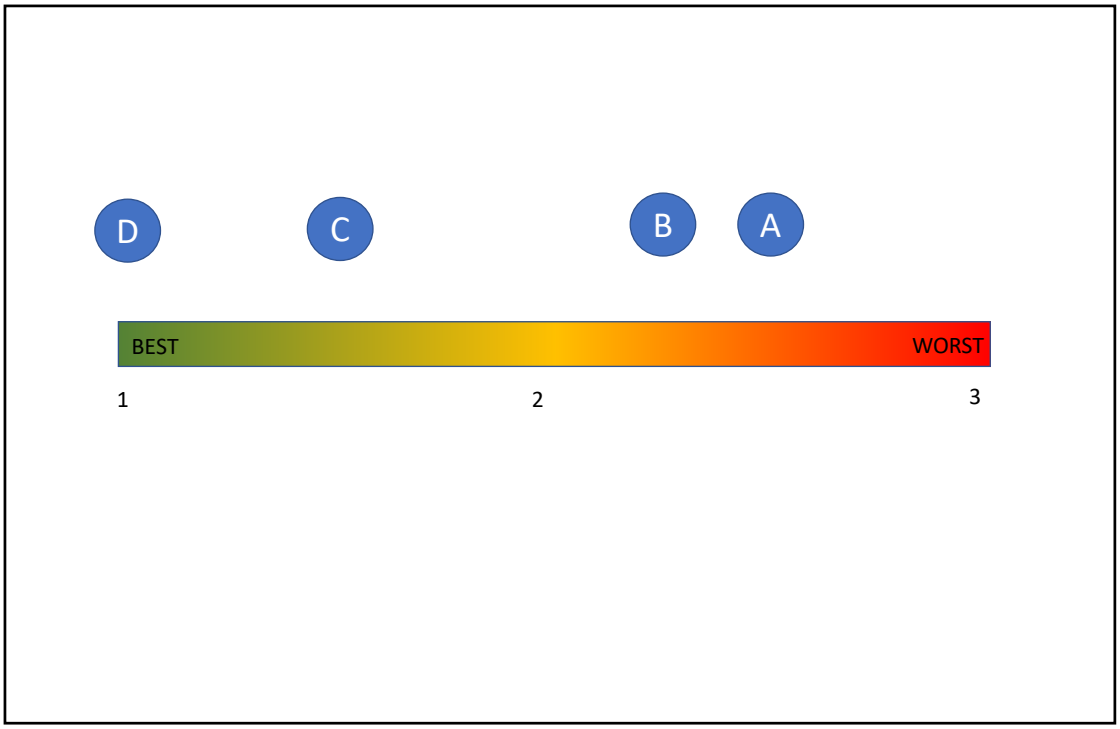
Group/Community	Order of Preference						Level
	1	Why?	2	3	4	Why?	
City of Portage la Prairie	D	Stays away from highway where the city has pipelines. Plan to add additional pipelines so would like room to expand	C	B	A	Opposite	2-3
Planning District:	D	Runs along diversion, less intrusive to houses	A	B	C	You could lump the last three together. Randy is sharing his own opinion. More to come from PD	3
Long Plain First Nation	C/ D	Due to infrastructure concerns			B	Disrupt peoples lives	5
Dakota Tipi First Nation	D	Runs adjacent to the floodway and doesn't affect housing. Opening access to fisher. D is less intrusive	C	B	A	Either or	3
RM of Portage	D	Avoids housing and intersection that may need expansion. And least impact on future development on south side of highway	C	B	A	Longest distance along hwy, bad for safety, and optics, house would require expropriation, existing sewer and pipelines owned by city	3
Manitoba Metis Federation	A	Highway is there already, less impact. Infrastructure is there already, leave it there. Be less invasive. Looks direct.	B	C	D	Indirectness of line. More impact.	3
Portage Urban Indigenous Peoples Coalition	D	Like bc less intrusive when it comes to other buildings. Open space – room to make it happen. Easiest.	C	B	A	Concerns with A due to storms, traffic, etc.	3

15

Some Typical Mitigation Measures

Homes Trees Heritage Water The Land

16



17

Round 2 engagement

The following presentation was shared during a meeting with ICACs on March 3, 2021

Attendees:
Dakota Tipi First Nation: Darryl Taylor
Long Plain First Nation: Ralph Roulette Jr. and Shaun Peters
Manitoba Metis Federation (MMF): Marci Riel and Tayler Fleming
Manitoba Hydro: Sarah Coughlin, Maria M'Lot and Ariane Dilay

Environmental Assessment

BP6/7 Transmission Project

Indigenous Community Assessment Coordinators

March 2, 2021

Manitoba Hydro

1

Overview of Deliverable 3

- Prepare a section for inclusion in the traditional practices and culture section of the BP6/BP7 Environmental Assessment. This document is to include the following information:
  - a) A description of your community, at a level of detail deemed appropriate by you and your leadership;
  - b) A description or assessment of the potential effect of the BP6/BP7 Project on the traditional practices and culture of your community;
  - c) A suggestion of potential mitigation measures to reduce any adverse effects and enhance positive effects of the BP6/BP7 Project

2

2

a) Prepare a Community Profile

- a description of your Indigenous community in the Portage la Prairie area, at a level of detail deemed appropriate by you.
- this should take less than 8 hours to prepare
- tell us about your community and its culture

3

b) and c)Assessment of effects

Why?

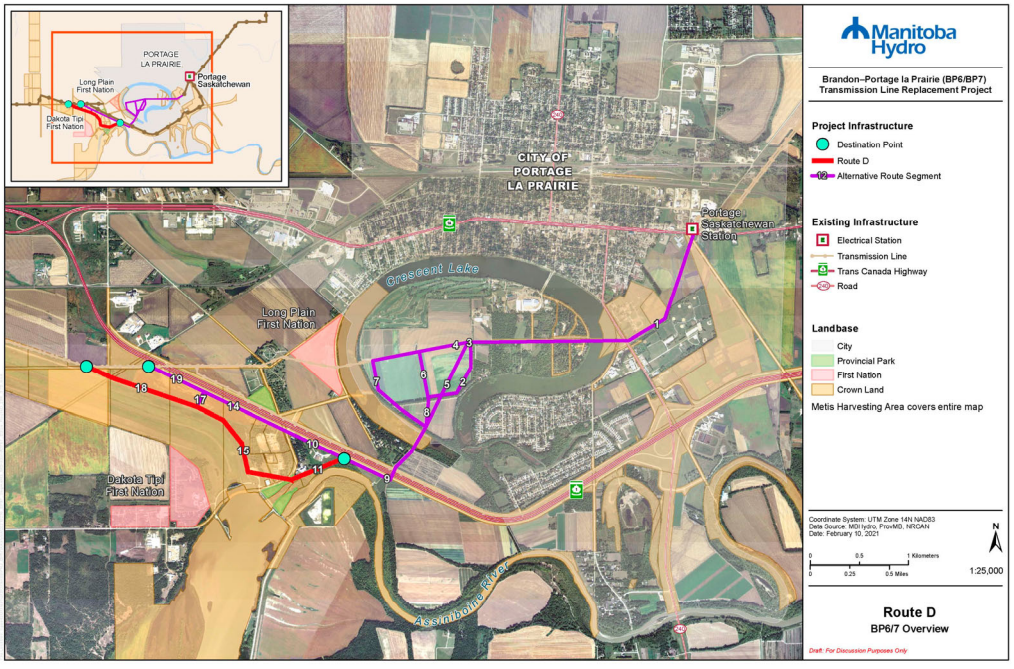
- We want to understand how the project may impact your community
- See what we can do to reduce those effects
- We want you to do this in a manner that makes sense to you and reflects your leaderships views.

4

Environmental assessment

- It's just a planning tool
- A process of conducting assessments has evolved over the last few decades
- It's far from perfect

Manitoba Hydro



Environmental Assessment Reports

- Can be very long and complex. This is not our goal. It should convey key concerns and meaningful ways to address those concerns.
- Usually include:
  - Description of the existing environment
  - An educated guess at how the project may change key parts of that environment
  - Suggestions on how to reduce that change

Manitoba Hydro

7

Focus the assessment

- We can't study everything – so focus to valued components or key topics important to your community. MH uses:
  - Is it important to people or very rare?
  - Is it a requirement of government?
  - Do we have data on the subject?
  - Is it a keystone species, or a component of the environment that represents health of many components?
  - Sensitive to change?
  - Will it actually interact with the project?
- Manitoba Hydro has sought feedback on BP6/7 since August of 2020. We've heard key themes that helped us select valued components

Manitoba Hydro

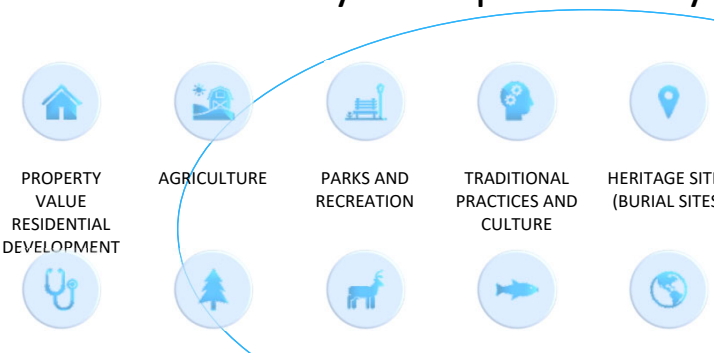
8

Through direction provided by the Province and engagement we learned these are important…

VALUED COMPONENTS (VCs)

Manitoba Hydro

Some of these may be important to your community



Manitoba Hydro

Some of these may be important to your community

Manitoba Hydro

11

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Some of these may be important to your community

Manitoba Hydro

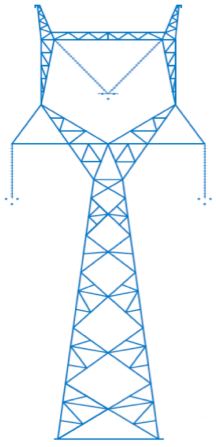
12

12

Assessed Effects to Each Valued Component

- What is the pathway of effect?

Project Components



FISH AND FISH HABITAT

Manitoba Hydro

Fish and Fish Habitat

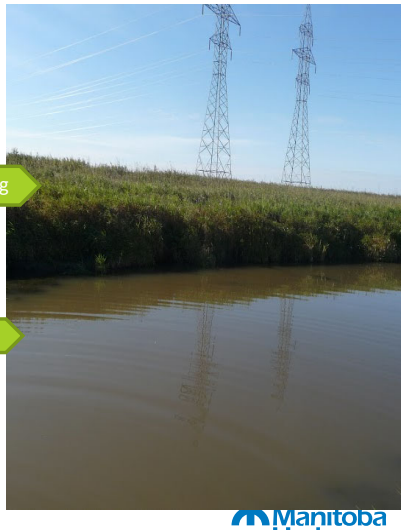
- Construction Traffic
- Access Route
- Right of Way Clearing → Loss of riparian habitat
- Marshalling Yards
- Tower Construction and Stringing
- Demobilization
- Vegetation Management → Use of Herbicides
- Inspection Patrols
- Operation/Presence

Manitoba Hydro

15

Fish and Fish Habitat

- Construction Traffic
- Access Route
- Right of Way Clearing → Loss of riparian habitat → Buffers, Erosion Control, Routing
- Marshalling Yards
- Tower Construction and Stringing
- Demobilization
- Vegetation Management → Use of Herbicides → Education, Chemical selection
- Inspection Patrols
- Operation/Presence



Manitoba Hydro

16

Describe the effect

- Is it a positive or negative effect?
- What is the magnitude of the effect?
- Will it be a single event, or happen frequently or continuously?
- What is the duration of the effect?
- Where is the effect likely to occur?
- Can the VC go back to existing condition (reversible/irreversible)
- What is the context? Is this a big deal?

17

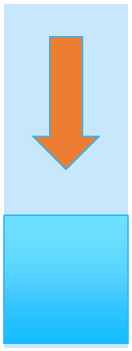
17

Effect

18

18

Effect + Mitigation



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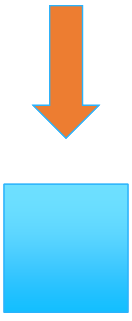
19

Effect + Mitigation = Residual Effects



Residual Effects

20

20

Make a clear statement

- With erosion control measures in place, and the planned buffers in use, effects to fish are predicted to be low in magnitude, short term, reversible and localized.
- Construction monitoring should take place

21

21

From Interviews and your knowledge

May have heard:

- themes / repeated concerns
- reference of use at a particular spot within the Project area
- A story important to the area and your culture
- Ideas or solutions that might be applicable here

22

22

Topics of Discussion/VCs

- Select topics valuable to your community to discuss and relevant to the project area
- Characterize the effects to those values
- Suggest solutions

23

Deliverable 2: Routing Brief
Prepared by Darryl Taylor for Dakota Tipi First Nation

Deliverable 2 - Routing Brief

Indigenous Community Assessment Coordinator – Darryl Taylor

January 15, 2021

Background and Methods

To understand community concerns within the BP6&7 Project area I conducted my own research and interviewed 11 people:

1. Cornell Pashe
2. Darlene Nadon
3. Linda Nadon (Pashe)
4. Frances Pashe
5. Florence Pashe
6. Colin James
7. Geneva Smoke
8. Diane Smoke
9. Clayton Smoke
10. Wesley Lake
11. Corinne Smoke

I have documented the outcome of these interviews in another document that I will attach to this brief. I followed the procedures suggested in the documents provided by Manitoba Hydro and have completed consent forms for each participant.

Summary of DTFN views and routing preferences:

Summary of Routing preferences

• No concerns with segment 1 on the right-of way. In the Cocoa flats (Wilkinson and Phoebe) area there are eight bodies. Monitor and be diligent to see if something else shows up in the

that area. Because the line already existed, it will be less intrusive. Once the line is on the Island, by Brandon Avenue there are tipi mounds and graves close to the line. This segment is not on any burials that we know, but there are important sites beside the line that should be respected.

• Segments 1-9 are private lands and Manitoba Hydro should be diligent because there are burials nearby (see map A, B)

• Our preferred route includes 18, 5, 11, 9, 3, 1. at number 11 we need to be very careful. This was the yellow Quill Trail. We need to monitor construction carefully. There is no hunting being done in these areas because we're in an urban setting. There is no fishing being done except at the designated area. (see map C). This will be going along a man-made structure that has already disturbed the environment. 11, 9, 5 and 3 are the most efficient way to build the new portion as they are a straight line and less disturbance to the environment.

Photo 1. Discovered remains at Wilkinson and Phoebe

Summary of Views

Some Elders:

• How does Dakota Tipi benefit from this project? If DTFN is not being acknowledged by the province or the federal government, why would Manitoba Hydro acknowledge us now?

• What benefit do Indigenous people get from these projects?

• Will this create economic development for the area?

Some Elders

• Are positive about the benefits this project will bring.

One Elder

• Shared concerns about EMF? Does it cause cancer? Is this why LPFN doesn't want this on their property?

• Respect for the land is considered very important to Dakota people • If the project is approved Indigenous monitors

should be supported to monitor construction of the project
• A ceremony should precede construction
• Work should occur at a time to minimize impacts plants and wildlife

Important Activities that occur in the project area

• Island park has become a bigger tourist attraction over the past few years, building the new PCU complex and having adjacent water parks.
• Yellowquill trail ran through the Island park which made the trail significant for heritage and cultural sensitivity, oral history identifying 3 potential chiefs' graves on private land.
Other private landowners on the Island have indicated potential mounds and tipi rings on their property.
• Hunting does not occur because much of the land in the project area is private.

Outcome of my research and understandings

There are specific sites on Crescent Island that are very important to DTFN, see the map. These specific sites include:
• There is a known burial site located a 'A' on the attached map. Three Chiefs are buried here and this is considered a very important site.

Outcome of interviews

I have interviews scheduled for next week, and some people have spoken to me about their concerns. Some of that information is shared here, more will come in the next deliverable. Traditional activities occur in the Project area as indicated as D, E and F on the map.

Photos 2 and 3. Existing towers on Crescent Island.

Photos 4 and 5. Ecologically significant area along segment 1.

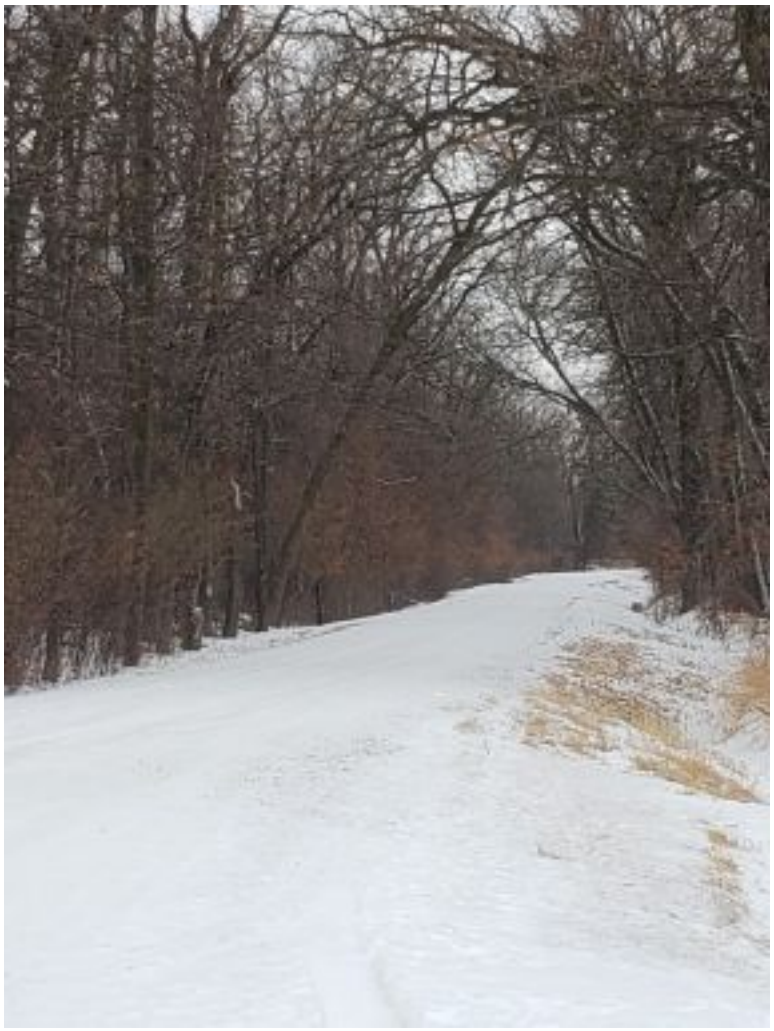
Photos 6 and 7 – Photo on left is looking east from Keesh. Photo on right is

looking east at segment 4-3.

Photos 8 and 9 – Photo on left is a segment on the north side with possible mounds (private land). Photo on right is segment 4.

Photos 10 and 11 – Segment 4, Mayfair lands.


Fresh
Veggies
MAYDAY TRUCKS
BRANDON AVE
319
321
311
310A
310B



Photos 12 and 13 – Photo on left is segment 6-8-9. Photo on right is by

segment 4 where three Chiefs are buried.

Deliverable 2: Routing Brief
Supporting letter from Chief Eric B.D. Pashe for Dakota Tipi First Nation

Dakota Tipi First Nation

PH 204.857.4381
FAX 204.857.9855
DAKOTATIPIFN.COM

Maria M'Lot
Community Relations Advisor
Indigenous Relations | Manitoba Hydro
360 Portage Avenue (14) | Winnipeg, MB | R3C 0G8
Tel: (204) 360-3738
Cell: (204) 390-2468
Email: mmlot@hydro.mb.ca

January 27, 2020

RE: Indigenous Community Engagement Letter
on Behalf of Dakota Tipi First Nation to Manitoba Hydro

Portage la Prairie - Brandon ("BP6/BP7")
Transmission Line Replacement Project

Dear Maria and Manitoba Hydro,

This letter will serve as the official first correspondence on behalf of the Dakota Tipi First Nation regarding the Manitoba Hydro Portage la Prairie-Brandon (BP6/BP7) Transmission Line Replacement Project (First Draft Comments on behalf of the Dakota Tipi First Nation).

Dakota Tipi First Nation (DTFN) began the official consultation process, specific to this project, in November 2020 with Manitoba Hydro (MBH).

DTFN agreed for the approach that was proposed by MBH via meeting between DTFN and MBH on December 7, 2020:

- for the implementation of a Portage area part-time Coordinator that will lead and work through the consultation process for the concerns.
- Darryl Taylor, member of DTFN and Lands Manager for DTFN, was subsequently hired as the part-time Coordinator for this project (BP6 and BP7 project).

As reiterated in our ongoing discussions with Manitoba Hydro, and specific to the BP6 and BP7 Project for the purpose of this letter, Dakota Tipi First Nation would like to provide the following as our concerns specific to same (BP6/BP7):

- DTFN has concerns with respect to the land area alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce medicinal vegetation in such areas (sage, sweet grass, cedar, Seneca root,

bear root, etc.). This also includes concerns that the line placement areas may be on a former or traditional burial ground or site (such as tobacco flag or tie placement areas).

- DTFN has concerns with respect to the wildlife population alterations that may occur with the transmission line placement route. This includes concerns that the line placement areas may reduce wildlife populations such as whitetail deer, porcupines, and rabbits which are a source for food and traditional use.

- DTFN has broad concerns with various industry development in the adjacent areas of the DTFN and traditional territory of the Dakota people. This concern is linked to the fact that the Dakota First Nations within Canada, with Dakota Tipi being one (1) of them, did not enter into a Treaty or surrender arrangement with Canada nor the Province of Manitoba in relation to traditional Dakota territory. This is an ongoing negotiation between the DTFN, and other Dakota Nations within Canada, with Canada and the Province of Manitoba.

- DTFN often seeks a process for strong consultation in these instances (energy development or improvement (ie. Transmission line replacement/ rerouting)). DTFN would like to see an increase in employment opportunities for these developments (either short and or long term employment) and quality accessibility to such employment for members of the DTFN.

- DTFN often seeks to have more involvement in economic development opportunities such as having the ability to bid on various areas of the construction sectors of such projects and being awarded such. DTFN does have some concerns with how development may impact local economic development and markets (businesses within the DTFN)

- DTFN seeks to mutually engage in a process for reconciliation and remediation of potential impacts, such as reiterated in these comments, that may occur as a result of industry and energy development within areas of the DTFN adjacent land areas and Dakota traditional territory.

In closing, these are ever evolving and changing concerns and aren't limited to that which is stated herein this letter. Dakota Tipi First Nation appreciates the continued collaboration and consultation on the projects that Manitoba Hydro performs.

Please do not hesitate to contact myself below if you have any additional questions, comments and/ or concerns regarding the content of this correspondence and related.

In closing and on Behalf of the Dakota Tipi First Nation

Eric B. D. Pashe
Chief
Consultations Portfolio
Dakota Tipi First Nation
C: (204) 871-3847
E: e.pashe@live.ca

Deliverable 3: Environmental Assessment
Prepared by Darryl Taylor for Dakota Tipi First Nation

Introduction Component to the Dakota Tipi First Nation

Project: *Manitoba Hydro* BP6 and BP7 Project
Traditional Knowledge Study

Date: March 15, 2021

Completed By: Darryl Taylor
Dakota Tipi First Nation Tribal Member
Industry and Lands Liaison Worker/ Lands Protector

Introduction:

The Dakota Tipi First Nation (DTFN) and *Manitoba Hydro* entered into a Traditional Knowledge (TKS) Study agreement in the fall of 2021. The purpose of the Study was to provide a framework that would enable the gathering and documentation of DTFN (TKS) and traditional knowledge information relevant to the proposed BP 6/7 project (the project).

The agreement acknowledged that the DTFN will take the lead in the planning and implementing of its own methods of research and will decide what level of information will be provided to *Manitoba Hydro* to assist in the assessment of potential project effects and potential impacts on the use of lands, waters, and resources by the DTFN community.

1.1 OVERVIEW OF THE DAKOTA TIPI OYATE BEING PART OF THE DAKOTA NATION and as it Relates to the Project

In the (TKS) study the DTFN intends to provide information about the cultural and historical context of the Dakota Tipi community and who we are as a part of the larger Dakota Nation.

While there are differing views on the extent of the Dakota Homeland or Traditional Territory, most sources agree that at the time of contact the Dakota People /Nation (which the Dakota Tipi People are apart of) used and occupied areas within the current jurisdictions of Canada and the United States, the North West Territories, Alberta, Saskatchewan, Manitoba and portions of Ontario.

The DTFN and several other Dakota Nations within Manitoba

are in a unique position, as they never adhered to a treaty and thus retain, hold and assert Aboriginal Rights and Title to areas within southern Manitoba, and areas the project traverses. Some of the Aboriginal Rights that DTFN exercise and assert include (but are not limited to) the right to hunt, fish, harvest land and water based resources, practice various forms of cultivation, build and occupy settlements, build and occupy camps and cabins, and the ability to travel to and access resource activity areas, etc..

The DTFN also asserts and maintain that it has never ceded its title or interests to its ancient homelands or traditional territory nor its inherent jurisdiction and decision-making authority in relation to the lands, waters, and resources.

Given this, at a minimum, *Manitoba Hydro* should begin its consideration of any potential known biophysical and socio-economic effects against these noted broad rights categories through portions of southern Manitoba.

1.2 Community at a Glance

In 1959 the *Old Sioux Village* near Portage La Prairie relocated to the current location site of the Dakota Tipi First Nation. In 1972 the community divided and thereby creating two (2) First Nations presently known as Dakota Tipi First Nation (IR No.#56 or 295) and Dakota Plains Wahpeton Nation (which borders the Long Plain First Nation, south of Edwin Manitoba Canada).

The Dakota Tipi First Nation was granted “Indian Reserve” Status in 1972.

Dakota Tipi First Nation is situated approximately 2 kilometers southwest of the city of Portage La Prairie, Manitoba, and is roughly 80 kilometers west of Winnipeg, Manitoba, and located on the Yellowquill Trail highway, just off of the TransCanada No. 1 Highway, and can be reached by a paved class "C" highway.

The current Dakota Tipi First Nation consists of Parish lot 25 and Parish Lot 24 and in 1985 the First Nation also secured Parish Lot 16, 17 and 18 for a total of 371.8 acres or 150.48 hectares.

The current population of the Dakota Tipi First Nation is approximately 275 people “on reserve on” and has on “off reserve” population of approximately 300 people.

1.3 Current Vision of the Dakota Tipi First Nation

The Dakota Tipi First Nation currently works with a number of industries and industry partners, such as *Manitoba Hydro*, in consultation to ensure the concerns of the Dakota Tipi Nation are dealt with in an according, proper and traditional way.

The Dakota Tipi Nation continues to work towards the goals and vision of itself as a part of the larger Dakota Nation in creation of a strong and viable future for its membership and in honour of the history of the ancestral Dakota people that which we derive from.

Deliverable 3: Environmental Assessment
Prepared by Adam Myran for Long Plain First Nation

Deliverable # 3

A description of the LPFN community in the Portage la Prairie area, at a level of detail deemed appropriate by the LPFN.

A signatory to Treaty 1, 1871, Long Plain First Nation is a proud, prosperous community of both Ojibway and Dakota people situated in the central plains region of Manitoba.

Long Plain has a population of over 4,500 with approximately 2,475 of its registered members living on reserve, 1940 living in urban areas and the remining 60 living in other reserve communities.

Long Plain is Reserve No. 6 on a land base of 10,800 acres comprised of 3 reserves of which 2 are urban. Long Plain is situated in the south-central area of Manitoba, known as the "Central Plains Region". The reserve is located 14 km southwest of Portage La Prairie, and 98 kilometers west of Winnipeg and 10 kilometers south of the TransCanada Highway No. 1. The landscape of the reserve begins along the northwest and southeast banks of the Assiniboine River for approximately five miles and extending three miles west. A portion of the reserve also lies across Assiniboine River.

The urban reserves are situated along the city limits of Portage la Prairie (Keeshkeemaquah Reserve) and in the City of Winnipeg (Madison Indian Reserve No. 1). Long Plain has additional plans for Treaty Land/Reserve expansion in Manitoba. These plans are in various stages of the Addition to Reserve process.

The Portage and surrounding areas have been our people's traditional territory and homeland for thousands of years. The lands in the Portage area were historically considered Long Plain's traditional and tribal territory and are still currently used by Long Plain First Nation registered members for traditional hunting, harvesting and cultural practices.

Long Plain has a custom election system and a tribal government consisting of five; a Chief and four Councillors. Each of the five elected members are responsible for a diverse portfolio of Long Plain's programs and services that includes Arrowhead Development Corp., Economic Development, Gaming, Employment / Training / Daycare, Security / Fire, Education, Social Services, Membership, Land Management, Public Works, Justice / Legal, Recreation / Culture, Child & Family Services, Housing, Residential School, Health and Veterans Affairs.

The community has a diverse economic development portfolio including one of the most successful Petro Canada stations in all of Canada at the Madison Indian Reserve No.1, a thriving Hotel and Gaming Centre on the Keeshkeemaquah Reserve as well as recent acquisitions and builds that will only continue to make Long Plain a fixture in both the Economic and Local Landscape for future generations to come.

A description or assessment, from LPFN's perspective, of the potential effect of the BP6/BP7 Project on the traditional practices and culture of the LPFN community.

Long Plain is happy to be a part of these discussions and is grateful there is a consultation process with the potentially affected First Nations in the region.

We are also however reluctant to (and are not in a position to) grant a corporation 'carte blanche' authority for any future infrastructure conflicts that may arise, and they have in the past. The reality is after hundreds of years of socio-economic, spiritual and legal disparity, we simply do not know for

certain if these plans are over for instance, a familial or community burial plot from the 1790's. Perhaps it goes through the old lodging grounds of the regions most respected Medicine Man from an even earlier time which would no doubt be in abundance of our 4 Sacred Medicines (Sage, Cedar, Sweetgrass and Tobacco). Such a plot would no doubt have old ceremonial grounds that would still be respected and protected no matter how old they are, as such sites are identified and do exist within our Long Plain Reserve No. 6 borders today.

I am sure you can see our need to keep communication open and honest so that if and when matters like the examples presented here arise, proper consultation and due diligence can be performed.

That being said, the purposed route is not currently in any conflict therefor should have no immediate adverse effect on current traditional practices and culture of the LPFN Community, outside of perhaps the disturbance of wildlife habitats or migration routes that some families still rely on today as a source of food.

A suggestion of potential mitigation measures to reduce any adverse effect and enhance the positive effects of the BP6/BP7 Project.

Long Plain First Nation would like to see an effort made to harvest any sacred medicines that may be disturbed during the project in accordance with our spiritual protocols.

We have attached **Attachment A** for identification purposes.

In regard to any spiritual lodgings or landmarks, we would like the opportunity to consult with local Elders and knowledge-keepers on proper protocol if such an issue were to arise. There are many constructs we use on our spiritual journey including but not limited to, Arbours, Ceremonial Lodges, Rock Paintings and formations etc.

Also, if a rough count of large vegetation removals (trees and native brush etc.) exists we would like to see an effort made to either relocate or plant-new vegetation in accordance with our beliefs that we should live lightly on Mother Nature, take only what we need and replace what we take whenever possible.

Attachment A

Four Sacred Medicines:

1. Wild Sage

2. Closeup of Cedar Branches

3. Sweetgrass

4. Wild Tobacco

Deliverable 2 and 3: Routing Brief and Environmental Assessment
Prepared by the Manitoba Metis Federation (MMF)

Métis Specific Concerns

Brandon-Portage La Prairie (BP6/BP7) Transmission Line Replacement

Manitoba Metis Federation

February 25, 2021

Contents

Executive Summary

Through an assessment of our existing land use and occupancy database, we found that **Métis citizens are actively exercising their rights in the BP6/BP7 area**. The presence of 80 existing Métis Knowledge features in the general project area indicates the potential for the Manitoba Métis Community to have additional specific knowledge to share about the route alternatives if given the opportunity. We would also like to engage Métis citizens for additional project specific information which can be used to inform Manitoba Hydro's full environmental assessment and EAP, construction and future operations of the line.

The presence of these 80 existing features near the BP6/BP7 project area, from past studies that were not focused on this project specifically, is evidence of the potential for impact to the Métis way of life from the BP6/BP7 project. Métis have Constitutionally protected rights to harvest, and any impact on these rights, claims or interests needs to be adequately and appropriately assessed and, if necessary, accommodated and mitigated for.

In the context of these conclusions, the Manitoba Metis Federation (MMF) has provided to Manitoba Hydro a set of recommendations in this report related to the current BP6/BP7 route selection process, recommendations for MMF's engagement and consultation in the BP6/BP7 going forward, and recommendations that may guide MMF's engagement and consultation on future projects such as the Portage Area Capacity Enhancement (PACE) project.

Métis Concerns with Transmission Lines

- Concerns about impacts to Métis rights, claims and interests.
- Concerns about Métis Valued Components being considered in the process.
- Concerns that contiguous Unoccupied Crown Land will not be maintained.
- Potential for impact to Lands for Métis Use
- Potential changes to wildlife habitat and the ability harvest in the area
- Cumulative effects of development on the ability to harvest.
- Numerous concerns related to transmission line project impacts including the following:
  - Aquatic harvesting and water quality
  - Chemical spraying
  - Human population increase pressures on harvesting
  - Impacts to animal health and habitat
  - Sensitive Habitat such as a swamp
  - Access to historic and culturally important harvesting areas and impacts on gathering berries
  - Economic impacts
  - Effects on commercial trapping
  - Wood harvesting impacts
  - Challenges presented by needing to change harvesting locations
  - Cultural impacts
  - Changes to the landscape and foreign objects
  - Aesthetic and visual concerns
  - Human health impacts and noise concerns
  - Safety
- Fears and psycho-social concerns
- Concerns with the administration of monitoring programs.

1.0 Introduction

1.1 Project Context

Manitoba Hydro is proposing to construct a double circuit transmission line between Brandon and Portage la Prairie, referred to as BP6/BP7 or the Project. This project is intended to replace or rebuild a section of the BP6/BP7 line that was damaged during a storm in 2019. Because development beside the line has grown and the requirements for right-of-way widths have increased since construction of the original BP6/BP7 line, Manitoba Hydro must consider different routes for the new BP6/BP7 line.

Manitoba Hydro and the Manitoba Metis Federation (MMF) have long been in negotiations around the terms of their engagement relationship. With the cancellation of the Turning the Page Agreement, there has been a gap in the funding of an Energy Liaison position at the MMF. In Summer 2020, Manitoba Hydro met with the MMF and informed them that the BP6/BP7 project was going to be initiated. Manitoba Hydro held meetings with MMF staff through the Fall and Winter 2020 with the aim of developing a contribution agreement to support a more fulsome consultation process on this Project with the MMF. The MMF received a draft contribution agreement from Manitoba Hydro in December 2020. The agreement proposed that a series of engagement activities be carried out by the MMF over the next two months. Because the MMF does not have an Energy Liaison employed at this time, it was not possible for us to mobilize to meet these aggressive timelines. We consider the contribution agreement negotiation process to be ongoing though some of the originally proposed timelines cannot be met.

On February 18, 2021, representatives from the Manitoba Metis Federation (MMF) participated in a Community Ranking Meeting organized by Manitoba Hydro. During the meeting, participants were asked to rank and provide feedback on four alternative routes (A, B, C and D) being considered for the Project. During the meeting, MMF representatives shared concerns that proper consultation has not occurred. MMF representatives shared that they participated in the meetings in good faith, but that a full and meaningful consultation process is required; the MMF still needs to consult with the Manitoba Métis Citizens to understand their perceptions and the potential for project impacts. The MMF representatives added that they understand that there are pressures to move things forward, but they cannot participate fully without the perspective of the Manitoba Métis Community.

In response to these concerns, Manitoba Hydro proposed to hold the ranking results for one week so that participants can come back to share key concerns within that time frame.

The MMF asserts that one week is not a reasonable time frame to consult with the Manitoba Métis Community in a meaningful way on this project. As the contribution agreement has not been finalized, we also lack the capacity funding to properly engage Métis citizens. However, we also do not want to miss the opportunity to have at least some input to the route selection process, so we have chosen to prepare this submission to Manitoba Hydro.

This report summarizes some of our key concerns regarding the routing of the BP6/BP7 line based on the information we have available at this time and outlines our recommendations for proper and meaningful engagement for a transmission line project, including the BP6/BP7 project as well as future projects such as the Portage Area Capacity Enhancement (PACE) project.

1.2 Regulatory Process

1.2.1 Environmental Assessment

General process overview

The BP6/BP7 Project requires an environmental assessment as a Class 2 development according to Manitoba Regulation 164/88 (the Classes of Development Regulation) under *The Environment Act* (Manitoba). The environmental assessment (EA) must be submitted to Manitoba Conservation and Climate for approval, and the Project will require a licence under *The Environment Act* prior to the initiation of construction.

As described in Section 1(1) of *The Environment Act*, the purpose of the EA process is to "ensure that the environment is protected and maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for this and future generations". Section 1(1)(b) of *the Act* provides for the environmental assessment of projects which are likely to have significant effects on the environment.

As part of its environmental assessment, Manitoba Hydro identified and evaluated alternative routes for the Project in fall 2020 and plans to select the preferred route in March 2021. The environmental assessment report is anticipated to be filed for regulatory review in early 2021, with construction planned to start in 2022 if regulatory approval is received.

Key Milestones

February 18, 2021 – MMF participated in a community ranking meeting with Manitoba Hydro

February 25, 2021 – Manitoba Metis community concerns to be shared with Manitoba Hydro

March 2021 - preferred route selection

Early 2021 - environmental assessment report to be filed for regulatory review

2022 - construction planned to start if regulatory approval is received

The Route Selection Process

For the purposes of assessing the environmental impacts of a Class 2 development, Section 11(9) of *the Act* sets out requirements including an assessment of alternatives to the proposed development processes and locations. The process defined by Manitoba Hydro for assessing alternative routes and selecting the preferred route for the Project is summarized in Figure 1 below (Manitoba Hydro, 2021). Route selection falls within Manitoba Hydro's Site Selection and Environmental Assessment (SSEA) process, which includes:

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

As described during the Community Ranking Meeting on February 18, 2021, Manitoba Hydro is now at the Pick Preferred Route step in this process.

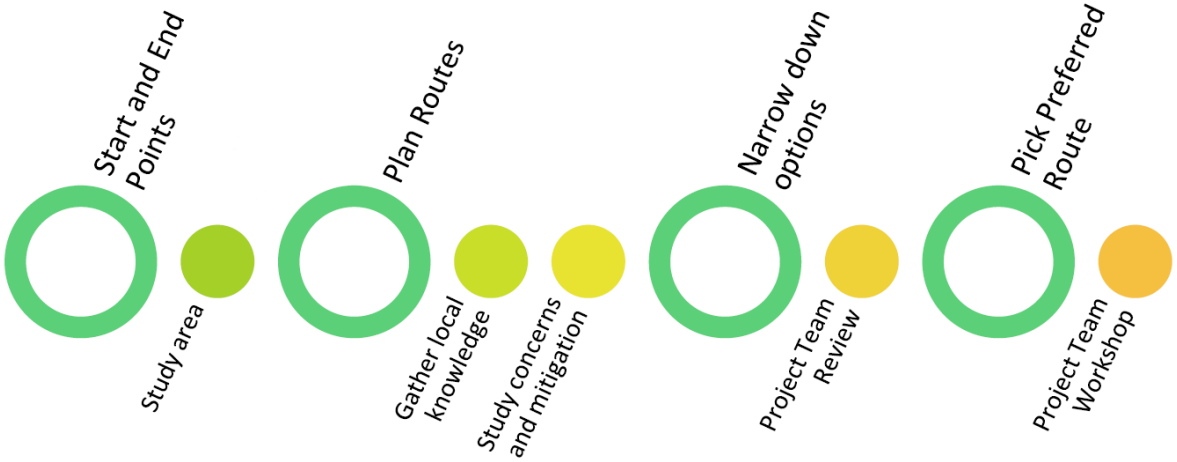


Figure 1. Manitoba Hydro Process for Route Selection

Environment Act Proposal for licensing

To obtain a Licence under *The Environment Act*, Manitoba Hydro must submit a complete Environment Act Proposal (EAP) to the Environmental Approvals Branch (EAB) of Manitoba Conservation and Climate. The EAP will consist of the following components (emphasis added):

- Cover Letter
- Environment Act Proposal Form
- Reports/Plans Supporting the Environment Act Proposal, including the Environmental Assessment Report. According to the Government of Manitoba's Environment Act Proposal Report Guidelines (March 2018), the EA Report should include the following sections:
    - Executive summary
    - Introduction and background
    - Description of proposed development, including construction, operation, maintenance, and decommissioning if applicable.
    - Description of existing environment in the project area, including **identification of Indigenous communities in the vicinity of the proposed development**. Existing environmental **information may come from sources including traditional ecological knowledge.**
    - Description of **environmental and human health effects of the proposed development, including potential impacts of the development on Indigenous communities**, including, but not necessarily limited to:
        - direct impacts on communities in the project area.
        - resource use, including hunting, fishing, trapping, gathering, etc.
        - cultural or traditional activities in the project area.
    - **Mitigation measures** to protect the environment and human health, and residual environmental effects.
    - **Follow-up plans, including monitoring and reporting**.
    - Conclusions
- Application Fee

The Government of Manitoba encourages proponents to consult with staff of the department, affected public, interested parties **and First Nation communities to identify issues and concerns prior to finalizing the EAP**, to allow for potential concerns to be addressed early in the process. The MMF assumes these guidelines are dated and that "First Nation" communities actually means "First Nation,

Métis or Inuit communities" and that it will be provided time and capacity funding to comment on the EAP.

After checking the EAP for completeness, the Government of Manitoba will place the EAP on the public registry and request public comments within a prescribed timeframe. A Technical Advisory Committee (TAC) consisting of provincial and federal government specialists will review the EAP and submit comments in parallel with the public review.

The EAB will then reviews all public and TAC comments on the EAP and may request additional information from Manitoba Hydro to address concerns. Guidelines may be completed for the proponent to prepare a full Environmental Impact Statement (EIS). If required, the EIS Guidelines and the EIS are also screened by the public and TAC.

If concerns warrant a public hearing, the Director of the EAB may recommend that the Minister request the Clean Environment Commission to hold a public hearing on the proposed development. Upon the Minister's request, the Commission would conduct a public hearing and provide advice and recommendations to the Minister based on evidence received during the hearing process. While the MMF does not necessarily assume that the BP6/BP7 will require a public hearing, we would expect that we would be provided the opportunity for capacity funding to participate should a hearing occur.

At the end of the environmental assessment process, a decision will be made by the Director of the EAB for Class 2 developments to either issue a licence with limits, terms, and conditions, or to refuse a licence. The MMF expects that we would be provided capacity funding to comment on these conditions.

1.3 Environmental Assessments and Manitoba Metis Federation Consultation

There is a natural convergence between the conduct of an environmental assessment process and the Crown's Duty to Consult and if necessary, accommodate Indigenous peoples for adverse effects to their rights (Bankes, 2009). Broadly, the environmental review process is often the only vehicle used by the Crown to identify and predict whether a proposed natural resources development project should proceed.

The Crown's Duty to Consult is triggered when the Crown, as represented by Canada and/or a Province, "has knowledge, real or constructive, of the potential existence of the Aboriginal right or title and contemplates conduct that might adversely affect" (Haida Nation v. British Columbia [Minister of Forests], 2004 SCC 73, [2004] 3 SCR 511, para. 35) that right. Consultation must always be conducted "through a meaningful process" and with "the intention of substantially addressing [Aboriginal] concerns" (Haida Nation v. British Columbia [Minister of Forests], 2004 SCC 73, [2004] 3 SCR 511, para. 42). "Consultation that excludes from the outset any form of accommodation would be meaningless" (Mikisew Cree First Nation v. Canada 2005, para. 54). The 'conduct' of the Crown that may result in a

negative effect to a Métis right, claim or interest includes decisions to approve the construction and operation of natural resource development projects, such as a transmission line.

The conduct of environmental assessment processes is underpinned by the notion that a rational scientific method provides the basis for their execution and that "in order to be credible, the [EA] process must be based on scientific objectives, modeling and experimentation, quantified impact predictions and hypothesis-testing" (Noble, 2010).

In Canada, the requirement for the conduct of an environmental assessment is codified within legislation, both federal and provincial across the country. However, legislation setting out the Crown's expectations on the requirements of the environmental assessment process, including scope, procedures, and methods, are not explicit with respect to the identification of adverse effects to Métis rights, claims or interests. Despite this lack of explicit guidelines, both federal and provincial regulatory authorities often rely on the results of the environmental assessment process as a resource to assist in predicting and managing adverse effects to Métis rights, claims or interests.

Consultation with the Manitoba Metis Federation, interwoven into the regulatory review process, can assist in the identification of impacts to Manitoba Métis rights, claims and interests and assist the Crown in its decision about whether a project should proceed. In the case of the EAP for the BP6/BP7 project, meaningful consultation with the Manitoba Metis Federation can also assist Manitoba Hydro in preparing mitigation measures, and follow-up plans, including monitoring.

2.0 Manitoba Métis Community

2.1 History and Identity

The Métis Nation—as a distinct Indigenous people—evolved out of relations between European men and First Nations women who were brought together as a result of the early fur trade in the Northwest. In the eighteenth century, both the Hudson Bay Company and the Northwest Company created a series of trading posts that stretched across the upper Great Lakes, through the western plains, and into the northern boreal forest. These posts and fur trade activities brought European and Indigenous peoples into contact. Inevitably, unions between European men—explorers, fur traders, and pioneers—and Indigenous women were consummated. The children of these families developed their own collective identity and political community so that "[w]thin a few generations, the descendants of these unions developed a culture distinct from their European and Indian forebears" and the Métis Nation was born—a new people, indigenous to the western territories *(Alberta (Aboriginal Affairs and Northern Development) v. Cunningham*, [2011] 2 SCR 670 at para. 5; 2008 MBPC *R. v. Goodon*, 59 at para. 25; *Manitoba Metis Federation Inc. v. Canada (Attorney General)*, [2013] 1 SCR 623 at para. 2).

The Métis led a mixed way of life. "In early times, the Métis were mostly nomadic. Later, they established permanent settlements centered on hunting, trading and agriculture" (*Alberta v. Cunningham*, at para. 5). The Métis were employed by both of the fur trades' major players, the Hudson's Bay and Northwest companies. By the early 19th century, they had become a major component of both firms' workforces. At

the same time, however, the Métis became extensively involved in the buffalo hunt. As a people, their economy was diverse; combining as it did, living off the land in the Aboriginal fashion with wage labour (*MMF Inc. v. Canada*, at para. 29).

It was on the Red River, in reaction to a new wave of European immigration, that the Métis Nation first came into its own. Since the early 1800s, the Manitoba Métis Community—as a part of the larger Métis Nation—has asserted itself as a distinct Indigenous collective with rights and interests in its Homeland. The Manitoba Métis Community shares a language (Michif), national symbols (infinity flags), culture (i.e., music, dance, dress, crafts), as well as a special relationship with its territory that is centered in Manitoba and extends beyond the present-day provincial boundaries.

The Manitoba Métis Community has been recognized by the courts as being a distinctive Indigenous community, with rights that are recognized and affirmed in section 35 of the *Constitution Act, 1982*. In *Goodon*, the Manitoba court held that:

The Métis community of Western Canada has its own distinctive identity […] the Métis created a large inter-related community that included numerous settlements located in present-day southwestern Manitoba, into Saskatchewan and including the northern Midwest United States. This area was one community […] The Métis community today in Manitoba is a well-organized and vibrant community (paras. 46-47; 52).

This proud independent Métis population constituted a historic rights-bearing community in present day Manitoba and beyond, which encompassed "all of the area within the present boundaries of southern Manitoba from the present-day City of Winnipeg and extending south to the United States" (*R. v. Goodon*, at para. 48).

The heart of the historic rights-bearing Métis community in southern Manitoba was the Red River Settlement; however, the Manitoba Métis Community also developed other settlements and relied on various locations along strategic fur trade routes. During the early part of the 19th century, these included various posts of varying size and scale spanning the Northwest Company and the Hudson Bay Company collection and distribution networks.

More specifically, in relation to the emergence of the Métis—as a distinct Aboriginal group in Manitoba—the Supreme Court of Canada wrote the following in the *MMF Inc. v. Canada* case:

[21] The story begins with the Aboriginal peoples who inhabited what is now the province of Manitoba—the Cree and other less populous nations. In the late 17th century, European adventurers and explorers passed through. The lands were claimed nominally by England which granted the Hudson's Bay Company, a company of fur traders' operation of out London, control over a vast territory called Rupert's Land, which included modern Manitoba. Aboriginal peoples continued to occupy the territory. In addition to the original First Nations, a new Aboriginal group, the Métis, arose—people descended from early unions between European adventurers and traders, and Aboriginal women. In the early days, the descendants of English-speaking parents were referred to as half-breeds, while those with French roots were called Métis.

[22] A large—by the standards of the time—settlement developed at the forks of the Red and Assiniboine Rivers on land granted to Lord Selkirk by the Hudson's Bay Company in 1811. By 1869, the settlement consisted of 12,000 people, under the governance of Hudson's Bay Company.

[23] In 1869, the Red River Settlement was a vibrant community, with a free enterprise system and established judicial and civic institutions, centred on the retail stores, hotels, trading undertakings and saloons of what is now downtown Winnipeg. The Métis were the dominant demographic group in the Settlement, comprising around 85 percent of the population [approximately 10,000 Métis], and held leadership positions in business, church and government.

The fur trade was vital to the ethnogenesis of the Métis and was active in Manitoba from at least the late 1770s, and numerous posts and outposts were established along cart trails and waterways throughout the province. These trails and waterways were crucial transportation networks for the fur trade (Jones 2014; Figure) and were the foundation of the Manitoba Métis Community's extensive use of the lands and waters throughout the province. In the early 20th century, the Manitoba Métis Community continued to significantly participate in the commercial fisheries and in trapping activities, which is well documented in Provincial government records.

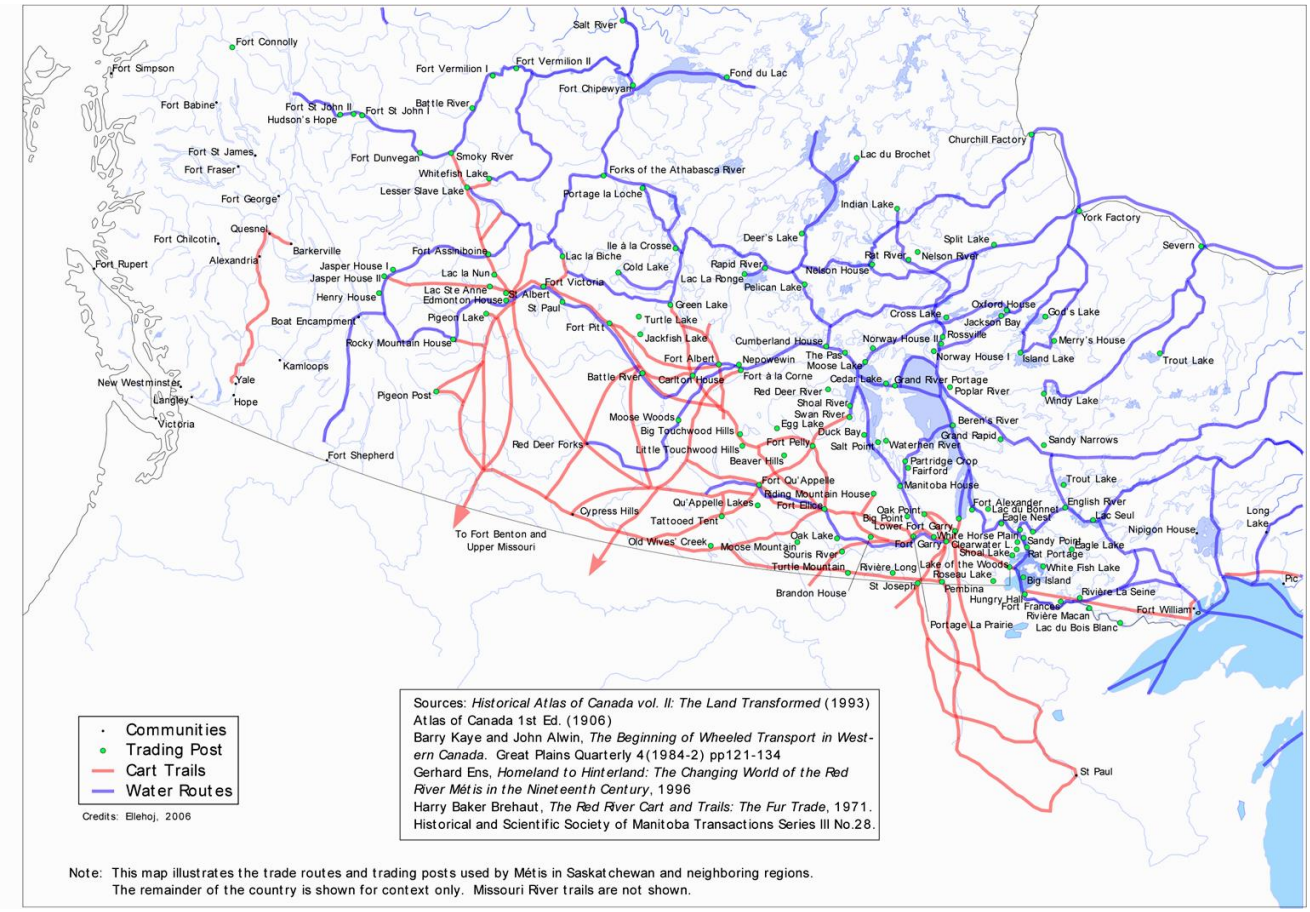


Figure 2. The Fur Trade Network: Routes and Posts Prior to 1870

2.2 Manitoba Metis Federation

The MMF is the democratically elected government of the Métis Nation's Manitoba Métis Community (Manitoba Métis Community). The MMF is duly authorized by the Citizens of the Manitoba Métis Community for the purposes of dealing with their collective Métis rights, claims, and interests, including conducting consultations and negotiating accommodations (as per MMF Resolution No. 8). While the MMF was initially formed in 1967, its origins lie in the 18th century with the birth of the Manitoba Métis Community and in the legal and political structures that developed with it. Since the birth of the Métis people in the Red River Valley, the Manitoba Métis Community—as a part of the larger Métis Nation—has asserted and exercised its inherent right of self-government. The expression of this self-government right has changed over time to continue to meet the needs of the Manitoba Métis Community. For the last 50 years, the MMF has represented the Manitoba Métis Community at the provincial and national levels.

During this same period, the MMF has built a sophisticated, democratic, and effective Métis governance structure that represents the Manitoba Métis Community at the local, regional, and provincial levels throughout Manitoba. The MMF was created to be the self-government representative of the Manitoba Métis Community—as reflected in the Preamble of the MMF's Constitution (also known as the MMF Bylaws):

WHEREAS, the Manitoba Metis Federation Inc. has been created to be the democratic and self-governing representative body of the Manitoba Métis Community.

In addition, the purpose "to provide responsible and accountable governance on behalf of the Manitoba Métis Community using the constitutional authorities delegated by its citizens" is embedded within the MMF's objectives, as set out in the MMF Constitution as follows:

I. To promote and instill pride in the history and culture of the Métis people.

II. To educate members with respect to their legal, political, social and other rights.

III. To promote the participation and representation of the Métis people in key political and economic bodies and organizations.

IV. To promote the political, legal, social and economic interests and rights of its citizens.

V. To provide responsible and accountable governance on behalf of the Manitoba Métis community using the constitutional authorities delegated by its members.

The MMF is organized and operated based on centralized democratic principles, some key aspects of which are described below.

President: The President is the Chief Executive Officer, leader, and spokesperson of the MMF. The President is elected in a province-wide ballot-box election every four years and is responsible for overseeing the day-to-day operations of the MMF.

Board of Directors: The MMF Board of Directors, or MMF Cabinet leads, manages, and guides the policies, objectives, and strategic direction of the MMF and its subsidiaries. All 23 individuals are democratically elected by the citizens.

Regions: The MMF is organized into seven regional associations or "Regions" throughout the province (Figure 3.): The Southeast Region, the Winnipeg Region, the Southwest Region, the Interlake Region, the Northwest Region, the Pas Region, and the Thompson Region. Each Region is administered by a Vice-President and two executive officers, all of whom sit on the MMF's Cabinet. Each Region has an office which delivers programs and services to their specific geographic area.

Locals: Within each Region are various area-specific "Locals" which are administered by a chairperson, a vice-chairperson and a secretary-treasurer. Locals must have at least nine citizens and meet at least four times a year to remain active. There are approximately 140 MMF Locals across Manitoba.

While the MMF has created an effective governance structure to represent the Manitoba Métis Community at the local, regional, and provincial levels, it is important to bear in mind that there is only one large, geographically dispersed, Manitoba Métis Community. Citizens of the Manitoba Métis Community live, work and exercise their s. 35 rights throughout and beyond the province of Manitoba.

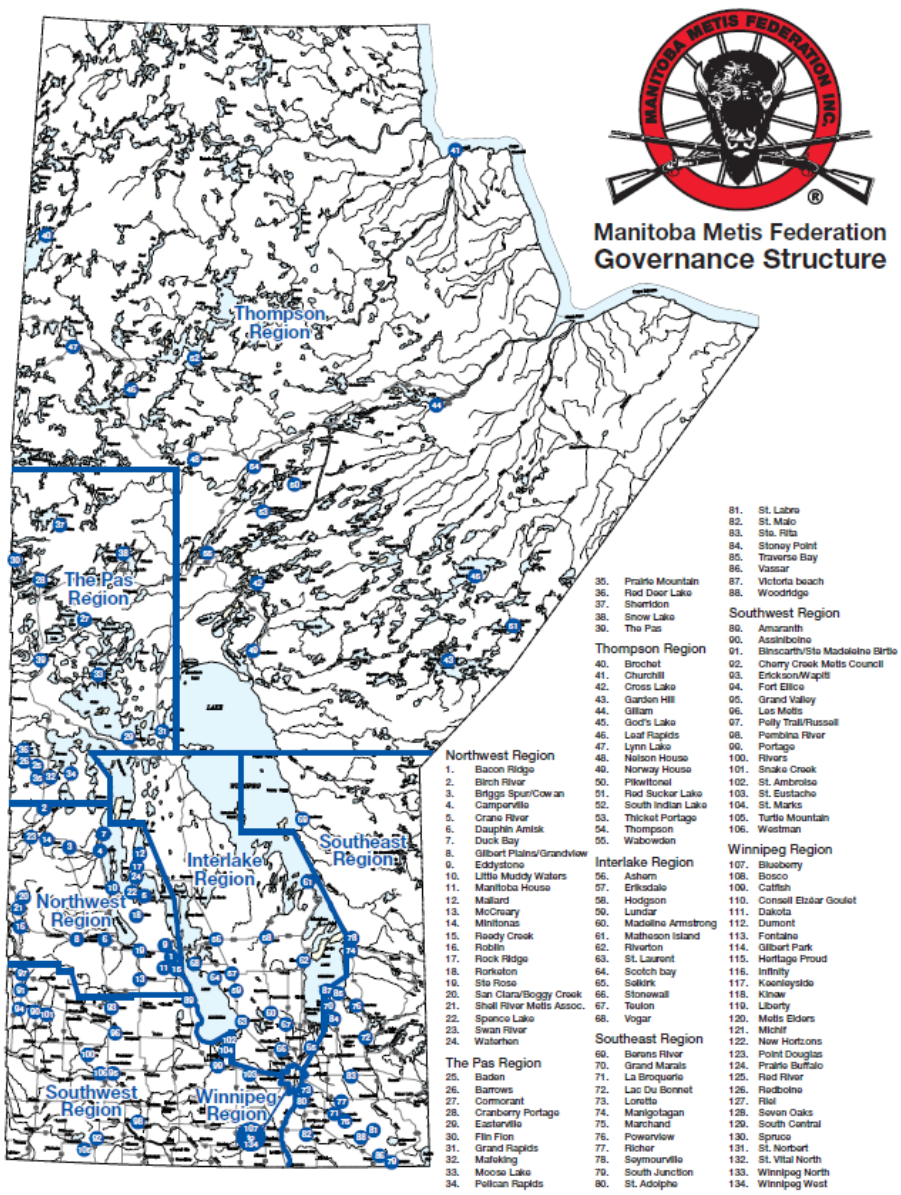


Figure 3. Manitoba Metis Federation (MMF) Regions

2.3 MMF Resolution No. 8

Among its many responsibilities, the MMF is authorized to protect the Aboriginal rights, claims, and interests of the Métis Nation's Manitoba Métis Community, including as related to harvesting, traditional culture, and economic development, among others.

In 2007, the MMF Annual General Assembly unanimously adopted Resolution No. 8 that sets out the framework for engagement, consultation, and accommodation to be followed by Federal and Provincial governments, industry, and others when making decisions and developing plans and projects that may impact the Manitoba Métis Community. Under MMF Resolution No. 8, direction has been provided by the Manitoba Métis Community

for the MMF Home Office to take the lead and be the main contact on all consultation undertaken with the Manitoba Métis Community. Resolution No. 8 reads, in part that:

> *…this assembly continue[s] to give the direction to the Provincial Home Office to take the lead and be the main contact on all consultations affecting the Métis community and to work closely with the Regions and Locals to ensure governments and industry abide by environmental and constitutional obligations to the Métis…*

The MMF Home Office works closely with the Regions and Locals to ensure the rights, interests, and perspective of the Manitoba Métis Community are effectively represented in matters related to consultation and accommodation.

Resolution No. 8 has five phases:

Phase 1: Notice and Response

Phase 2: Funding and Capacity

Phase 3: Engagement or Consultation

Phase 4: Partnership and Accommodation

Phase 5: Implementation

Each phase is an integral part of the Resolution No. 8 framework and proceeds logically through the stages of consultation.

2.4 Manitoba Métis Community Rights, Claims, and Interests

The Manitoba Métis Community possesses Aboriginal rights, including pre-existing Aboriginal collective rights and interests in lands recognized and affirmed by section 35 of the *Constitution Act, 1982*, throughout Manitoba. The Manitoba court recognized these pre-existing, collectively held Métis rights in *R. v. Goodon* (at paras. 58; 72):

> *I conclude that there remains a contemporary community in southwest Manitoba that continues many of the traditional practices and customs of the Métis people.*
>
> *I have determined that the rights-bearing community is an area of southwestern Manitoba that includes the City of Winnipeg south to the U.S. border and west to the Saskatchewan border.*

As affirmed by the Supreme Court of Canada, such rights are "recognize[d] as part of the special aboriginal relationship to the land" (*R. v. Powley,* 2003 SCC 43, at para. 50) and are grounded on a "communal Aboriginal interest in the land that is integral to the nature of the Métis distinctive community and their relationship to the land" (*MMF Inc. v. Canada*, at para. 5). Importantly, courts have also recognized that Métis harvesting rights may not be limited to Unoccupied Crown Lands (*R. v. Kelley*, 2007 ABQB 41, para. 65).

The Crown, as represented by the Manitoba government, has recognized some aspects of the Manitoba Métis Community's harvesting rights through a negotiated agreement: The *MMF-Manitoba Points of Agreement on*

Métis Harvesting (2012) (the *MMF-Manitoba Harvesting Agreement*). This Agreement was signed at the MMF's 44th Annual General Assembly and "recognizes that collectively-held Métis Harvesting Rights, within the meaning of s. 35 of the *Constitution Act, 1982*, exist within the [Recognized Métis Harvesting Zone], and that these rights may be exercised by Métis Rights Holders consistent with Métis customs, practices and traditions…" (*MMF-Manitoba Harvesting Agreement*, section 1). In particular, the *MMF-Manitoba Harvesting Agreement* recognizes that Métis rights include "hunting, trapping, fishing and gathering for food and domestic use, including for social and ceremonial purposes and for greater certainty, Métis harvesting includes the harvest of timber for domestic purposes" throughout an area spanning approximately 169,584 km² (the "Métis Recognized Harvesting Area") (*MMF-Manitoba Harvesting Agreement*, section 2; Figure). The MMF further asserts rights and interests beyond this area, which require consultation and accommodation as well.

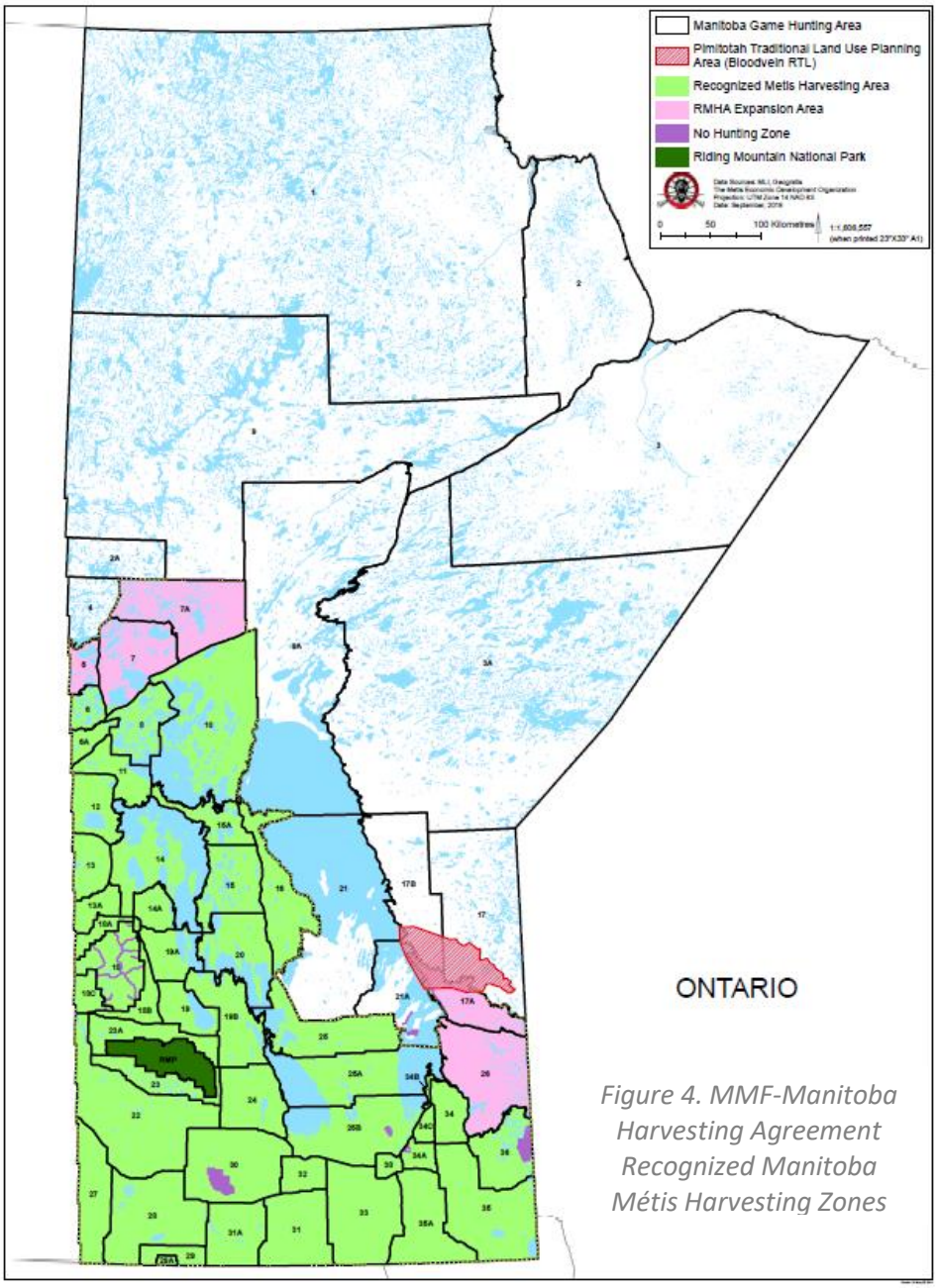


Figure 4. MMF-Manitoba Harvesting Agreement Recognized Manitoba Métis Harvesting Zones

Beyond those rights already established through litigation and recognized by agreements, the Manitoba Métis Community claims commercial and trade-related rights. Courts have noted that Métis claims to commercial rights remain outstanding (*R. v. Kelley* at para. 65). These claims are strong and well-founded in the historical record and the customs, practices, and traditions of the Manitoba Métis Community, and it is incumbent on the Crown and Proponents to take them seriously.

As noted above, the Manitoba Métis Community has its roots in the western fur trade (*R. v. Blais*, 2003 SCC 44 at para. 9 [*Blais*]; *R. v. Goodon* at para. 25). The Métis in Manitoba are descendants of early unions between Aboriginal women and European traders (*MMF Inc. v. Canada* at para. 21). As a distinct Métis culture developed, the Métis took up trade as a key aspect of their way of life (*R. v. Powley* at para. 10). Many Métis became independent traders, acting as middlemen between First Nations and Europeans (*R. v. Goodon* at para. 30). Others ensured their subsistence and prosperity by trading resources they themselves hunted and gathered (*R. v. Goodon*

at para. 31, 33, & 71). By the mid-19th century, the Métis in Manitoba had developed the collective feeling that "the soil, the trade and the Government of the country [were] their birth rights." (*R. v. Goodon* at para. 69(f)). Commerce and trade are, and always have been, integral to the distinctive culture of the Manitoba Métis Community. Today, the Manitoba Métis have an Aboriginal, constitutionally protected right to continue this trading tradition in modern ways to ensure that their distinct community will not only survive, but also flourish.

Unlike First Nations in Manitoba, whose commercial rights were converted and modified by treaties and the *Natural Resources Transfer Agreement* (*NRTA)* (*R. v. Horseman*, [1990] 1 SCR 901), the Métis' pre-existing customs, practices, and traditions—including as they relate to commerce and trade—were not affected by the *NRTA* (*R. v. Blais*) and continue to exist and be protected as Aboriginal rights. First Nations' treaty rights in Manitoba are, for example, inherently limited by the Crown's power to take up lands (*Mikisew Cree First Nation v Canada* (*Minister of Canadian Heritage*), [2005] 3 SCR 388 at para 56). Métis rights, in contrast, are not tempered by the "taking up" clauses found in historic treaties with First Nations. Métis rights must be respected as they are, distinct from First Nations' rights and unmodified by legislation or agreements.

In addition to the abovementioned rights to land use that preserve the Métis culture and way of life, the MMC has other outstanding land related claims and interests with respect to lands. Specifically, these claims relate to the federal Crown's constitutional promise to all Aboriginal peoples, including Manitoba Métis, as set out in the Order of Her Majesty in Council Admitting Rupert's Land and the North-Western Territory into the Union (the "1870 Order") which provides

that, upon the transference of the territories in question to the Canadian Government, the claims of the Indian tribes to compensation for lands required for purposes of settlement will be considered and settled in conformity with the equitable principles which have uniformly governed the British Crown in its dealings with the aborigines.

The manner in which the federal Crown implemented this constitutional promise owing to the Manitoba Métis—through the *Dominion Lands Act* and the resulting Métis scrip system—effectively defeated the purpose of the commitment. Accordingly, the MMF claims these federal Crown actions constituted a breach of the honour of the Crown, which demand negotiations and just settlement outside of the 'old postage stamp province' within Manitoba as well.

The MMF also claims that the *Dominion Lands Act* and the resulting Métis scrip system were incapable of extinguishing collectively held Métis title in specific locations where the Manitoba Métis Community is able to meet the legal test for Aboriginal title as set out by the Supreme Court of Canada. These areas in the province, which the Manitoba Métis exclusively occupied—as an Indigenous people—prior to the assertion of sovereignty, establish a pre-existing Métis ownership interest in these lands.

The MMC also has an outstanding legal claim within what was the 'old postage stamp province' of Manitoba relating to the 1.4 million acres of land promised to the children of the Métis living in the Red River Valley, as enshrined in s. 31 of the *Manitoba Act, 1870* (*MMF Inc. v. Canada* at para 154).

This land promised was a nation-building, constitutional compact that was meant to secure a "lasting place in the new province [of Manitoba]" for future generations of the Métis people (*MMF Inc. v. Canada* at para 5). This "lasting place" was to have been achieved by providing the Manitoba Métis Community a "head start" in securing lands in the heart of the new province (*MMF Inc. v. Canada* at paras 5-6).

Instead, the federal Crown was not diligent in its implementation of s. 31, which effectively defeated the purpose of the constitutional compact.

In March 2013, the Supreme Court of Canada found that the federal Crown failed to diligently and purposefully implement the Métis land grand provision set out in s. 31 of the *Manitoba Act, 1870* (*MMF Inc. v. Canada* at para 154). This constituted a breach of the honour of the Crown. In arriving at this legal conclusion, the Court wrote:

What is at issue is a constitutional grievance going back almost a century and a half. So long as the issue remains outstanding, the goal of reconciliation and constitutional harmony, recognized in s. 35 of the Constitution Act, 1982 and underlying s. 31 of the Manitoba Act, remains unachieved. The ongoing rift in the national fabric that s. 31 was adopted to cure remains unremedied. The unfinished business of reconciliation of the Métis people with Canadian sovereignty is a matter of national and constitutional import. (*MMF Inc. v. Canada* at para 140)

This constitutional breach is an outstanding Métis claim flowing from a judicially recognized common law obligation which burdens the federal Crown (*MMF Inc. v. Canada* at paras 156; 212). It can only be resolved through good faith negotiations and a just settlement with the MMF (see for example: *R v Sparrow*, [1990] 1 SCR 1075 at paras 51–53; *R v Van der Peet*, [1996] 2 SCR 507 at paras 229, 253; *Haida* at para 20; *Carrier Sekani* at para 32). Lands both within the 'old postage stamp province' as well as in other parts of Manitoba—since little Crown lands remain within the 'old postage stamp province'—may need to be considered as part of any future negotiations and settlement in fulfillment of the promise of 1.4 million acres, together with appropriate compensation.

On November 15, 2016, the MMF and Canada concluded a *Framework Agreement for Advancing Reconciliation* (the "Framework Agreement"). The Framework Agreement established a negotiation process aimed, among other things, at finding a shared solution regarding the Supreme Court of Canada's decision in *MMF Inc. v. Canada* and advancing the process of reconciliation between the Crown and the Manitoba Métis Community. It provides for negotiations on various topics including, but not limited to, the "quantum, selection and management of potential settlement lands." Negotiations under the Framework Agreement are active and ongoing.

3.0 Métis Specific Concerns

3.1 BP6/BP7 Routing Input

During the Community Ranking Meeting with Manitoba Hydro on February 18, 2021, MMF representatives conveyed that Route A is the most preferred because the highway is already there so it is less invasive and is most direct, whereas Route D is the least preferred because of the indirectness of the line and more potential for impact.

3.2 Potential for Impact to Métis Rights, Claims and Interests

The MMF has a database of Métis Knowledge features that were recorded by the Manitoba Métis Community through past studies. While that data was not collected specifically to inform the BP6/BP7 Transmission Line Replacement, it is a useful starting point to begin to understand the Community's rights, interests, and values in the Project area.

Our Métis Knowledge studies are conducted using a rigorous, legally defensible, methodology known as land use and occupancy mapping. These studies involve a desktop mapping exercise with individual Métis citizens and an interview that asks the land users to share their oral history and give their opinions on a specific project development. The data we collect is not comprehensive of all Métis Knowledge in an area. This is because we have not yet had the capacity to interview the entire population of Métis land users and because each interview is only a couple hours long and it is impossible to map each person's entire lifetime of knowledge in that time frame. For this reason, our database should be thought of as a snapshot of some Métis citizens knowledge in the area.

We have assessed our data and prepared a map in Figure 5 which summarizes previously collected land use, occupancy, and ecological knowledge features in the BP6/BP7 project area. There were ten citizens who had previously mapped some of their knowledge in the area. Collectively these participants recorded over 80 features in the areas overlapping or immediately surrounding the proposed routes.

The Métis Knowledge near the BP6/BP7 project routes has been summarized in the following categories:

- Reported change to water quality (1 participant)
- Fishing – walleye, pike, carp, mariah, sturgeon, catfish (8 participants)
- Hunting – grouse, waterfowl, turkey, deer (5 participants)
- Ecological knowledge – deer birthing area, plant gathering, deer hunting (1 participant)
- Historic trapping (3 participants)

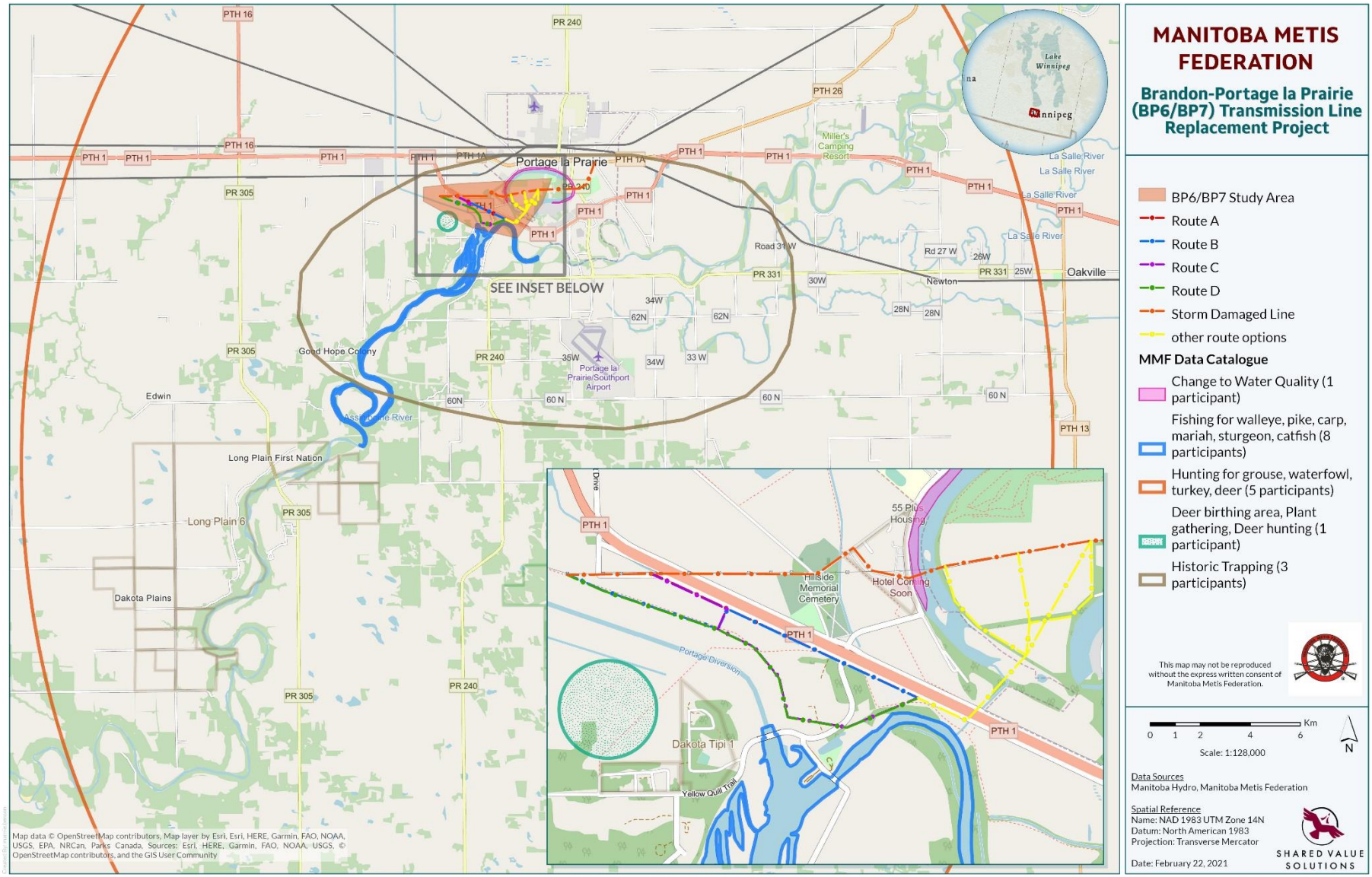


Figure 5. Previously Mapped Manitoba Metis Community Knowledge in the BP6/BP7 Project Area

3.3 Previously Recorded Métis Concerns

Because Manitoba Hydro only gave the MMF one week to put forward concerns with the BP6/BP7 route selection, we were not able to engage our citizens in any community meetings or primary research. However, we have looked to the concerns that the community voiced around previous transmission line developments and compiled those here for Manitoba Hydro's consideration in the route selection process.

The MMF has previously commissioned the following studies:

- Métis Land Use and Occupancy Study as input to the Manitoba to Minnesota Transmission Line Project by Calliou Group in 2017
- Métis Land Use and Occupancy Study as input to the Birtle Transmission Project by MNP in 2017
- Métis Land Occupancy and Use Study as input to the Bipole III Transmission Line Project by SVS in 2015.

We have summarized the concerns from these reports which have applicability for any transmission line development below.

3.3.1 Concerns Identified Through the MMTP Métis Land Use and Occupancy Study

Concerns about impacts to Métis rights, claims and interests.

The Manitoba Minnesota transmission project (MMTP) falls on portions of the Métis homeland in southern Manitoba. This report describes the history of the Manitoba Métis community in southern Manitoba, including reference to the Goodon decision where the court found a historic, rights-bearing Métis community to have existed in "all of the area within the present boundaries of southern Manitoba from the present-day City of Winnipeg and extending south to the United States and northwest to the Province of Saskatchewan" (para.48).

Concerns about Métis Valued Components being considered in the process.

Based on our initial review of the Project Scoping Document for the Manitoba Minnesota Transmission Line Project, we felt that it did not adequately describe the valued components (VCs) necessary to fully identify potential environmental effects to Métis rights, claims and interests. The MMF worked with our legal counsel and consultants to define potential Métis Specific Interests (MSIs), including VCs related to Métis rights and interests and then consulted the Manitoba Métis community about the MSIs. We decided that "Harvesting" and "Available Lands" would be measurable, have available information and potentially be affected by the Project.

In 2017, Calliou Group examined the potential effects of the MMTP on lands available for Métis use and harvesting using these two Métis Valued Components as a framework to assess the baseline data we collected. They conducted 47 in-person surveys and 121 paper surveys.

Concerns that contiguous Unoccupied Crown Land will not be maintained.

The report goes on to explain how important unoccupied land is to the Manitoba Métis as it represents areas where they have access to exercise their Métis rights that does not require permission. On all other land types, the exercise of Métis rights can be restricted from time to time under certain circumstances.

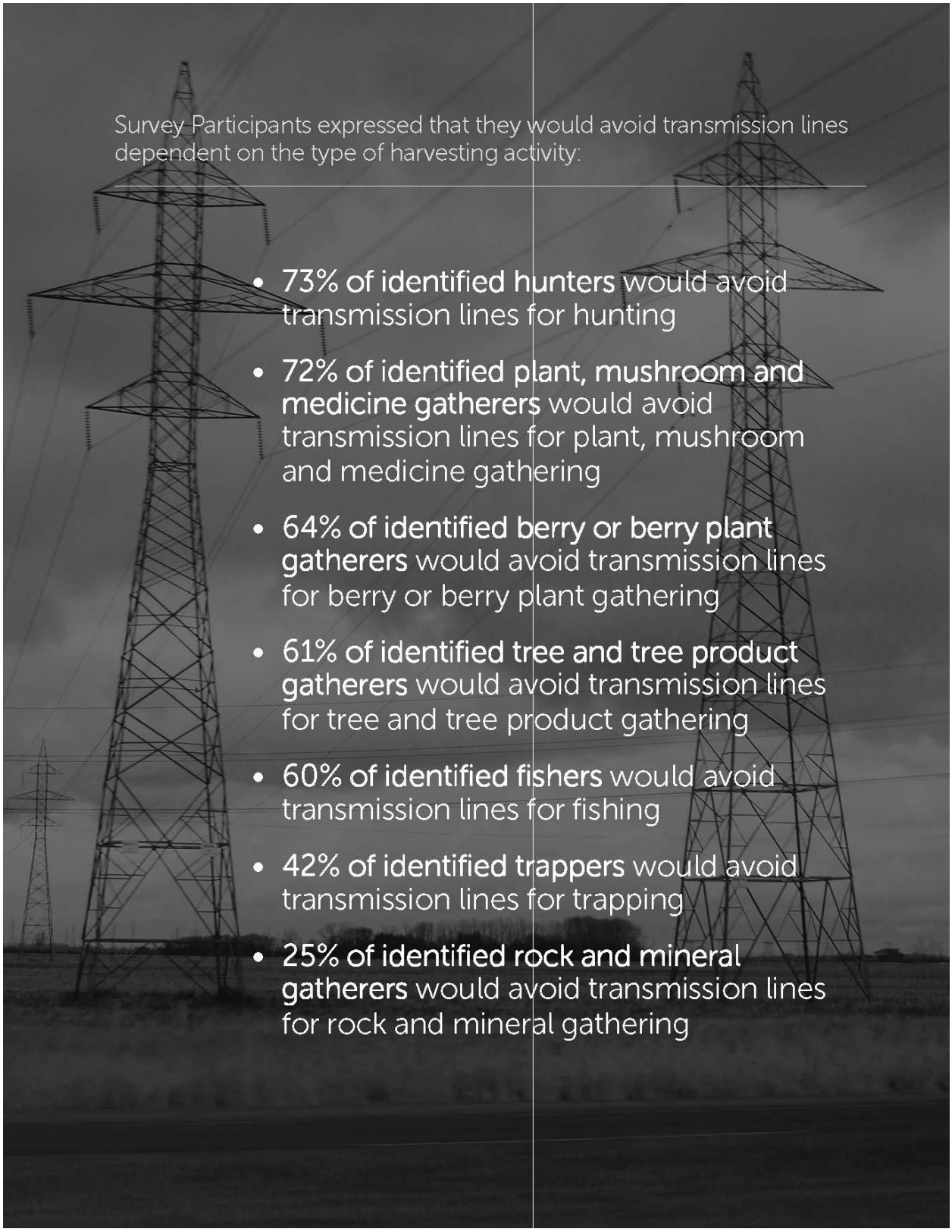
The study pointed out that the Manitoba Minnesota Transmission Project would result in a further reduction of the Manitoba Métis Community's ability to access unoccupied Crown land.

The Manitoba Métis Community would have the same concerns with the potential for loss of access to Unoccupied Crown Land with the BP6/BP7 projects and would request that route selection take in to account the objective to maintain as much contiguous Unoccupied Crown Land as possible.

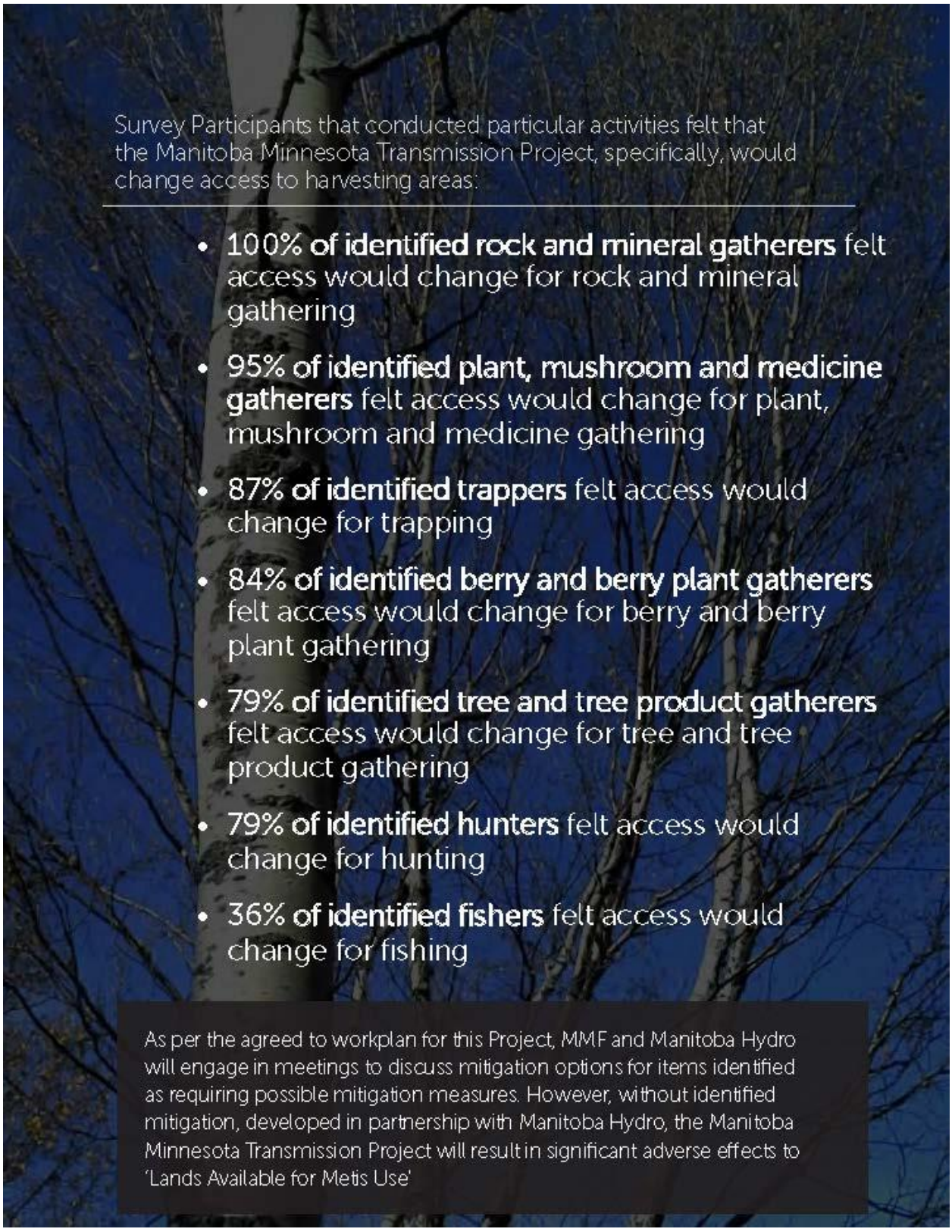
Potential for impact to Lands for Métis Use

Through the survey conducted for this study, the Métis respondents reported that they would avoid transmission lines for future harvesting. They also said that they felt their access to lands for their harvesting would be affected. These findings are summarized in more detail on the next two pages.

Effective engagement on the BP6/BP7 project would include providing the MMF an opportunity to assess whether the Manitoba Métis Community who use the land near the BP6/BP7 project have similar or different opinions regarding transmission line developments and the potential for adverse effects.



Calliou Group (2017). Metis Land Use and Occupancy Study: Manitoba to Minnesota Transmission Line Project



Calliou Group (2017). Metis Land Use and Occupancy Study: Manitoba to Minnesota Transmission Line Project

3.3.2 Concerns Identified Through the Birtle Métis Land Use and Occupancy Study

The Métis Land Use and Occupancy Study completed by MNP in 2017 includes information related to Métis land use and connection to the Ste. Madeleine site and area, Land Available for Métis Use, and Harvesting in the vicinity of the Birtle Transmission Line Project. This study involved seven interviews with Manitoba Métis citizens and a focus group with 30 Métis citizens and political representatives which included dissemination of surveys, 16 of which were completed and returned.

Potential changes to wildlife habitat and the ability harvest in the area.

The participants in this study indicated several concerns related to the transmission line development largely having to do with the potential for change to wildlife habitat and to their ability to harvest. Some participants noted that the Birtle study area had just begun to be rehabilitated from previous development and they worried that the transmission line would disturb the wildlife that had returned to the area. One Manitoba Métis citizen who participated in the study explained:

> *"[t]he area is starting to be re-habitated by animals again […] [i]t's going to affect the plant life. It's going to affect the animal life and the habitat. It's going to affect the water."*

Cumulative effects of development on the ability to harvest.

Another participant discussed the cumulative effects they have experienced:

> *"[t]hat is what happened to the environment – remember where people used to hunt, they can't hunt anymore because of those bulldozers and all that … knocked down bushes; built new roads and there is no wildlife there anymore."*

Similar concerns would be applicable for the BP6/BP7 transmission line project. Though there was an existing transmission line, the area was naturalized again to a certain degree and will be disturbed again in the construction of the line. Manitoba Hydro should also examine and address the cumulative effects of this transmission line development on the Manitoba Métis community.

3.3.3 Concerns Identified through the Bipole III Métis Land Occupancy and Use Study

A Métis Traditional Knowledge and Land Use Study (TKLUS) (Larcombe, 2012) was first commissioned and completed by the MMF with funding from Manitoba Hydro to identify Métis rights and interests that would potentially be impacted by the Bipole III transmission line project. The findings of the TLUKS, which were derived from 735 mail-out surveys and 49 in-person map biography and semi-structured interviews, concluded that there was extensive traditional use in the Bipole III study area. Much of this use was concentrated on the Breadbasket Region of Manitoba.

Shared Value Solutions' (SVS) built on the initial TLUKS by conducting more focused, representative research specific to Métis people who use the features, areas, activities, or facilities within the Breadbasket Region. They completed 58 desktop mapping interviews and 12 follow up field interviews with a sub-sample of the participants. These results were reported on in the 2015 Métis Land Occupancy and Use Study.

Numerous concerns related to transmission line project impacts.

The Manitoba Métis citizens who participated in the 2015 study had many concerns regarding the transmission line development. The quotes from the participants and summary that accompanies detailing these concerns is chapters long in that report. However, some of the main concerns identified include the following:

- Aquatic harvesting and water quality
- Chemical spraying
- Human population increase pressures on harvesting
- Impacts to animal health and habitat
- Sensitive Habitat such as a swamp
- Access to historic and culturally important harvesting areas and impacts on gathering berries
- Economic impacts
- Effects on commercial trapping
- Wood harvesting impacts
- Challenges presented by needing to change harvesting locations
- Cultural impacts
- Changes to the landscape and foreign objects
- Aesthetic and visual concerns
- Human health impacts and noise concerns
- Safety

Fears and psycho-social concerns

This is an example of a direct quote from one of the study participants:

> *"We had power lines in the back there. And we never liked to pick berries. You could always hear, and everybody always told us the people who lived in our house along there, none of them ever had any kids. It was because of the hydro lines they said, eh? So who knows whether it was or not, but all those things like that stay in mind, and when I pick berries, I didn't like picking near the hydro lines either. It was just the, they were ugly to look at. They don't represent the sacred, like, peaceful area to gather our stuff. I would never go pick by the hydro lines or hang out. And now they've got a snow route going right down the highway line, hydro lines."*

This quote demonstrates some of the fears and uncertainties that the Manitoba Métis community holds about transmission line developments in general. By consulting with the MMF meaningfully on the BP6/BP7 project, Manitoba Hydro will have the opportunity to understand and address these sorts of concerns directly as they did with the Bipole III project.

Concerns with the administration of monitoring programs.

Several participants in this study suggested that there was an opportunity for Métis citizens to support with 'boots on the ground' monitoring. There were concerns with monitoring programs that are led by people who do not know the area well as described in this quote from a participant:

> *"And that's how it should be, like some guy sitting in the office in Winnipeg, at Portage and Main, should [not] be making the calls about what's happening right here in our backyard. There should be somebody locally, no matter if there's one from each town, one each district, but there should be somebody there doing the monitoring."*

The MMF used the study results to identify Environmentally Sensitive Sites (ESS) that required protection during construction, operation, and maintenance of the Bipole III. Additional mitigation, offsetting, or accommodation measures for the ESS were recommended.

Manitoba Hydro engaged the MMF to discuss these concerns and adjust its Environmental Protection Plans (EPP) based on this input in a series of collaborative workshops, meetings, and communications with the MMF. The MMF would request a similar process be undertaken for the BP6/BP7 process.

4.0 Conclusion and Recommendations

4.1 Conclusions

Through an assessment of our existing land use and occupancy database, we found that Métis people are actively exercising their rights in the BP6/BP7 area. The presence of 80 existing Métis Knowledge features in the general project area indicates the potential for the Manitoba Métis Community to have additional specific knowledge to share about the route alternatives if given the opportunity. We would also like to engage Métis citizens for additional project specific information which can be used to inform Manitoba Hydro's full environmental assessment and EAP, construction and future operations of the line.

The presence of these 80 existing features near the BP6/BP7 project area, from past studies that were not focused on this project specifically, is evidence of the potential for impact to the Métis way of life from the BP6/BP7 project. Today, Métis have Constitutionally protected rights to harvest, and any impact on these rights needs to be adequately and appropriately assessed and, if necessary, accommodated and mitigated for.

It is in the context of these conclusions that we provide a set of recommendations related to the current BP6/BP7 route selection process, recommendations for MMF's engagement and consultation in the BP6/BP7 going forward, and recommendations that may guide MMF's engagement and consultation on future projects such as the Portage Area Capacity Enhancement (PACE) project.

4.2 Recommendations

The following are recommendations regarding the BP6/BP7 route selection:

Recommendation 1: Ideally, the route selection process would be paused so that the MMF may meaningfully assess whether the Manitoba Métis Community who uses the land near the BP6/BP7 project have concerns or input on the route alternatives and to help us more effectively understand any potential adverse effects. This would involve a community meeting at the least, and most ideally, allowing us the time to complete our interviews with local Métis citizens before the route is decided upon.

Recommendation 2: In the absence of input from the Manitoba Métis Community, we recommend that Manitoba Hydro use the precautionary principle and assume all the same concerns are held as have been identified in past transmission line projects to inform its route selection process. We request Manitoba Hydro's explanation of how it took these concerns into consideration in route selection.

Recommendation 3: In the absence of input from the Manitoba Métis Community and the chance for MMF staff to complete an assessment, we recommend that Manitoba Hydro use the precautionary principle and assume the same Métis Valued Components for the BP6/BP7 as have been identified in past transmission line projects to inform its route selection process. These are "Harvesting" and "Available Lands". We request Manitoba Hydro's explanation of how it took these VCs in to consideration in route selection.

Recommendation 4: During the Community Ranking Meeting on February 18, 2021, MMF representatives conveyed that Route A is the most preferred because the highway is already there so it is less invasive and is most direct, whereas Route D is the least preferred because of the indirectness of the line and more potential for impact. We request a written explanation from Manitoba Hydro describing how it considered this input in its decision-making on the route.

Recommendation 5: The MMF would request that route selection take in to account its objective to maintain as much contiguous Unoccupied Crown Land as possible.

The following are recommendations regarding ongoing MMF engagement on the BP6/BP7 Project:

Recommendation 6: Although MMF and Manitoba Hydro have not finalized an agreement to fund interviews with Métis citizens in advance of selection of the preferred route, the interviews should still be completed for our traditional ecological knowledge, land use and rights-based activities within the Project area to inform the environmental assessment including the identification of potential effects and appropriate mitigation measures.

Recommendation 7: Although the MMF and Manitoba Hydro have not finalized an agreement to fund community meetings in advance of the selection of the preferred route, community

engagement sessions should still be completed. By consulting with the Manitoba Métis Community meaningfully on the BP6/BP7 project, Manitoba Hydro will have the opportunity to understand and address concerns directly and will gain additional information to inform its environmental assessment.

Recommendation 8: While, in the case of BP6/BP7, there was an existing transmission line, the area was naturalized again to a certain degree and will be disturbed again in the construction of the line. Manitoba Hydro should examine and address the cumulative effects of this transmission line development on the Manitoba Métis community in its environmental assessment.

Recommendation 9: The MMF should be engaged by Manitoba Hydro in the mitigation planning process for BP6/BP7. This would focus on mitigations to address the baseline data that is mapped during Métis Knowledge and land use interviews.

Recommendation 10: The Government of Manitoba encourages consultation with First Nation, Métis or Inuit communities to identify issues and concerns prior to finalizing the EAP, to allow for potential concerns to be addressed early in the process. For the MMF to be adequately and meaningfully consulted, the MMF should be provided the time and capacity funding necessary to review and comment on the EAP and/or any proposed EIS guidelines for the Project should the Project require an EIS.

Recommendation 11: While the MMF does not necessarily assume that the BP6/BP7 will require a public hearing, we would expect that we would be provided the opportunity for capacity funding to participate should a hearing occur.

Recommendation 12: At the end of the environmental assessment process, a decision will be made by the Director of the EAB to either issue a licence with limits, terms, and conditions, or to refuse a licence for the Project. The MMF expects that we would be provided capacity funding to comment on these conditions.

Recommendation 13: Métis citizens should be included in any environmental monitoring programs for the Project. The MMF has invested in capacity building and is in the process of providing training to Métis citizens on environmental monitoring techniques that are relevant to this and other future transmission line projects (e.g., surface water quality, wetland health, wildlife, species at risk).

The following are recommendations regarding MMF engagement and consultation on future projects such as the Portage Area Capacity Enhancement (PACE) project:

Recommendation 14: In the short term, the MMF requests Manitoba Hydro's understanding that we do not have an Energy Liaison in place. The MMF simply does not have the 'person power' to be as responsive as we may have been on some previous projects and so additional time should be built into Manitoba Hydro's engagement timelines to allow for our responses.

Recommendation 15: Manitoba Hydro should provide initial capacity funding to support the MMF's involvement in contribution agreement negotiations. While the MMF has the goal of building its internal capacity to respond to energy files, we have a gap in this area currently. Even when a new staff person is hired, they will take time to build their capacity; we rely on our legal advisors and consultants to support us in this capacity development process. Even after our internal capacity is built, there will be times that our staff's overall workload is too high to be responsive enough to projects with short regulatory timelines. At these times, the MMF may need to rely on its legal advisors and consultants for support so that we do not miss opportunities for engagement. Doing so does not reduce the MMF's capacity, but rather increases it. The MMF's capacity funding requests will be reasonable and the intended use of capacity funding for the MMF's negotiations in contribution agreements will be laid out transparently to Manitoba Hydro. The MMF requests Manitoba Hydro's understanding that capacity building may look different at the MMF than how it thinks about it. Providing initial capacity funding will help ensure timely negotiation of contribution agreements to support our meaningful engagement and consultation on future transmission line projects.

Recommendation 16: The MMF should be engaged at early stages to identify Métis Specific Interests and assist in identifying Valued Components for the transmission line project environmental assessment.

Recommendation 17: Collection of Métis land use and occupancy information should occur earlier in the route selection process (e.g., during the gather local knowledge stage) so that this information can meaningfully inform the selection of the preferred alternative route.

Recommendation 18: The MMF should be given reasonable amounts of time and opportunity to consult with the Manitoba Métis Community about any concerns and feedback on the preferred route.

Recommendation 19: The Government of Manitoba encourages consultation with First Nation, Métis or Inuit communities to identify issues and concerns prior to finalizing the EAP, to allow for potential concerns to be addressed early in the process. The MMF should be provided time and capacity funding to comment on the EAP.

Recommendation 20: In the event that concerns raised during review of the EAP require a public hearing, we would expect that we would be provided the opportunity for capacity funding to participate should a hearing occur.

Recommendation 21: At the end of the environmental assessment process, a decision will be made by the Government of Manitoba to either issue a licence with limits, terms, and conditions, or to refuse a licence. The MMF expects that we would be provided capacity funding to comment on these conditions.

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Appendix D
Vegetation technical report

BRANDON - PORTAGE LA PRAIRIE TRANSMISSION LINES

REPLACEMENT PROJECT

VEGETATION TECHNICAL REPORT

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Manitoba Hydro

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December, 2020

SUMMARY

The proposed project occurs within the Lake Manitoba Plain Ecoregion, overlying both the Portage and MacGregor Ecodistricts. The area is highly developed with urban, industrial, and commercial developments. Agriculture represents the dominant land cover. Small areas of native vegetation include deciduous forest, wetland and herbaceous cover.

Twenty-four sites were visited along the proposed routes and project area, with a total of 117 plant taxa recorded. Seven species of conservation concern were observed during surveys, with one species ranked imperilled (Hairy sweet cicely, S2?) and the remaining six ranked vulnerable (S3 to S3S5). Thirty-nine species are considered non-native or invasive, with 15 of these species considered noxious weeds (Tier 3). Invasive species are abundant and widespread in the project area.

Table of Contents

LIST OF TABLES

LIST OF MAPS

LIST OF PHOTOGRAPHS

1.0 INTRODUCTION

1.1 Background

The purpose of this study was to assess the vegetation for the Brandon - Portage la Prairie Transmission Lines Replacement Project (BP6/BP7). In October 2019, a storm caused extensive damage to Manitoba Hydro's system of a section of two transmission lines between Brandon and Portage a Prairie, in the Portage a Prairie area. As a result, both lines need to be repaired, rebuilt and modernized with a permanent replacement that meets safety requirements for rights-of-way. A temporary wood pole transmission line along the Trans-Canada Highway was installed to temporarily maintain reliability. The original transmission lines were built between 1949 to 1964 and since then required right-of-way widths have expanded for safety reasons and development has grown beside the existing lines. As part of the project, Manitoba Hydro is considering different routes for the rebuilt section. The project is a Class 2 development under The Environment Act and requires regulatory approval. The project in-service date is anticipated to be 2022.

The objective of this study is to provide information on vegetation that will be used to develop the existing environment portion of the environmental assessment for the project. The specific tasks established for this study were as follows:

- Compile existing ecological, vegetation and botanical information for the study area;
- Visit various sites in the field to describe the terrestrial vegetation communities along the proposed routes and study area;
- Survey for potential rare plants;
- Document invasive and noxious plant species observed during site visits; and
- Develop a technical report that addresses existing environment information on vegetation.

1.2 Study Area

The study area overlaps with the city of Portage la Prairie and surrounding area, in the Central Plains Region, shown in Map 1-2. The northern extent of the study area approximately follows the BP6/BP7 storm damaged route, through Island Park and Crescent Lake, and is generally bound by the Assiniboine River to the south. The east and west boundaries of the study area approximately occur at the city limits, near where Provincial Trunk Highway 1A merges with the Trans-Canada Highway.

2.0 METHODS

2.1 Data Sources

Existing biophysical information was used to describe the environment, regionally for the transmission project (e.g., Rowe 1959; Smith et al. 1998). Rowe (1959) provides a geographic description of regions that includes distinctive patterning of vegetation and information on major species. The existing ecological land classification was identified and described from Smith et al. (1998). Here, ecological regions are delineated that are relatively homogeneous in overlapping patterns of climate, as expressed in vegetation, and geology, physiography, and soil development.

Botanical and vegetation information was described from available data sources including Smith et al. (1998) who describes vegetation at all levels of classification (ecozone to ecodistrict). The Manitoba Conservation Data Centre (Manitoba Government 2020a) provides information on species of conservation concern.

2.2 Field Site Selection

Manitoba Hydro's Environmental Protection Information Management System (EPIMS) Map Viewer was used to view the study area and project footprint imagery (digital ortho-rectified imagery). EPIMS Map Viewer provides information on land use and vegetation cover from the Manitoba Land Cover Classification. EPIMS Map Viewer was used to select potential sites to survey in the field. Suitable sites were selected based on a stratification of vegetation types (e.g., deciduous forest, grassland and wetland), importance of vegetation types (greater potential to support species of conservation concern), accessibility, and disturbance. Twenty-four sites were considered suitable for surveys. All fieldwork was conducted roadside, along existing Manitoba Hydro RoW's, or on Crown lands. A high-level routing and study area map generated by Manitoba Hydro and a Google Earth satellite imagery map were used in the field. Field visits were conducted August 11 and 12, 2020.

2.3 Vegetation Survey

The vegetation survey consisted of recording species composition and structure. Qualitative surveys were used to characterize vegetation communities along the potential transmission line routes and study area. All vascular plant species observed, including noxious weeds, were recorded.

To characterize the local vegetation, community type descriptions are presented where surveys occurred. Naming of vegetation community types was based on their structure and species dominance by stratum. Species separated by a slash (/) indicates a change in

stratum, while co-dominant species are separated by a dash (-) indicating similar abundance within the stratum.

Where surveys occurred in the forest community, descriptions further included tree height (measured at 20 m) and diameter at breast height (dbh). Canopy cover is defined as closed (>60%), open (>25-60%) and sparse (10-25%). GPS coordinates and photographs were taken at each site visited.

2.4 Rare Plant Survey

Species of conservation concern are imperilled and vulnerable plants tracked by the Manitoba Conservation Data Centre (Manitoba Government 2020a), including those plants listed under *The Endangered Species and Ecosystems Act* of Manitoba (Manitoba Government 2020b), the federal *Species at Risk Act* (Government of Canada 2020), or listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2020).

The standardized ranking of species used by Conservation Data Centres and Natural Heritage Programs throughout North America includes a series of ranks on a five-point scale from critically imperilled to secure. Listed below are definitions for interpreting conservation status ranks at the subnational or provincial (S) level. Ranks may also be intermediary between levels.

CRITICALLY IMPERILLED (S1): At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

IMPERILLED (S2): At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

VULNERABLE (S3): At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

APPARENTLY SECURE (S4): At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

SECURE (S5): At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

Under ESEA, SARA and COSEWIC, species are designated into the following categories: Endangered, Threatened, Extirpated, and Special Concern (see Appendix I).

Searches for species of conservation concern began with the review of provincially tracked species previously known to occur in the assessment area (provincial database). Biological information on species flowering times and preferred habitat was also reviewed.

In the field, rare plant searches occurred in selected habitats, where access was permitted, and follow methods outlined by the Alberta Native Plant Council (2012). Rare plant locations were recorded using GPS, individuals counted, phenology recorded and population extent estimated. Photographs were captured in the field.

2.5 Collection Guidelines and Plant Identification

All vascular plants were recorded and those unidentifiable in the field were collected, as voucher specimens, where the population size permits. Identification of vascular plants followed published volumes of Flora of North America (1993+). Plant nomenclature followed the Manitoba Conservation Data Centre provincial species list.

3.0 RESULTS

3.1 Ecological Land Classification

The proposed project lies within the Aspen-Oak Section of the Boreal Forest Region (Rowe 1959). This is a transition zone between forest and prairie vegetation of west-central Canada. The deciduous element of the boreal forest forms grove land where elements of prairie are intermixed.

Within the Prairies Ecozone of the ecological landscape stratification lies the Lake Manitoba Plain Ecoregion, extending northwestward from the International Boundary to Lake Dauphin, with the Manitoba escarpment marking its western boundary (Smith et al. 1998). The proposed project occurs almost entirely within the Portage Ecodistrict, in the central portion of the ecoregion. The western edge of the study area occurs in the MacGregor Ecodistrict.

The regional landscape is characterized by level to rolling or gently undulating terrain. Soils are dominantly Black Chernozemic soils developed on till, glaciolacustrine and alluvial materials. Humic Vertisolic and Gleysolic soils also are developed on glaciolacustrine sediments.

The Lake Manitoba Plain Ecoregion historically was comprised of prairie grasslands and stands of trembling aspen (*Populus tremuloides*) and bur oak (*Quercus macrocarpa*); however domestic crops and pastureland have now replaced much of the natural vegetation. Some groves remain along with deciduous forest remnants of trembling aspen, balsam poplar (*Populus balsamifera*), elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), and Manitoba maple (*Acer negundo*) on moist sites. Bur oak and grassland communities dominate drier sites. Stands of trees could also be intermixed with shrub species such as willows (*Salix* spp.), Saskatoon (*Amelanchier alnifolia*), red-osier dogwood (*Cornus sericea*) and snowberry (*Symphoricarpos occidentalis*), and various herbs in the understory. Grasses in the region include fescue (*Festuca* spp.), wheat grass (*Elymus* spp.), June grass (*Koeleria macrantha*) and Kentucky bluegrass (*Poa pratensis*). Poorly drained areas support slough grasses (*Beckmannia syzigachne*), marsh reed grass (*Calamagrostis canadensis*), sedges (*Carex* spp.), cattails (*Typha* spp.) and willows.

The regional climate consists of long, cold winters and short, warm summers. The mean annual temperatures vary from 1.8^{o}C to 3.1^{o}C. The mean annual precipitation ranges from 485 to 540 mm.

3.2 Land Cover Classification

The Manitoba Land Cover Classification (EPIMS Map Viewer) identifies seven vegetation classes within the study area, including deciduous forest, open deciduous forest, treed wetland, marsh wetland, range and grassland, agriculture, and agriculture – forage field. The water class includes lakes and rivers, while the cultural feature class includes residential area. Agriculture represents the dominant land cover. Map 3-2 illustrates the distribution of the land cover classes for the study area.

3.3 Route Descriptions

Both proposed transmission line routes were driven where accessible by road. The routes both occur primarily through or adjacent to agricultural land use. The Storm Damaged route begins at Provincial Trunk Highway 1A and passes through the southern portion of Portage la Prairie, crossing cultivated land and Crescent Lake, westwards. The existing RoW of the Storm Damaged route also occurs along stands of deciduous forest before again crossing agricultural land in the west part of the study area. The Temporary route also begins at Provincial Trunk Highway 1A and travels along the RoW of Angle Road heading south. The line turns west and follows the Trans-Canada Hwy (Portage la Prairie Bypass) to where the project terminates. The Temporary route occurs adjacent to a tree plantation and a minor amount of deciduous forest.

3.4 Vegetation and Botanical Resources

3.4.1 Vegetation Community Types

Twenty-four sites were surveyed along the routes and study area. Map 3-4 shows the distribution of sites within the study area. The vegetation can be grouped into three broad types including deciduous forest, wetland and herbaceous. To characterize the local vegetation, stands were classed into seven vegetation community types based on field data collected at each site, including vegetation composition and structure. Vegetation communities are summarized in Table 3-4a. Descriptions are presented for all strata present (i.e., tree canopy, tall shrub layer, and herb and low shrub understory). A single description is presented for each community type, although they occur in more than one location in the study area. For all species recorded in field surveys, refer to the flora list in Appendix III and IV.

Table 3-4a. Vegetation community types surveyed in the study area.

Vegetation Community	Site	Number of Sites	Total Species	Mean Species
Deciduous				
Bur Oak-Green Ash/ Tall Shrub	5, 6, 8, 9	4	45	21.3
Cottonwood-Deciduous Forest/ Tall Shrub	19, 20, 21, 10, 22, 31	6	46	16.2
Deciduous Open/Grassland	1, 2, 3, 7, 18	5	39	13.6
Wetland				
Marsh Wetland	25, 27, 30	3	11	5.3
Shoreline	4, 26	2	18	10.5
Herbaceous				
Grassland	13, 14	2	40	23.5
Disturbed Ground	16, 23	2	24	13

Bur Oak-Green Ash/ Tall Shrub

This community type was a tall (14 to 19.5 m) open-canopied deciduous forest (Photograph 3-4a). The canopy was composed of bur oak (*Quercus macrocarpa*) and green ash (*Fraxinus pennsylvanica*), with a presence of American elm (*Ulmus americana*), basswood (*Tilia americana*) and balsam poplar (*Populus balsamifera*). Diameter at breast height (DBH) averaged 46.8 cm for bur oak while a measured tree of green ash was 23.8 cm. A well-developed tall shrub stratum (1 to 3 m in height) was composed of several species including beaked hazel (*Corylus cornuta*), highbush-cranberry (*Viburnum opulus*) and downy arrow-wood (*Viburnum rafinesquianum*), that had high constancy (occurred in 75% of sites). Twelve other tall shrubs were recorded in this community type. The herb and low shrub stratum (typically >1 m tall) consisted of 30 species, dominated by forbs.

Photograph 3-4a. Bur Oak-Green Ash/ Tall Shrub community type.

Widespread species (found in all sites) included Virginia creeper (*Parthenocissus quinquefolia*) and poison-ivy (*Toxicodendron rydbergii*). Wild sarsaparilla (*Aralia nudicaulis*) and two graminoid species, smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*) were also commonly observed among sites. One imperilled species was recorded in this community type, hairy sweet cicely (*Osmorhiza claytonia*, S2?), and four vulnerable species: alternate-leaved dogwood (*Cornus alternifolia*, S3), basswood (S3S4), common milkweed (*Asclepias syriaca*, S3S4) and riverbank grape (*Vitis riparia*, S3S4).

Cottonwood-Deciduous Forest/ Tall Shrub

The Cottonwood-Deciduous Forest/ Tall Shrub community type had an open-canopy of tall cottonwood (*Populus deltoides*), 20.5 m height, and other deciduous trees including green ash (13.5 m), American elm (10 m), Manitoba maple (*Acer negundo*, 9.5 m), basswood and willow (*Salix* sp.). Although one site had an old growth cottonwood measuring 153.8 cm DBH, average DBH of cottonwood was 41.5 cm. Other mature trees measured were Manitoba maple (25 cm), American elm (19.5 cm) and green ash (18 cm). Fourteen species were recorded in the tall shrub stratum, but species inconsistently occurred among sites. Thirty-two species were recorded in the herb and low shrub stratum, including four grasses, 19 forbs and nine low shrubs. Species with high constancy (>67%) were Canada goldenrod (*Solidago canadensis*), Virginia creeper, smooth brome, wild sarsaparilla and veiny meadow-rue (*Thalictrum venulosum*). Abundant leaf litter accounts for the ground layer. Five vulnerable species were recorded in or along this vegetation type: cottonwood

(S3S5), basswood (S3S4), common milkweed (S3S4), riverbank grape (S3S4), and tall coneflower (*Rudbeckia laciniata*, S3S4). This plant community was found in areas that were associated with existing waterways or adjacent to channels that previously supported water, such as oxbows. Photograph 3-4b shows the Cottonwood-Deciduous Forest/ Tall Shrub community type.

Photograph 3-4b. Cottonwood-Deciduous Forest/ Tall Shrub community type.

Deciduous Open/Grassland

The Deciduous Open/Grassland community type is a mixed stand of primarily open-canopied hardwoods dominated by trembling aspen (*Populus tremuloides*), 18.5 m tall, and Manitoba maple (13.3 m). Other tree species recorded in the canopy may include American elm, basswood, cottonwood, green ash, willow, silver maple (*Acer saccharinum*) and white spruce (*Picea glauca*). Aspen DBH averaged 35.5 cm while measured Manitoba maple averaged 41.8 cm. The tall shrub stratum was poorly developed and only seven species were sporadically encountered. Graminoids were the most abundant species in the low shrub and herb stratum, dominated by Kentucky bluegrass and smooth brome. Two vulnerable species were recorded in this vegetation type: basswood (S3S4) and cottonwood (S3S5). This community type occurred mostly as park-like settings with mowed lawn, which included Yellow Quill Provincial Park (Photograph 3-4c).

Photograph 3-4c. Deciduous Open/Grassland community type.

Marsh Wetland

This community type was a low to intermediate height (approximately 1 m), closed-canopied (>60% cover) marsh wetland dominated by common cat-tail (*Typha latifolia*). Sandbar willow (*Salix exigua*) was the only tall shrub observed which occurred sporadically. Characteristic graminoid species were reed canarygrass (*Phalaris arundinacea*), prairie cordgrass (*Sporobolus michauxianus*), American sloughgrass (*Beckmannia syzigachne*), common reedgrass (*Phragmites australis*) and water sedge (*Carex aquatilis*). Forbs were a minor component of the total vegetation composition. Common milkweed (S3S4) was a vulnerable species recorded roadside. This vegetation was associated with depressional sites. Photograph 3-4d shows the Marsh Wetland community type.

Shoreline

Trees were absent from the two sites that make up this community type. Only willows with infrequent occurrence were present in the tall shrub stratum. Seventeen species were recorded in the herb and low shrub understory. Widespread species are water smartweed (*Polygonum amphibium*), silverweed (*Potentilla anserina*), spotted touch-me-not (*Impatiens capensis*) and Canada thistle (*Cirsium arvense*). A notable non-native species was purple loosestrife (*Lythrum salicaria*). This community type was located at Crescent Lake. The shoreline water regime is permanently flooded to intermittently exposed. Photograph 3-4e shows the Shoreline community type.

Photograph 3-4d. Marsh Wetland community type.

Photograph 3-4e. Shoreline community type.

Grassland

The Grassland vegetation was a low-growing graminoid community type dominated by a mixture of smooth brome, Kentucky bluegrass, reed canarygrass, reed grass (*Calamagrostis* sp.), creeping bent grass (*Agrostis stolonifera*), big bluestem (*Andropogon gerardii*) and quackgrass (*Elymus repens*). In total, 36 species were recorded in the low shrub and herb stratum. Among the species that occurred were prickly rose (*Rosa acicularis*), many-flowered aster (*Symphyotrichum ericoides*), narrow-leaved sunflower (*Helianthus maximiliani*) and curly-cup gumweed (*Grindelia squarrosa*). The tall shrub stratum has infrequently occurring willows (*Salix bebbiana, S. exigua*). White spruce at the tree level was only present along the periphery of the community type. Common milkweed (S3S4) was a vulnerable species recorded roadside. The grasslands surveyed had moist to dry soil conditions. The Grassland community type is shown in Photograph 3-4f.

Photograph 3-4f. Grassland community type.

Disturbed Ground

Two Disturbed Ground sites consisted of low to intermediate height (approximately 1 m) herbaceous vegetation dominated by non-native species (Photograph 3-4g). Twenty-four species were recorded with seven graminoids including smooth brome, Kentucky bluegrass, reed canarygrass, wild barley (*Hordeum jubatum*), green foxtail (*Setaria viridis*), cultivated oats (*Avena sativa*) and Canada wildrye (*Elymus canadensis*). Widespread forbs (species occurring in both surveys) were prostrate knotweed (*Polygonum aviculare*) and marsh-elder (*Cyclachaena xanthiifolia*). Fifteen other forbs were recorded in this vegetation

type. Disturbed ground was surveyed roadside adjacent to agricultural land use and in an area of previously stock-piled soil material.

Photograph 3-4g. Disturbed ground.

3.4.2 Botanical Resources

Vegetation composition was recorded at 24 sites along the routes and study area (see Map 3-2). A total of 117 plant taxa were recorded with 112 plants identified to the species level (Appendix III). All plants were grouped by primitive vasculars (e.g., ferns and horsetails), gymnosperms (conifers) and angiosperms (flowering plants), with angiosperms being the largest (Table 3-4b). There were 114 angiosperms (20 monocotyledons and 94 dicotyledons), two primitive vasculars and one gymnosperm.

Table 3-4b. Botanical resources in the study area.

Plant Group	Number of Species	Percent
Primitive Vasculars	2	2
Gymnosperms	1	1
Angiosperms		
Monocots	20	17
Dicots	94	80
Total	117	

Vascular plants were distributed among 38 families, with the angiosperms representing 35 of these. The Aster family (Asteraceae) was the largest with 20 plant taxa, followed by the Grass (Poaceae), and Pea (Fabaceae) families, with 15 and 12 taxa, respectively. Four or more species were observed in each of the Rose (Rosaceae), Honeysuckle (Caprifoliaceae),

Willow (Salicaceae), Mustard (Caprifoliaceae) and Smartweed (Polygonaceae) families. The primitive vasculars are distributed among two families, the Horestail (Equisetaceae) and Wood Fern (Dryopteridaceae). The Pine family (Pinaceae) was the only gymnosperm.

3.4.3 Species of Conservation Concern

According to provincial sources, there are 105 plant species of conservation concern that can be expected to range within the Lake Manitoba Plain Ecoregion (Manitoba Government 2020a). Currently, there are 10 species listed at risk in the ecoregion, with either the federal *Species at Risk Act* (SARA), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or *The Endangered Species and Ecosytems Act* of Manitoba (ESEA), see Table 3-4c. The potential for any of these species to occur along the storm damaged or temporary routes is low as a result of the current routing locations and field surveys completed.

Table 3-4c. Plant species listed at risk in the Lake Manitoba Plain Ecoregion.

Scientific Name	Common Name	SARA	COSEWIC	ESEA
Agalinis aspera	Rough Agalinis	Endangered	Endangered	Endangered
Agalinis gattingeri	Gattinger's Agalinis	Endangered	Endangered	Endangered
Celtis occidentalis	Hackberry	-	-	Threatened
Cypripedium candidum	Small White Lady's-slipper	Threatened	Threatened	Endangered
Dalea villosa	Hairy Prairie-clover	Special Concern	Special Concern	Threatened
Fraxinus nigra	Black Ash	-	Threatened	-
Solidago riddellii	Riddell's Goldenrod	Special Concern	Special Concern	Threatened
Symphyotrichum sericeum	Western Silvery Aster	Threatened	Threatened	Threatened
Vernonia fasciculata	Western Ironweed	Endangered	Endangered	Endangered
Veronicastrum virginicum	Culver's-root	-	-	Threatened

Based on provincial records (Manitoba Conservation Data Centre database search), two species of conservation concern potentially occur in the study area. One occurrence of alternative-leaved dogwood (*Cornus alternifolia*) and one occurrence of quill sedge (*Carex echinodes*) were reported in the study area around Crescent Lake, Portage la Prairie. Alternative-leaved dogwood is ranked vulnerable (S3) while, quill sedge is unranked or conservation status not yet assessed (SNR).

Seven species of conservation concern were observed during surveys, summarized in Table 3-4d. Among these, one is ranked Imperilled (S2?), hairy sweet cicely (*Osmorhiza claytonii*).

Table 3-4d. Species of conservation concern recorded in the study area.				
Scientific Name	**Common Name**	**Rank**	**Site**	**Vegetation Type**
Imperilled Species (S2?)				
Osmorhiza claytonii	Hairy Sweet Cicely	S2?	5	Deciduous
Vulnerable Species (S3 to S3S5)				
Asclepia syriaca	Common Milkweed	S3S4	5, 20, 31	Deciduous
Asclepia syriaca	Common Milkweed	S3S4	13	Herbaceous
Asclepia syriaca	Common Milkweed	S3S4	25, 27	Wetland
Cornus alternifolia	Alternate-leaved Dogwood	S3	9	Deciduous
Populus deltoides	Cottonwood	S3S5	3, 10, 18, 19, 20, 21, 22, 31	Deciduous
Rudbeckia laciniata	Tall Coneflower	S3S4	31	Deciduous
Tilia americana	Basswood	S3S4	1, 2, 3, 5, 8, 31	Deciduous
Vitis riparia	Riverbank Grape	S3S4	8, 10, 19, 22, 31	Deciduous

Note: A question mark (?) following a numeric rank denotes inexact or uncertain ranking (Manitoba Government 2020a).

Hairy sweet cicely was recorded at one location (five plants) in native forest vegetation (Photograph 3-4h). The stand consisted of open-canopied bur oak (*Quercus macrocarpa*) and green ash (*Fraxinus pennsylvanica*). Here eight species were recorded in the tall shrub layer (1 to 3 m tall), with a diverse herbaceous and low shrub stratum. Elsewhere in the study area, the vulnerable species (S3) were predominantly observed in forest vegetation. These species include common milkweed (*Asclepia syriaca*), alternate-leaved dogwood, cottonwood (*Populus deltoides*), tall coneflower (*Rudbeckia laciniata*), basswood (*Tilia americana*) and riverbank grape (*Vitis riparia*).

Photograph 3-4h. Hairy sweet cicely recorded during survey.

3.4.4 Invasive Species

Across all surveys, 39 species are considered non-native or invasive (see Table 3-4e). Thirty-three species are ranked SNA, conservation status rank not applicable, and one species ranked SU, currently unrankable (Manitoba Government 2020a). Of these species, 15 are considered Tier 3 Noxious weeds (Manitoba Government 2020c). In Manitoba, the Noxious Weeds Regulation lists approximately 90 plant species as noxious under the Noxious Weeds Act, with Tier I noxious weeds as the most threatening species. Sixteen species are considered invasive plants with the Canadian Food Inspection Agency (2008), while the Invasive Species Council of Manitoba (2020) lists five species as invasive.

Most prominently represented families of noxious, invasive and non-native species together are Asteraceae and Fabaceae (nine species each), Poaceae (seven species), and Brassicaeae (four species). Most non-native or invasive species were recorded on disturbed lands or incidental to surveys sites (i.e., roadside).

Table 3-4e. Non-native and invasive species observed during surveys.

Species	Common Name	MBCDC Rank[1]	Authority[2]
Agrostis stolonifera	Creeping Bent Grass	SNA	MBCDC
Amaranthus retroflexus	Redroot Pigweed	SNA	CFIA
Ambrosia artemisiifolia	Common Ragweed	S5	NWA
Ambrosia trifida	Giant Ragweed	S4	NWA
Arctium minus	Common Burdock	SNA	NWA, ISCM
Artemisia absinthium	Wormwood	SNA	NWA, CFIA
Asclepias syriaca	Common Milkweed	S3S4	NWA
Bromus inermis	Smooth Brome	SNA	CFIA
Capsella bursa-pastoris	Shepherd's Purse	SNA	CFIA
Caragana arborescens	Common Caragana	SNA	MBCDC
Chenopodium album	Lamb's-quarters	SNA	NWA, CFIA
Cirsium arvense	Canada Thistle	SNA	NWA, CFIA, ISCM
Cirsium vulgare	Bull Thistle	SNA	NWA, ISCM
Cyclachaena xanthiifolia	Marsh-elder	SNA	NWA
Descurainia sophia	Flixweed	SNA	NWA, CFIA
Elymus repens	Quackgrass	SNA	CFIA
Erucastrum gallicum	Dog-mustard	SNA	MBCDC
Hordeum jubatum	Wild Barley	S5	NWA
Kochia scoparia	Kochia	SNA	NWA
Lemna minor	Lesser Duckweed	SNA	MBCDC
Lonicera tatarica	Tartarian Honeysuckle	SNA	MBCDC
Lotus corniculatus	Bird's-foot Trefoil	SNA	MBCDC
Lythrum salicaria	Purple Loosestrife	SNA	ISCM

Medicago lupulina	Black Medic	SNA	MBCDC
Medicago sativa	Alfalfa	SNA	CFIA
Melilotus albus	White Sweet Clover	SNA	CFIA
Melilotus officinalis	Yellow Sweet Clover	SNA	CFIA
Parthenocissus quinquefolia	Virginia Creeper	SNA	MBCDC
Phalaris arundinacea	Reed Canary Grass	S5	CFIA
Plantago major	Common Plantain	SNA	MBCDC
Polygonum aviculare	Prostrate Knotweed	SU	MBCDC
Rumex crispus	Curled Dock	SNA	MBCDC
Setaria viridis	Green Foxtail	SNA	CFIA
Sonchus arvensis	Field Sow-thistle	SNA	NWA, CFIA, ISCM
Taraxacum officinale	Common Dandelion	SNA	NWA
Thlaspi arvense	Field Pennycress	SNA	NWA, CFIA
Trifolium hybridum	Alsike Clover	SNA	MBCDC
Trifolium pratense	Red Clover	SNA	CFIA
Trifolium repens	White Clover	SNA	MBCDC

1 (Rank): S3 – Vulnerable; S4 – Apparently Secure; S5 – Secure; SNA – Rank Not Applicable; SU – Unrankable.
2 (Authority): Manitoba Conservation Data Centre (MBCDC), Canadian Food Inspection Agency (CFIA), Noxious Weeds Act (NWA), Invasive Species Council of Manitoba (ISCM).

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APPENDIX I. Definitions of selected technical terms.

Abundance-Dominance – This term expresses the number of individuals of a plant species and their coverage in a phytosociological survey; it is based on the coverage of individuals for classes with a coverage higher than 5% and on the abundance for classes with a lower percentage (Cauboue et al. 1996).

Angiosperm – A seed borne in a vessel (carpel); thus one of a group of plants whose seeds are borne within a mature ovary or fruit (Raven et al. 1992).

Boreal – Pertaining to the north; a climatic and ecological zone that occurs south of the subarctic, but north of the temperate hardwood forests of eastern North America, the parkland of the Great Plains region, and the montane forests of the Canadian cordillera (Cauboue et al. 1996).

Canopy – The more or less continuous cover of branches and foliage formed by the crowns of trees (Cauboue et al. 1996).

Canopy Closure – The degree of canopy cover relative to openings (Cauboue et al. 1996).

Classification – The systematic grouping and organization of objects, usually in a hierarchical manner (Cauboue et al. 1996).

Community-Type – A group of vegetation stands that share common characteristics, an abstract plant community (Cauboue et al. 1996).

Cover – The area of ground covered with plants of one or more species, usually expressed as a percentage (Cauboue et al. 1996).

Deciduous – Refers to perennial plants from which the leaves abscise and fall off at the end of the growing season (Cauboue et al. 1996).

Dicotyledon – One of the two divisions of the Angiosperms; the embryo has two cotyledons, the leaves are usually net-veined, the stems have open bundles, and the flower parts are usually in fours or fives (Usher 1996).

Ecoregion – An area characterized by a distinctive regional climate as expressed by vegetation (Cauboue et al. 1996).

Endangered Species - A species that is facing imminent extirpation or extinction (Government of Canada 2020).

Extirpated Species - A species that no longer exists in the wild in Canada, but exists elsewhere in the wild (Government of Canada 2020).

Flora – A list of the plant species present in an area (Cauboue et al. 1996).

Forb – A broad-leaved, non-woody plant that dies back to the ground after each growing season (Johnson et al. 1995).

Forest – A relatively large assemblage of tree-dominated stands (Cauboue et al. 1996).

Graminoid – A narrow-leaved plant that is grass-like; the term refers to grasses and plants that look like grasses (Cauboue et al. 1996).

Grassland – Vegetation consisting primarily of grass species occurring on sites that are arid or at least well drained (Cauboue et al. 1996).

Gymnosperm – A seed plant with seeds not enclosed in the ovary; the conifers are the most familiar group (Raven et al. 1992).

Habitat – The place in which an animal or plant lives; the sum of environmental circumstances in the place inhabited by an organism, population or community (Cauboue et al. 1996).

Herb (Herbaceous) – A plant without woody above-ground parts, the stems dying back to the ground each year (Johnson et al. 1995).

Invasive – Invasive species are plants that are growing outside of their country or region of origin and are out-competing or even replacing native plants (Invasive Species Council of Manitoba 2020).

Monocotyledon – A class of the Angiosperms; the seeds have a single cotyledon, the floral parts are in three or multiples of three, and the leaves have parallel veins (Usher 1996).

Noxious Weed – A plant that is designated as a tier 1, tier 2 or tier 3 noxious weed in the regulations and includes the seed of a noxious weed, whether it is still attached to the noxious weed or is separate from it (Manitoba Government 2020).

Pteridophyte – A division of the plant kingdom including ferns and their allies (horsetails and clubmosses).

Rare Species – Any indigenous species of flora that, because of its biological characteristics, or because it occurs at the fringe of its range, or for some other reasons, exists in low

numbers or in very restricted areas of Canada but is not a threatened species (Cauboue et al. 1996).

Shrub – A perennial plant usually with a woody stem, shorter than a tree, often with a multi-stemmed base (Cauboue et al. 1996).

Site – The place or category of places, considered from an environmental perspective, that determines the type and quality of plants that can grow there (Cauboue et al. 1996).

Species – A group of organisms having a common ancestry that are able to reproduce only among themselves; a general definition that does not account for hybridization (Cauboue et al. 1996).

Species of Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (Government of Canada 2020).

Stand – A collection of plants having a relatively uniform composition and structure, and age in the case of forests (Cauboue et al. 1996).

Stratum – A distinct layer within a plant community, a component of structure (Cauboue et al. 1996).

Terrestrial – Pertaining to land as opposed to water (Cauboue et al. 1996).

Threatened Species - A species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction (Government of Canada 2020).

Understory – Vegetation growing beneath taller plants such as trees or tall shrubs (Cauboue et al. 1996).

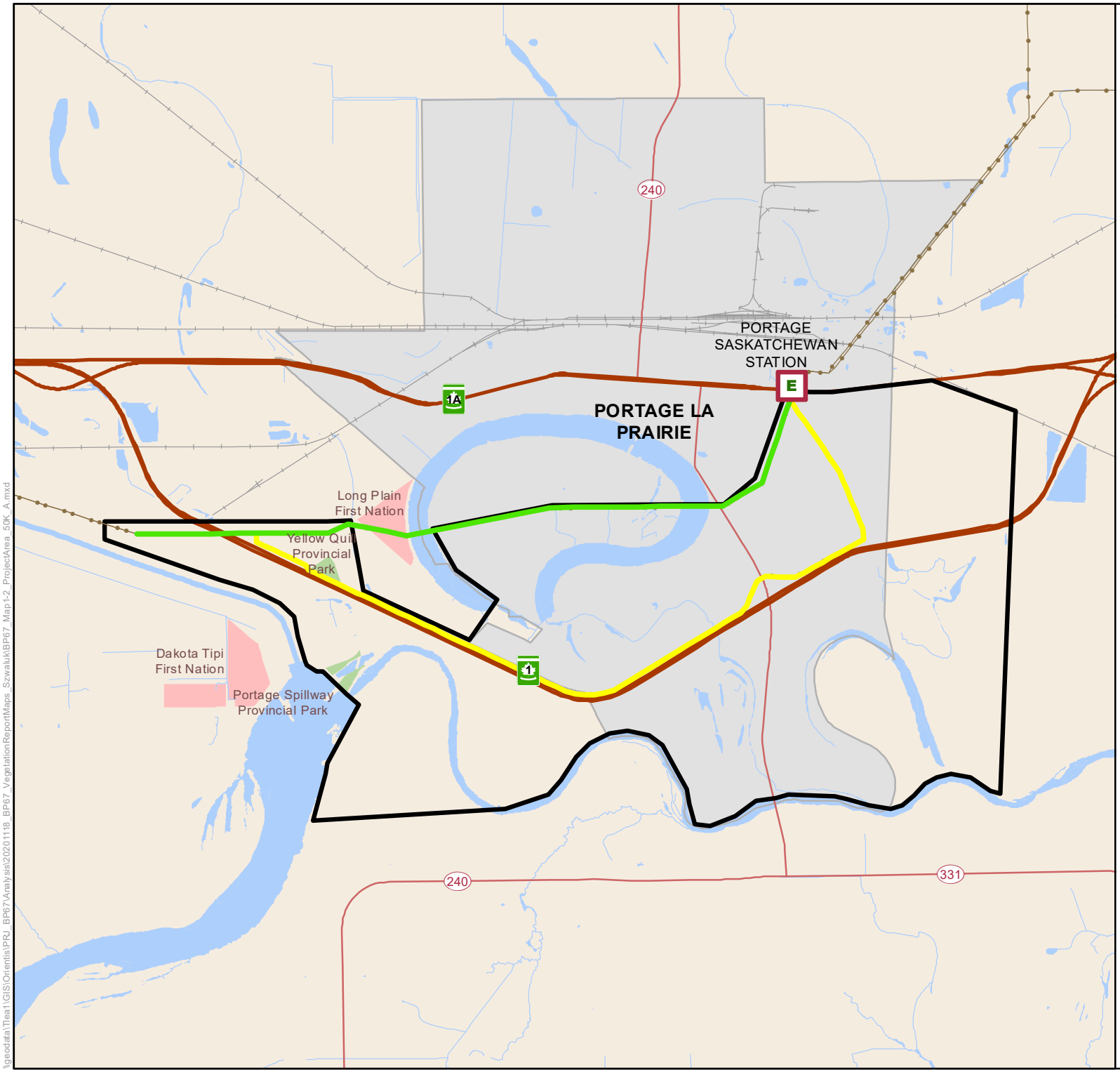
Vascular Plant – A plant having a vascular system (Usher 1996).

Vegetation – The general cover of plants growing on a landscape (Cauboue et al. 1996).

Vegetation Type – In phytosociology, the lowest possible level to be described (Cauboue et al. 1996).

Wetland – Land that is saturated with water long enough to promote hydric soils or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to wet environments (Cauboue et al. 1996).

APPENDIX II. Report maps.



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Storm Damaged BP6/BP7
- Temporary BP6/BP7 Route
- Route Planning Area

Infrastructure
- Transmission Line

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

0 0.5 Kilometres
0 0.25 0.5 Miles

1:50,000

Project Area

Map 1-2

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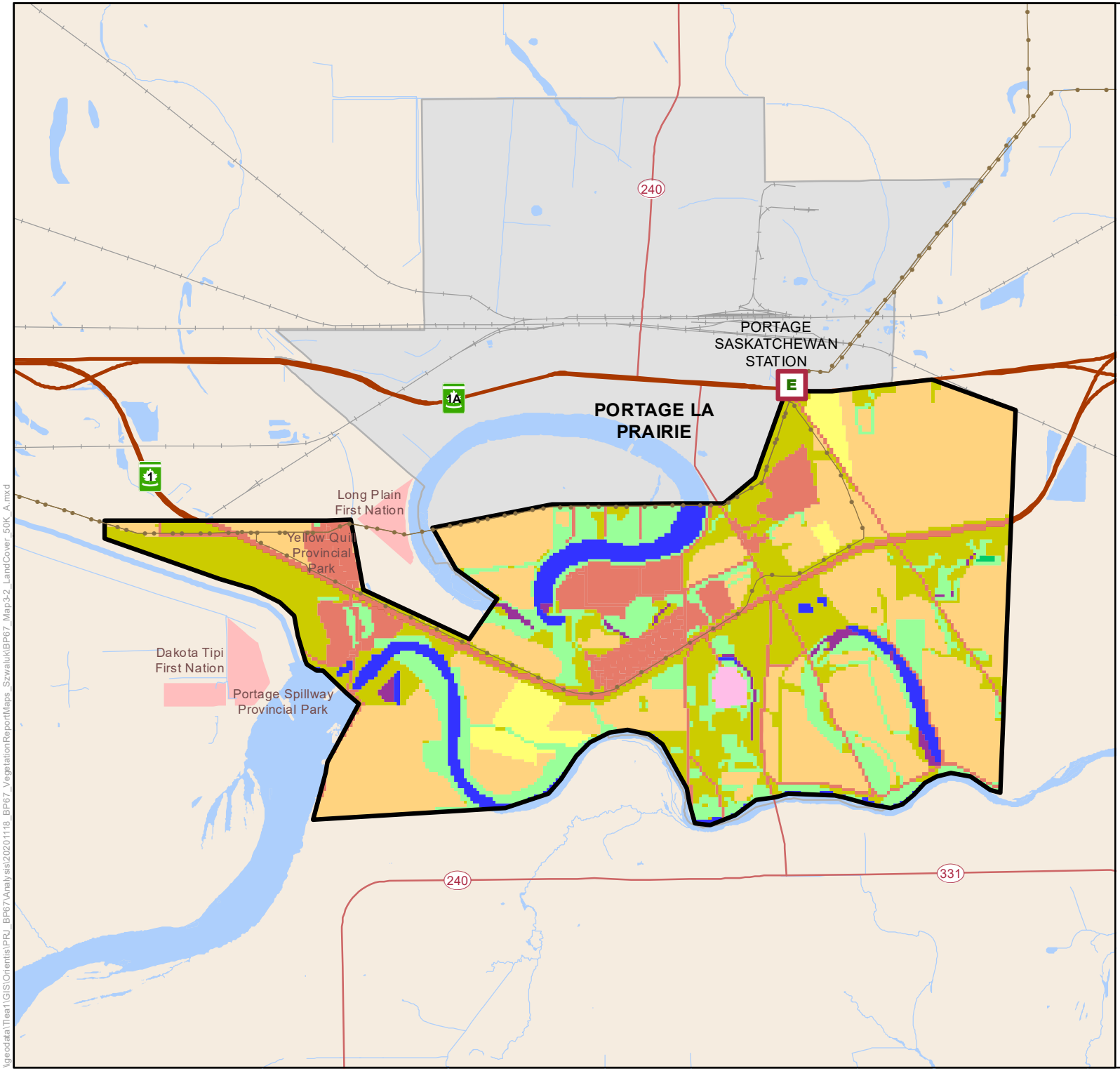


Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Route Planning Area

Infrastructure
- Transmission Line

Land Cover[1]
- Agricultural Cropland
- Cultural Features
- Decidious Forest
- Forage Crops
- Marsh and Fens
- Open Decidious Forest
- Range and Grassland
- Treed and Open Bogs
- Water

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Source:
1. Land Cover Classification (2006), Manitoba Conservation and Water Stewardship

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

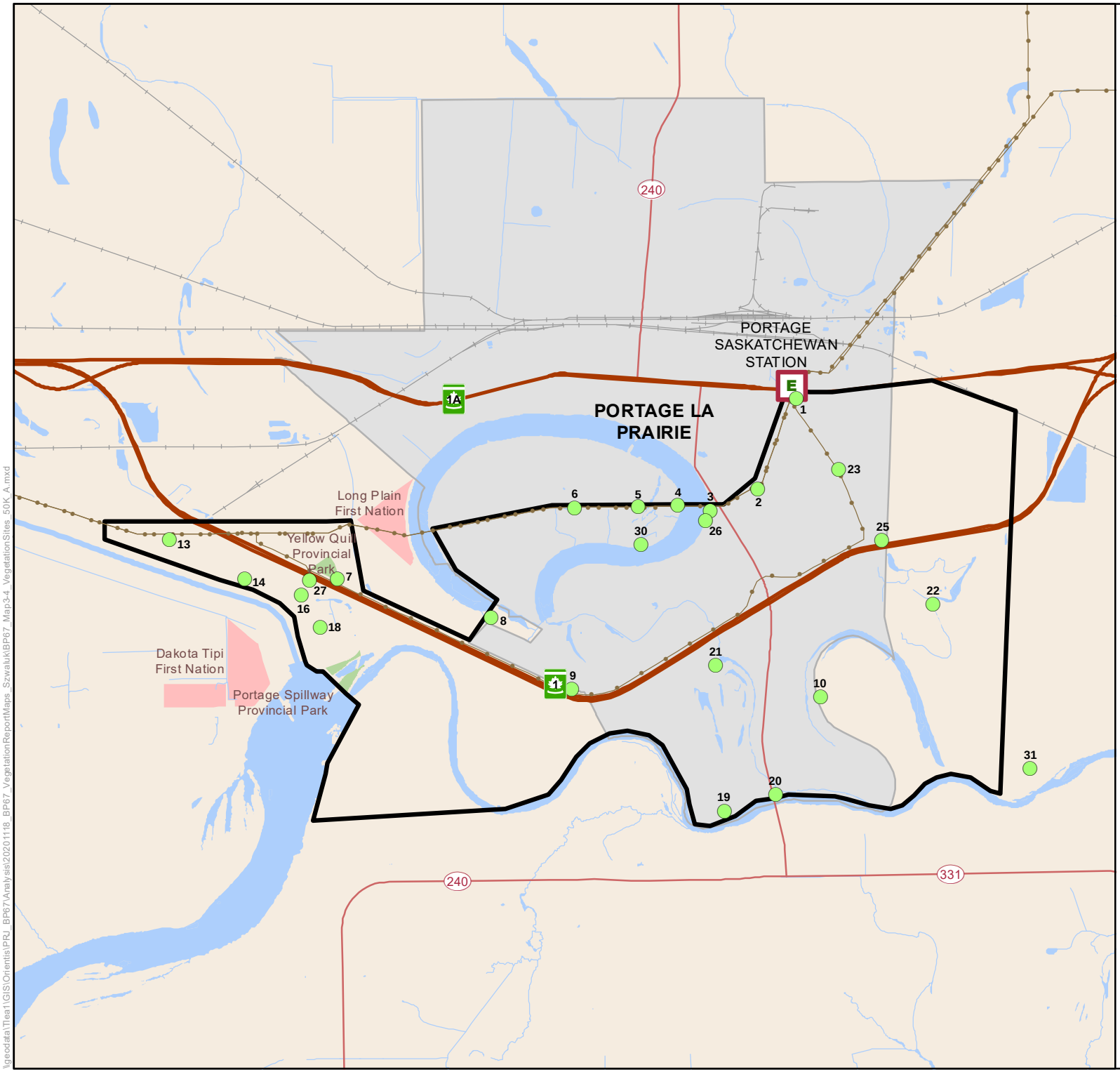
0 0.55 Kilometres
0 0.25 0.5 Miles

1:50,000

Land Cover Classification

Map 3-2

\\geodata\Tlea1\GIS\Orientis\PRJ_BP67\Analysis\20201118_BP67_VegetationReportMaps_Szwaluk\BP67_Map3-2_LandCover_50K_A.mxd



Manitoba Hydro

Brandon–Portage la Prairie (BP6/BP7)
Transmission Line Replacement Project

Project Infrastructure
- Route Planning Area

Infrastructure
- Transmission Line

Vegetation Sites
- Field Site Visited

Landbase
- Trans-Canada
- Provincial Road
- Railway
- First Nation
- City
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: November 19, 2020

N

0 0.5 Kilometres
0 0.25 0.5 Miles

1:50,000

Vegetation Sites

Map 3-4

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APPENDIX III. List of flora recorded from surveys.

Family/Species	Common Name	MB Rank
VASCULAR SPECIES		
Pteridophytes – Ferns and Allies		
EQUISETACEAE	HORSETAIL FAMILY	
Equisetum hyemale	Common Scouring-rush	S5
DRYOPTERIDACEAE	WOOD FERN FAMILY	
Matteuccia struthiopteris	Ostrich Fern	S5
Gymnosperms		
PINACEAE	PINE FAMILY	
Picea glauca	White Spruce	S5
Angiosperms - Monocotyledons		
CYPERACEAE	SEDGE FAMILY	
Carex aquatilis	Water Sedge	S5
LEMNACEAE	DUCKWEED FAMILY	
Lemna minor	Lesser Duckweed	SNA
LILIACEAE	LILY FAMILY	
Maianthemum canadense	Two-leaved Solomon's-seal	S5
NYMPHAEACEAE	WATER LILY FAMILY	
Nuphar variegata	Yellow Pond-lily	S5
POACEAE	GRASS FAMILY	
Agrostis stolonifera	Creeping Bent Grass	SNA
Andropogon gerardii	Big Bluestem	S5
Avena sativa	Cultivated Oats	SNA
Beckmannia syzigachne	American Sloughgrass	S5
Bromus inermis	Smooth Brome	SNA
Calamagrostis sp.	Reed Grass	
Elymus canadensis	Canada Wildrye	S4S5
Elymus repens	Quackgrass	SNA
Grass sp.	Grass	
Hordeum jubatum	Wild Barley	S5
Phalaris arundinacea	Reed Canarygrass	S5
Phragmites australis	Common Reedgrass	S5
Poa pratensis	Kentucky Bluegrass	S5

Setaria viridis	Green Foxtail	SNA
Sporobolus michauxianus	Prairie Cordgrass	S4S5
TYPHACEAE	CAT-TAIL FAMILY	
Typha latifolia	Common Cat-tail	S4S5
Angiosperms – Dicotyledons		
ACERACEAE	MAPLE FAMILY	
Acer negundo	Manitoba Maple	S5
Acer saccharinum	Silver Maple	
AMARANTHACEAE	AMARANTH FAMILY	
Amaranthus retroflexus	Redroot Pigweed	SNA
ANACARDIACEAE	SUMAC FAMILY	
Toxicodendron rydbergii	Poison-ivy	S5
APIACEAE	CARROT FAMILY	
Heracleum maximum	Cow-parsnip	S4S5
Osmorhiza claytonii	Hairy Sweet Cicely	S2?
APOCYNACEAE	DOGBANE FAMILY	
Apocynum androsaemifolium	Spreading Dogbane	S5
Asclepias syriaca	Common Milkweed	S3S4
ARALIACEAE	GINSENG FAMILY	
Aralia nudicaulis	Wild Sarsaparilla	S5
ASTERACEAE	ASTER FAMILY	
Ambrosia artemisiifolia	Common Ragweed	S5
Ambrosia trifida	Giant Ragweed	S4
Arctium minus	Common Burdock	SNA
Artemisia absinthium	Wormwood	SNA
Cirsium arvense	Canada Thistle	SNA
Cirsium vulgare	Bull Thistle	SNA
Cyclachaena xanthiifolia	Marsh-elder	SNA
Doellingeria umbellata	Flat-topped White Aster	S5
Euthamia graminifolia	Flat-topped Goldenrod	S5
Grindelia squarrosa	Curly-cup Gumweed	S5
Helianthus maximiliani	Narrow-leaved Sunflower	S5
Liatris ligulistylis	Meadow Blazingstar	S4
Rudbeckia laciniata	Tall Coneflower	S3S4
Solidago canadensis	Canada Goldenrod	S5

Solidago rigida	Stiff Goldenrod	S5
Sonchus arvensis	Field Sow-thistle	SNA
Symphyotrichum ciliolatum	Lindley's Aster	S5
Symphyotrichum ericoides	Many-flowered Aster	S4
Symphyotrichum laeve	Smooth Aster	S5
Taraxacum officinale	Common Dandelion	SNA
BALSAMINACEAE	TOUCH-ME-NOT FAMILY	
Impatiens capensis	Spotted Touch-me-not	S5
BETULACEAE	BIRCH FAMILY	
Betula papyrifera	White Birch	S5
Corylus cornuta	Beaked Hazelnut	S5
BRASSICACEAE	MUSTARD FAMILY	
Capsella bursa-pastoris	Shepherd's Purse	SNA
Descurainia sophia	Flixweed	SNA
Erucastrum gallicum	Dog-mustard	SNA
Thlaspi arvense	Field Pennycress	SNA
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY	
Lonicera tatarica	Tartarian Honeysuckle	SNA
Symphoricarpos occidentalis	Western Snowberry	S5
Viburnum edule	Mooseberry	S5
Viburnum lentago	Nannyberry	S4
Viburnum opulus	Highbush-cranberry	S5
Viburnum rafinesquianum	Downy Arrow-wood	S4S5
CHENOPODIACEAE	GOOSEFOOT FAMILY	
Chenopodium album	Lamb's-quarters	SNA
Kochia scoparia	Kochia	SNA
Oxybasis glauca	Oak-leaved Goosefoot	S4S5
CORNACEAE	DOGWOOD FAMILY	
Cornus alternifolia	Alternate-leaved Dogwood	S3
Cornus sericea	Red-osier Dogwood	S5
FABACEAE	PEA FAMILY	
Caragana arborescens	Common Caragana	SNA
Glycyrrhiza lepidota	Wild Licorice	S4S5
Hedysarum alpinum	Alpine Hedysarum	S4S5
Lotus corniculatus	Bird's-foot Trefoil	SNA
Medicago lupulina	Black Medick	SNA

Medicago sativa	Alfalfa	SNA
Melilotus albus	White Sweet Clover	SNA
Melilotus officinalis	Yellow Sweet Clover	SNA
Trifolium hybridum	Alsike Clover	SNA
Trifolium pratense	Red Clover	SNA
Trifolium repens	White Clover	SNA
Vicia americana	American Purple Vetch	S5
FAGACEAE	BEECH FAMILY	
Quercus macrocarpa	Bur Oak	S5
GROSSULARIACEAE	CURRENT FAMILY	
Ribes glandulosum	Skunk Currant	S5
Ribes sp.	Currant	
LINACEAE	FLAX FAMILY	
Linum lewisii	Blue Flax	S4
LYTHRACEAE	LOOSESTRIFE FAMILY	
Lythrum salicaria	Purple Loosestrife	SNA
OLEACEAE	OLIVE FAMILY	
Fraxinus pennsylvanica	Green Ash	S4S5
Syringa sp.	Lilac	
PLANTAGINACEAE	PLANTAIN FAMILY	
Plantago major	Common Plantain	SNA
POLYGONACEAE	SMARTWEED FAMILY	
Persicaria lapathifolia	Pale Smartweed	S5
Polygonum amphibium	Water Smartweed	S5
Polygonum aviculare	Prostrate Knotweed	SU
Rumex crispus	Curled Dock	SNA
RANUNCULACEAE	CROWFOOT FAMILY	
Actaea rubra	Red Baneberry	S5
Anemone canadensis	Canada Anemone	S5
Thalictrum venulosum	Veiny Meadow-rue	S5
ROSACEAE	ROSE FAMILY	
Crataegus chrysocarpa	Round-leaved Hawthorn	S4S5
Amelanchier alnifolia	Saskatoon	S5
Potentilla anserina	Silverweed	S5

Prunus virginiana	Chokecherry	S5
Rosa acicularis	Prickly Rose	S5
Rubus idaeus	Wild Red Raspberry	S5
Sorbus decora	Showy Mountain-ash	S4
RUBIACEAE	MADDER FAMILY	
Galium boreale	Northern Bedstraw	S5
Galium triflorum	Sweet-scented Bedstraw	S5
SALICACEAE	WILLOW FAMILY	
Populus balsamifera	Balsam Poplar	S5
Populus deltoides	Cottonwood	S3S5
Populus tremuloides	Trembling Aspen	S5
Salix bebbiana	Bebb's or Beaked Willow	S5
Salix exigua	Sandbar Willow	S5
Salix spp.	Willow	
TILIACEAE	LINDEN FAMILY	
Tilia americana	Basswood	S3S4
ULMACEAE	ELM FAMILY	
Ulmus americana	American Elm	S4S5
URTICACEAE	NETTLE FAMILY	
Urtica dioica	Stinging Nettle	S5
VITACEAE	GRAPE FAMILY	
Parthenocissus quinquefolia	Virginia Creeper	SNA
Vitis riparia	Riverbank Grape	S3S4

APPENDIX IV. Plant species observed by site visited.

			Site																							
Form	**Species**	**Common Name**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**13**	**14**	**16**	**18**	**19**	**20**	**21**	**22**	**23**	**25**	**26**	**27**	**30**	**31**
Tree	*Acer negundo*	Manitoba Maple	x		x				x								x	x	x							x
Tree	*Acer saccharinum*	Silver Maple		x																						
Tree	*Fraxinus pennsylvanica*	Green Ash		x			x	x	x	x	x	x					x		x	x						x
Tree	*Picea glauca*	White Spruce	x										x													
Tree	*Populus balsamifera*	Balsam Poplar						x																		
Tree	*Populus deltoides*	Cottonwood			x							x				x	x	x	x	x						x
Tree	*Populus tremuloides*	Trembling Aspen		x					x							x										
Tree	*Quercus macrocarpa*	Bur Oak					x	x		x	x															
Tree	*Salix* spp.	Willow		x	x								x				x									
Tree	*Tilia americana*	Basswood	x				x			x																x
Tree	*Ulmus americana*	American Elm	x				x										x	x	x	x						
Shrub	*Acer negundo*	Manitoba Maple		x			x			x						x	x			x						x
Shrub	*Amelanchier alnifolia*	Saskatoon																	x							
Shrub	*Betula papyrifera*	White Birch																x								
Shrub	*Caragana arborescens*	Common Caragana					x	x																		
Shrub	*Cornus alternifolia*	Alternate-leaved Dogwood									x															
Shrub	*Cornus sericea*	Red-osier Dogwood					x	x									x	x		x						x
Shrub	*Corylus cornuta*	Beaked Hazel					x	x			x															
Shrub	*Crataegus chrysocarpa*	Round-leaved Hawthorn								x																
Shrub	*Fraxinus pennsylvanica*	Green Ash		x			x				x	x							x							x
Shrub	*Lonicera tatarica*	Tartarian Honeysuckle					x	x											x							
Shrub	*Populus tremuloides*	Trembling Aspen		x												x										
Shrub	*Prunus virginiana*	Chokecherry					x		x	x						x										x
Shrub	*Quercus macrocarpa*	Bur Oak																	x							
Shrub	*Rosa acicularis*	Prickly Rose															x			x						
Shrub	*Salix bebbiana*	Bebb's or Beaked Willow											x													
Shrub	*Salix exigua*	Sandbar Willow											x							x				x		
Shrub	*Salix* spp.	Willow				x														x						
Shrub	*Syringa* sp.	Lilac			x																					
Shrub	*Tilia americana*	Basswood		x	x					x																

Shrub	*Ulmus americana*	American Elm	x															x								x
Shrub	*Viburnum lentago*	Nannyberry						x			x															
Shrub	*Viburnum opulus*	Highbush-cranberry					x	x			x	x														
Shrub	*Viburnum rafinesquianum*	Downy Arrow-wood						x		x	x															
Shrub	*Vitis riparia*	Riverbank Grape								x							x			x						x
Low Shrub	*Acer negundo*	Manitoba Maple		x				x															x			
Low Shrub	*Actaea rubra*	Red Baneberry						x			x					x										x
Low Shrub	*Apocynum androsaemifolium*	Spreading Dogbane					x						x			x										
Low Shrub	*Caragana arborescens*	Common Caragana								x																
Low Shrub	*Cornus sericea*	Red-osier Dogwood		x									x													
Low Shrub	*Lonicera tatarica*	Tartarian Honeysuckle		x																						
Low Shrub	*Parthenocissus quinquefolia*	Virginia Creeper		x			x	x		x	x	x					x	x	x							x
Low Shrub	*Populus deltoides*	Cottonwood														x										
Low Shrub	*Populus tremuloides*	Trembling Aspen														x										
Low Shrub	*Prunus virginiana*	Chokecherry		x																						
Low Shrub	*Quercus macrocarpa*	Bur Oak															x									
Low Shrub	*Ribes glandulosum*	Skunk Currant																x	x							
Low Shrub	*Ribes* sp.	Currant															x									
Low Shrub	*Rosa acicularis*	Prickly Rose								x			x	x					x							x
Low Shrub	*Rubus idaeus*	Wild Red Raspberry						x										x								x
Low Shrub	*Salix* spp.	Willow																					x			
Low Shrub	*Sorbus decora*	Showy Mountain-ash		x																						
Low Shrub	*Symphoricarpos occidentalis*	Western Snowberry					x	x					x													
Low Shrub	*Ulmus americana*	American Elm																					x			
Low Shrub	*Viburnum edule*	Mooseberry										x														
Low Shrub	*Vitis riparia*	Riverbank Grape										x														
Forb	*Amaranthus retroflexus*	Redroot Pigweed																			x					
Forb	*Ambrosia artemisiifolia*	Common Ragweed			x																					
Forb	*Ambrosia trifida*	Giant Ragweed											x													
Forb	*Anemone canadensis*	Canada Anemone										x														x
Forb	*Aralia nudicaulis*	Wild Sarsaparilla					x	x			x						x	x	x							x
Forb	*Arctium minus*	Common Burdock				x	x												x							
Forb	*Artemisia absinthium*	Wormwood													x			x								
Forb	*Asclepias syriaca*	Common Milkweed					x						x					x				x		x		x

Forb	*Capsella bursa-pastoris*	Shepherd's Purse																				x			
Forb	*Chenopodium album*	Lamb's-quarters												x	x											
Forb	*Cirsium arvense*	Canada Thistle	x	x	x	x				x			x	x							x		x			
Forb	*Cirsium vulgare*	Bull Thistle												x												
Forb	*Cyclachaena xanthiifolia*	Marsh-elder								x				x	x						x					
Forb	*Descurainia sophia*	Flixweed					x																			
Forb	*Doellingeria umbellata*	Flat-topped White Aster															x									
Forb	*Equisetum hyemale*	Common Scouring-rush					x																			
Forb	*Erucastrum gallicum*	Dog-mustard												x												
Forb	*Euthamia graminifolia*	Flat-topped Goldenrod												x												
Forb	*Galium boreale*	Northern Bedstraw									x															
Forb	*Galium triflorum*	Sweet-scented Bedstraw																								x
Forb	*Glycyrrhiza lepidota*	Wild Licorice											x													x
Forb	*Grindelia squarrosa*	Curly-cup Gumweed											x	x												
Forb	*Hedysarum alpinum*	Alpine Hedysarum															x									
Forb	*Helianthus maximiliani*	Narrow-leaved Sunflower											x	x												
Forb	*Heracleum maximum*	Cow-parsnip																								x
Forb	*Impatiens capensis*	Spotted Touch-me-not																					x		x	
Forb	*Kochia scoparia*	Kochia													x											
Forb	*Lemna minor*	Lesser Duckweed																		x						
Forb	*Liatris ligulistylis*	Meadow Blazingstar											x													
Forb	*Linum lewisii*	Blue Flax												x												
Forb	*Lotus corniculatus*	Bird's-foot Trefoil												x		x										
Forb	*Lythrum salicaria*	Purple Loosestrife				x																				
Forb	*Maianthemum canadense*	Two-leaved Solomon's-seal					x	x																		
Forb	*Matteuccia struthiopteris*	Ostrich Fern					x					x														
Forb	*Medicago lupulina*	Black Medick		x	x									x												
Forb	*Medicago sativa*	Alfalfa												x		x					x					
Forb	*Melilotus albus*	White Sweet Clover		x		x				x			x	x		x										
Forb	*Melilotus officinalis*	Yellow Sweet Clover				x																				
Forb	*Nuphar variegata*	Yellow Pond-lily				x																				
Forb	*Osmorhiza claytonii*	Hairy Sweet Cicely					x																			
Forb	*Oxybasis glauca*	Oak-leaved Goosefoot													x											
Forb	*Persicaria lapathifolia*	Pale Smartweed				x									x											

Forb	*Plantago major*	Common Plantain			x					x											x					
Forb	*Polygonum amphibium*	Water Smartweed				x																	x			
Forb	*Polygonum aviculare*	Prostrate Knotweed	x												x						x					
Forb	*Potentilla anserina*	Silverweed	x			x							x										x			
Forb	*Rudbeckia laciniata*	Tall Coneflower																								x
Forb	*Rumex crispus*	Curled Dock	x										x		x							x				
Forb	*Solidago canadensis*	Canada Goldenrod		x			x				x	x	x			x	x	x	x							x
Forb	*Solidago rigida*	Stiff Goldenrod												x												
Forb	*Sonchus arvensis*	Field Sow-thistle		x		x	x		x	x			x								x					
Forb	*Symphyotrichum ciliolatum*	Lindley's Aster					x				x															
Forb	*Symphyotrichum ericoides*	Many-flowered Aster											x	x												
Forb	*Symphyotrichum laeve*	Smooth Aster												x												
Forb	*Taraxacum officinale*	Common Dandelion		x	x				x	x				x		x					x					
Forb	*Thalictrum venulosum*	Veiny Meadow-rue						x			x	x					x		x							x
Forb	*Thlaspi arvense*	Field Pennycress																			x					
Forb	*Toxicodendron rydbergii*	Poison-ivy		x			x	x		x	x					x	x		x							
Forb	*Trifolium hybridum*	Alsike Clover																			x					
Forb	*Trifolium pratense*	Red Clover																			x					
Forb	*Trifolium repens*	White Clover					x																			
Forb	*Typha latifolia*	Common Cat-tail																		x		x		x	x	
Forb	*Urtica dioica*	Stinging Nettle																	x						x	
Forb	*Vicia americana*	American Purple Vetch																								x
Graminoid	*Agrostis stolonifera*	Creeping Bent Grass											x													
Graminoid	*Andropogon gerardii*	Big Bluestem											x													
Graminoid	*Avena sativa*	Cultivated Oats													x											
Graminoid	*Beckmannia syzigachne*	American Sloughgrass																				x				
Graminoid	*Bromus inermis*	Smooth Brome	x	x			x		x	x	x	x	x	x		x		x	x		x					x
Graminoid	*Calamagrostis* sp.	Reed Grass											x													
Graminoid	*Carex aquatilis*	Water Sedge																							x	
Graminoid	*Elymus canadensis*	Canada Wildrye													x											
Graminoid	*Elymus repens*	Quackgrass											x						x							
Graminoid	Grass sp.	Grass																					x			
Graminoid	*Hordeum jubatum*	Wild Barley	x																		x					
Graminoid	*Phalaris arundinacea*	Reed Canarygrass				x							x							x	x	x		x	x	

Graminoid	*Phragmites australis*	Common Reedgrass																						x
Graminoid	*Poa pratensis*	Kentucky Bluegrass	x	x	x		x	x	x		x		x									x		
Graminoid	*Setaria viridis*	Green Foxtail																				x		
Graminoid	*Sporobolus michauxianus*	Prairie Cordgrass																			x			x

Appendix E
Breeding bird technical report

To:	*Jonathan Wiens* *Licensing & Environmental Dept.* *Manitoba Hydro*	From:	*Robert Berger* *Wildlife Resource Consulting Services MB Inc.*
File:	*Portage la Prairie BP6/7 Transmission Project* *BP6/7_EA_FA543*	Date:	*December 16, 2020*

Reference: Field Survey Report – Portage la Prairie BP6/7 Transmission Project Breeding Bird Survey 2020

OBJECTIVE

The objective of this field survey report is to outline the results of a breeding bird survey conducted in the Portage la Prairie BP6/7 Transmission Project study area (Map 1) on July 4, 2020. The purpose of this survey was to supplement existing breeding bird data (e.g., Manitoba Breeding Bird Atlas) with relative abundance and habitat conditions along various right-of-way (ROW) options.

METHODS

Breeding bird 5-minute point counts were conducted at 12 roadside sites in the Portage la Prairie BP6/7 Transmission Project study area (Map 1). Pre-selected sample sites focused on naturalized grasslands and wetlands. Photographs were taken at each sample site (see Appendix – Photographs). Some pre-selected sites were not accessible due to private property or other accessibility concerns. The survey was original; previous data do not exist at these locations.

RESULTS

Results suggest that about 43 bird species and 239 individuals were heard/observed (Table 1). Diversity averaged about 8.5 (range 4 to 13) species per plot (Table 2). Relative abundance averaged 19.9 (range 8 to 63) individuals per plot (Table 2). The most common aquatic bird species were American White Pelican, Canada Goose and Mallard. The most common terrestrial bird species were American Crow, Common Grackle and Red-winged Blackbird (Table 1). Important grassland bird species included Western Meadowlark and Savannah Sparrow. Forest birds such as Red-eyed Vireo and Yellow Warbler were common. No bird Species-at-Risk were detected during the survey.

INFORMATION AND RECOMMENDATIONS

The majority of the survey area consists of developed areas, disturbed roadside ditches and agricultural lands, occasionally interspersed with small naturalized grasslands and wetlands. The most significant habitat type in the study area is associated with Crescent Lake, where riparian and aquatic bird species (i.e., waterfowl, pelicans) are prominent and tend to be numerous. Most birds observed in this study are common to suburban developments and agricultural lands. Although no Species-at-Risk were observed, there is some potential for barn swallow, bobolink and other Species-at-Risk to occur. As a cautionary note, the survey effort was limited, and it was conducted late in the breeding bird season,

Robert Berger
Wildlife Resource Consulting Services MB Inc.
Phone: (204) 452-2197

MAP 1 – BP6/7 Route Planning Area and Sample Sites

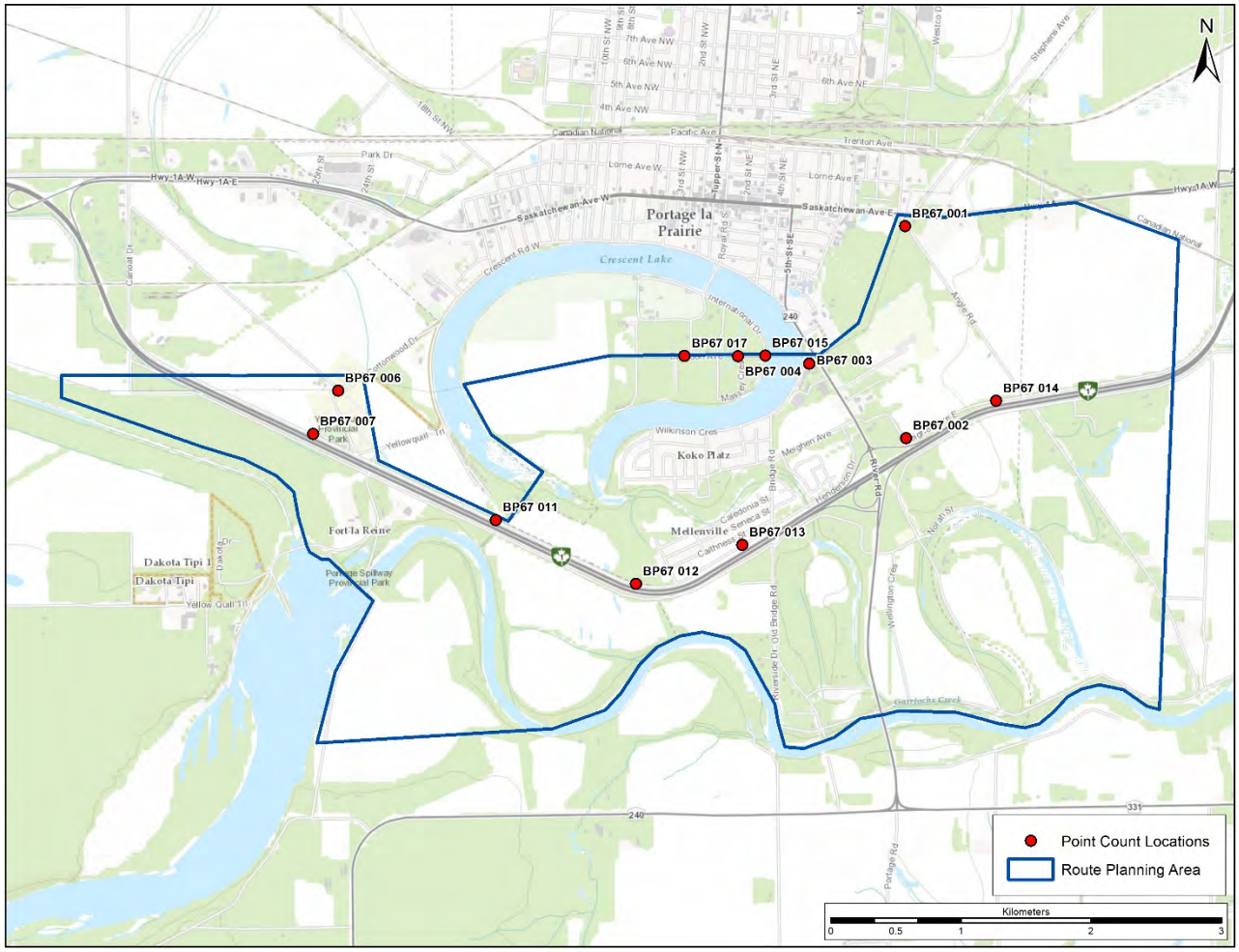


TABLE 1 – Bird Species Detected in the BP6/7 Study Area

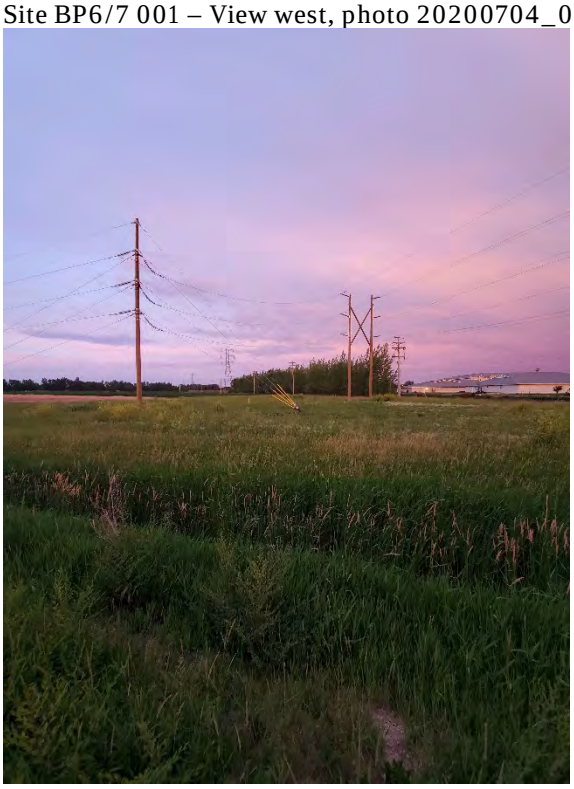
	BP67 001	BP67 002	BP67 003	BP67 004	BP67 006	BP67 007	BP67 011	BP67 012	BP67 013	BP67 014	BP67 015	BP67 017	Grand Total
American Coot											1		**1**
American Crow			3	3	2		3	2	1		1	1	**16**
American Goldfinch				1		1	2		2	1			**7**
American Redstart												1	**1**
American Robin				1	2				1			1	**5**
American White Pelican			27								25		**52**
Baltimore Oriole								1					**1**
Black-billed Magpie								1					**1**
Black-capped Chickadee					2							1	**3**
Blue Jay					1								**1**
Brown-headed Cowbird						1						1	**2**
Canada Goose				1							19		**20**
Chestnut-sided Warbler							1						**1**
Chipping Sparrow			1										**1**
Clay-coloured Sparrow						1			1			1	**3**
Common Grackle			14		1								**15**
Common Tern											5		**5**
Common Yellowthroat						1							**1**
Eastern Kingbird			1	1									**2**
Eastern Phoebe												1	**1**
Franklin's Gull											1		**1**
Gray Catbird								1				2	**3**
Great Crested Flycatcher									1				**1**
Green-winged Teal											1		**1**
Hairy Woodpecker			1	1									**2**
House Sparrow	2		1										**3**
House Wren			1	1	1		1	1				1	**6**
Killdeer							2						**2**
Lark Sparrow	1												**1**
Least Flycatcher					1		1	1					**3**
Mallard	2		9	1							6	1	**19**
Mourning Dove		1											**1**
Red-eyed Vireo				3			2	1	1			3	**10**
Red-winged Blackbird	3	2	1			2				3		1	**12**
Ring-billed Gull			4										**4**
Savannah Sparrow	1	2								1			**4**
Sedge Wren	1												**1**
Song Sparrow	1			1		1	1			1	1		**6**
Vesper Sparrow						1							**1**
Warbling Vireo									1				**1**
Western Meadowlark		3				1				3			**7**
White-breasted Nuthatch					1		1						**2**
Yellow Warbler						1	1	3	2			2	**9**
Grand Total	**11**	**8**	**63**	**14**	**11**	**10**	**15**	**11**	**10**	**9**	**60**	**17**	**239**

TABLE 2 – Bird Species Diversity and Abundance by Plot

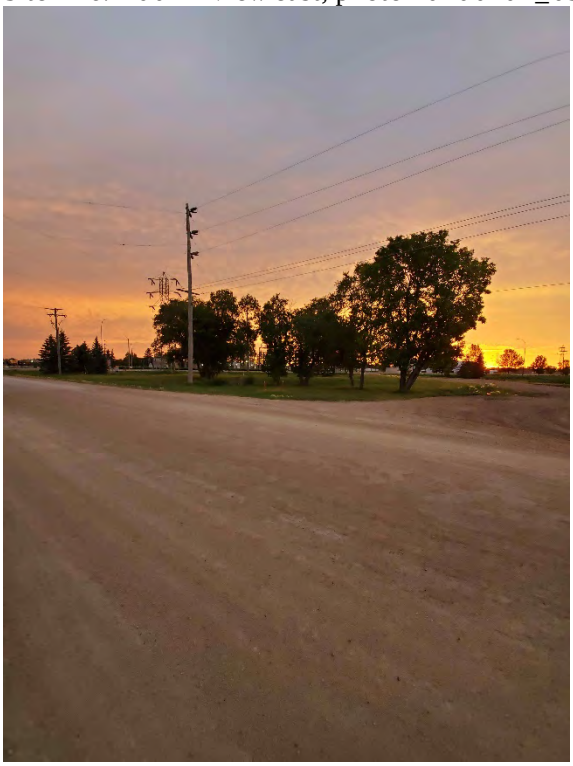
	Diversity	Abundance
BP67 001	7	11
BP67 002	4	8
BP67 003	11	63
BP67 004	10	14
BP67 006	8	11
BP67 007	9	10
BP67 011	10	15
BP67 012	8	11
BP67 013	8	10
BP67 014	5	9
BP67 015	9	60
BP67 017	13	17
Average	**8.5**	**19.9**

APPENDIX - PHOTOGRAPHS:

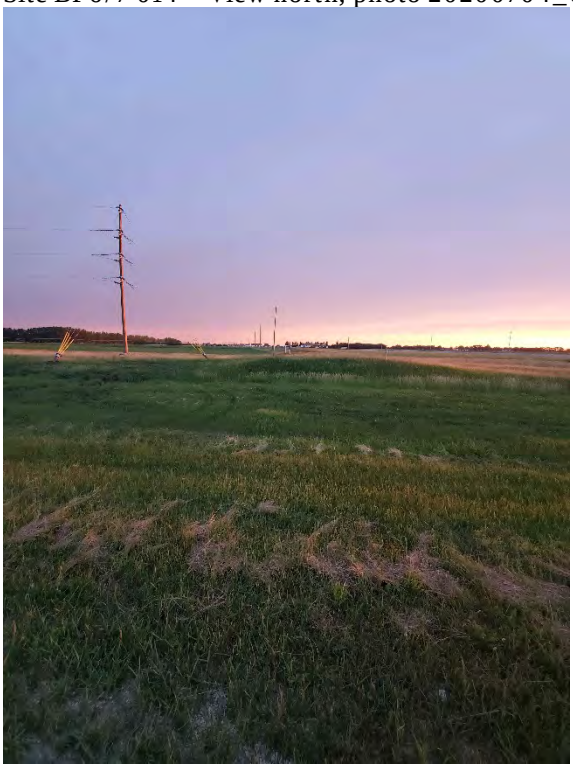
Site BP6/7 001 – View west, photo 20200704_052949



Site BP6/7 001 – View east, photo 20200704_052955



Site BP6/7 014 – View north, photo 20200704_054017



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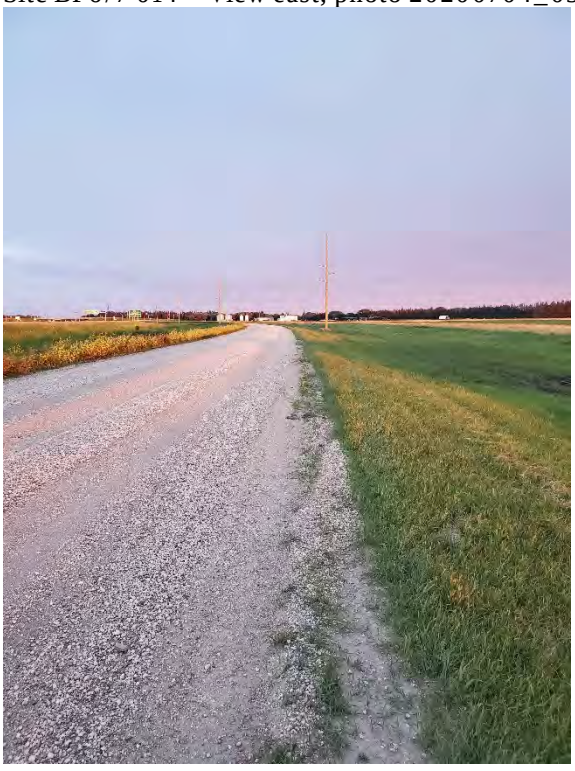
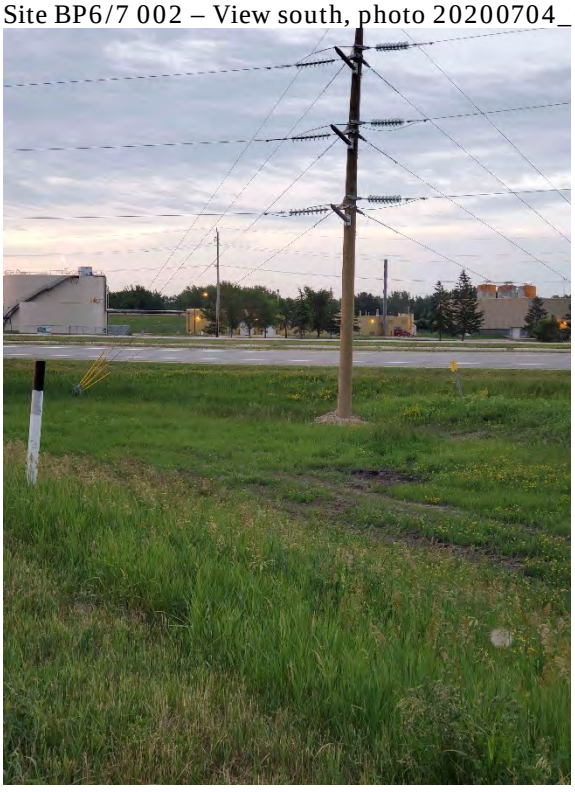


Site BP6/7 002 – View west, photo 20200704_055020

Site BP6/7 002 – View south, photo 20200704_055035



Site BP6/7 003 – View northeast, photo 20200704_055947

Site BP6/7 003 – View northwest, photo 20200704_055951

Site BP6/7 013 – View west, photo 20200704_061043

Site BP6/7 013 – View northwest, photo 20200704_061047

Site BP6/7 013 – Milkweed photo 20200704_061300

Site BP6/7 012 – View west, photo 20200704_061847

Site BP6/7 012 – View northwest, photo 20200704_061850

Site BP6/7 011 – View west, photo 20200704_062958

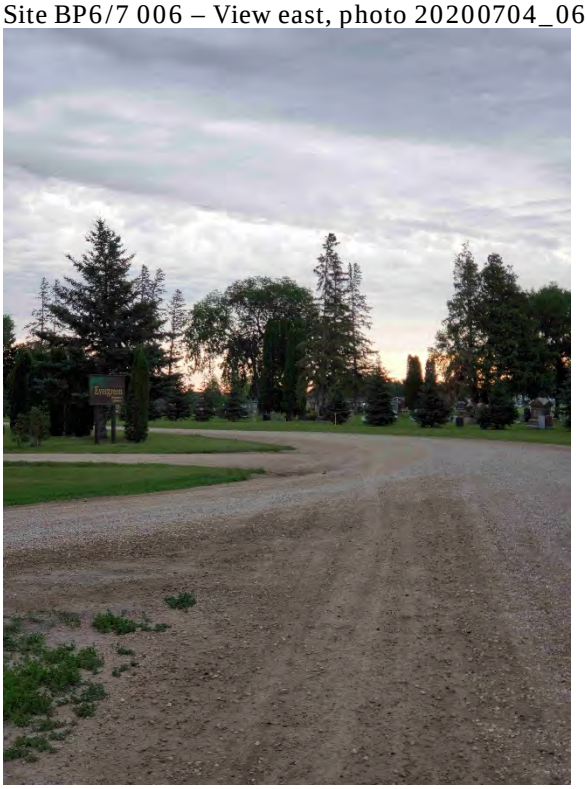
Site BP6/7 011 – View northwest, photo 20200704_063001

Site BP6/7 007 – View west, photo 20200704_063851

Site BP6/7 007 – View northwest, photo 20200704_063855

Site BP6/7 006 – View west, photo 20200704_065733

Site BP6/7 006 – View east, photo 20200704_065756



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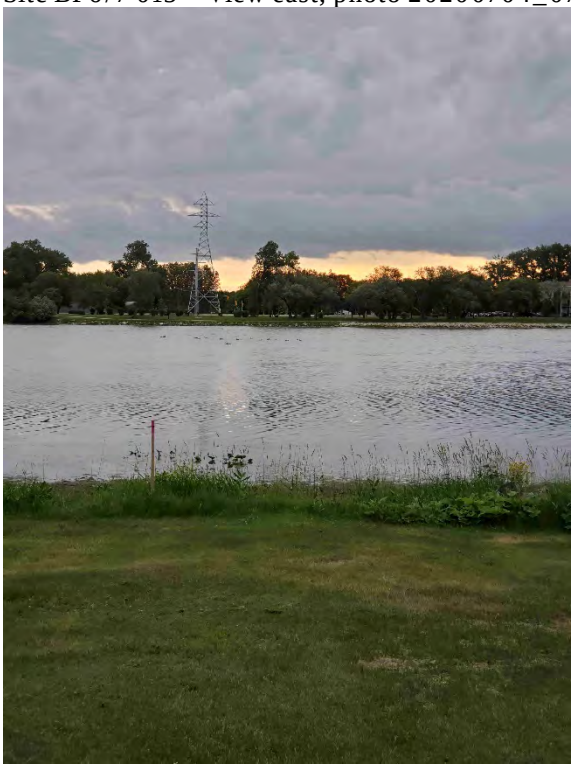


Site BP6/7 015 – View west, photo 20200704_072004

Site BP6/7 004 – View east, photo 20200704_072805

Site BP6/7 004 – View south, photo 20200704_072808

Site BP6/7 004 – View west, photo 20200704_072812

Site BP6/7 004 – White-tailed deer across pond photo 20200704_073224

Site BP6/7 017 – View east, photo 20200704_073834

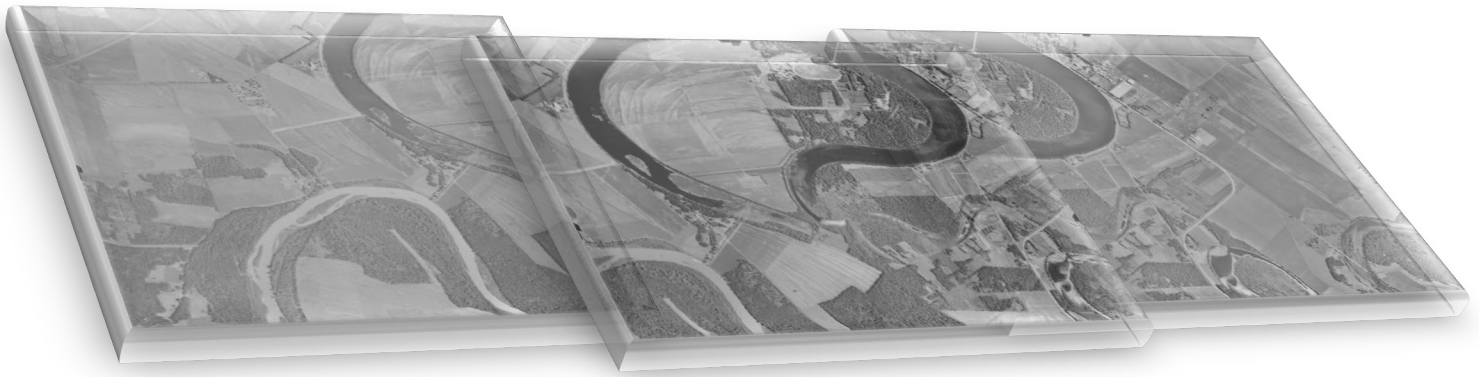
Site BP6/7 017 – View west, photo 20200704_073838

Appendix F
Heritage technical report

BRANDON – PORTAGE LA PRAIRIE AREA RESTORATION AND EXPANSION PROJECT
BP6/BP7 TRANSMISSION LINE REPLACEMENT
HERITAGE TECHNICAL REPORT

Prepared for:

Manitoba Hydro



Prepared by:

INTERGROUP CONSULTANTS LTD.

March 2021

InterGroup

CONSULTANTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

LIST OF FIGURES

1.0 INTRODUCTION

In the fall of 2020, Manitoba Hydro conducted the first round of engagement for the Brandon–Portage la Prairie Area Restoration and Expansion Project's BP6/BP7 transmission line replacement (the Project). Alternative routes were evaluated based on feedback and information collected through environmental assessment processes to help determine a preferred route.

The following is a characterization report of known and potential heritage resource concerns along the proposed preferred route and alternative routes located on Crescent Island in the anticipation of proposed construction of a double circuit transmission line (BP6/BP7). Development of the heritage technical memorandum involved acquiring the locations of previously recorded archaeological sites, registered century farms and a compiled list of municipally, provincially, and federally designated sites. A review of historic trails and parishes was conducted, and a list of known cemeteries was compiled. Archival maps and aerial photos were compared to Google® images to identify areas within the project area that have been modified agriculturally or impacted by road development, land drainage, or urban development.

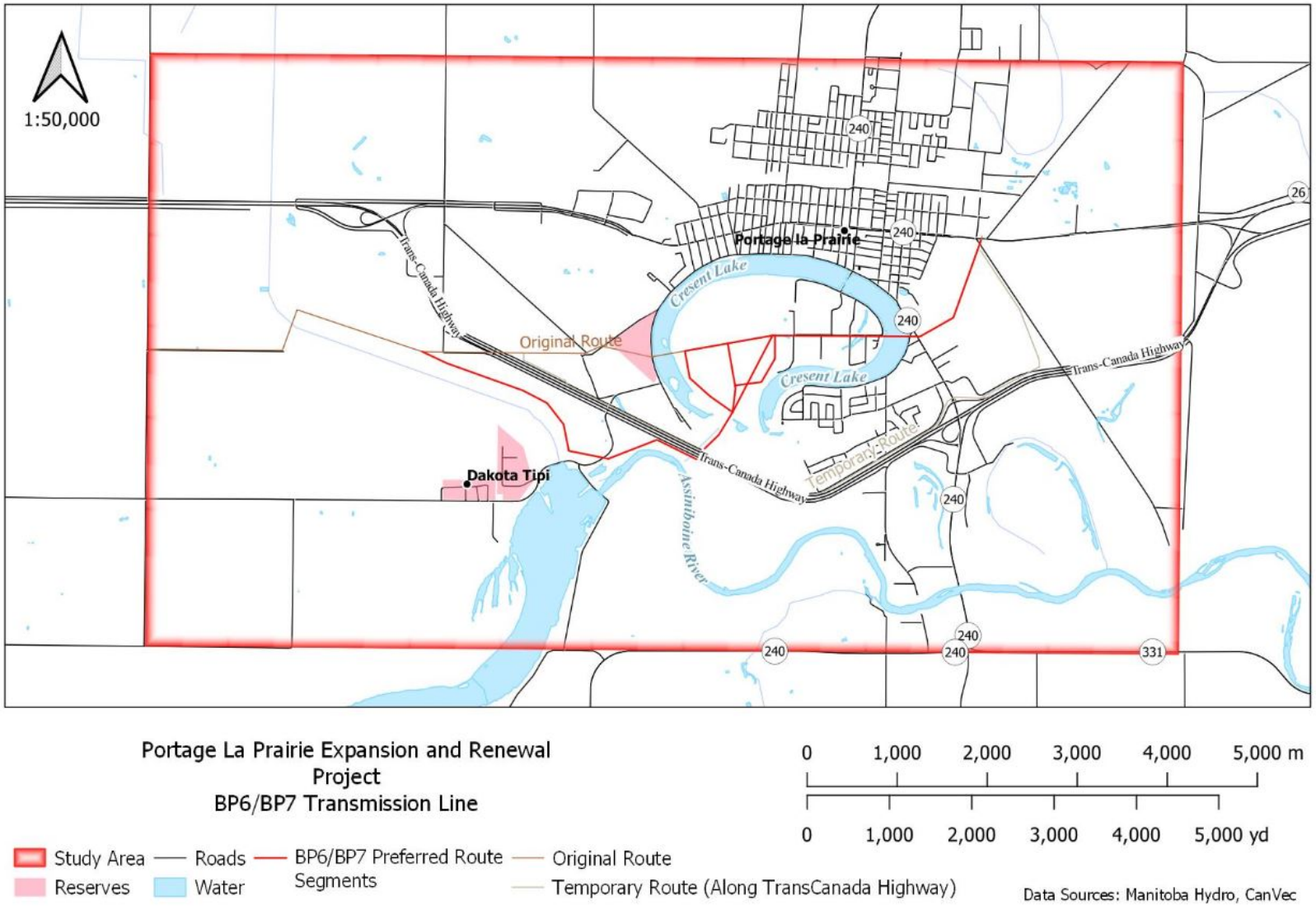
2.0 NATURAL ENVIRONMENT AND CULTURAL SETTING

An examination of the natural environment that has shaped the Project area is important for providing context to the regions cultural heritage and features that may be encountered during the Project.

2.1 NATURAL ENVIRONMENT

The Project study area overlaps with the City of Portage la Prairie and surrounding area (Map 1). The general environment is part of the Central Plains Region and Lake Manitoba Ecoregion. The Central Plains Region is a diverse landscape consisting of tall grass prairies, aspen forests, sandy beaches, rolling hills, farm fields, lakes, river valleys, marshes, wetlands, sedge meadows and man-made dykes. The Lake Manitoba Plains Ecoregion is part of the Prairies Ecozone (Map 2), which extends from the United States border, in a general north west direction towards Lake Dauphin. The ecoregion is flanked on the southwest by the Manitoba escarpment. The climate is marked by short, warm summers and long, cold winters. The ecoregion is classified as having a transitional grassland ecoclimate, which is now mostly farmland, but in its native state, the landscape was characterized by trembling aspen, oak groves, and intermittent fescue grasslands. This broad plain region, underlain by Precambrian limestone, is covered by flat to slightly undulating glacio-lacustrine silts and clays. The soils of the ecoregion are dominantly Black Chernozemic soils developed on loam and feature some of the most agriculturally important and productive soils in Manitoba (Smith, et al 1998:244-245). The ecoregion provides major breeding habitat for waterfowl and includes habitat for white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), ground squirrel (*Alpine marmot*) and bird species like Great Grey Owls (*Strix nebulosa*), Trumpeter Swans (*Cygnus buccinator*), and Barn Swallows (*Hirundo rustica*).

Map 1: Study Area



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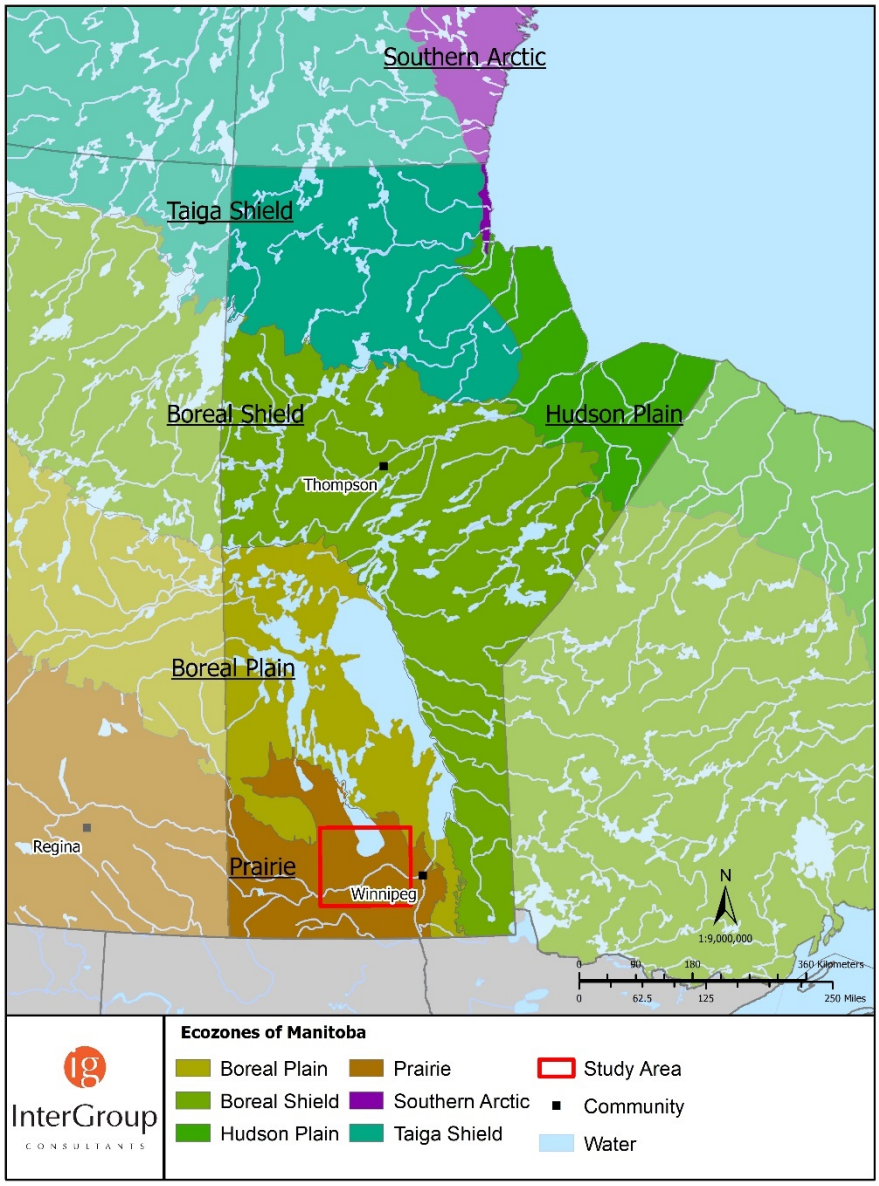
Map 2: Ecozones of Manitoba



The study area crosses three watersheds. These include the Lake Winnipeg, the Assiniboine River, and the Red River Watershed. Of particular importance to this area is Lake Manitoba which is a prominent hydrological feature in the northern half of the study area and is flanked by several large marshes and wetlands. Major waterways include the Assiniboine River, La Salle River, the Boyne River, the Whitemud River as well as the Portage Diversion Channel, a man-made waterway which connects the Assiniboine River to Lake Manitoba and aids in decreasing the severity of flooding events.

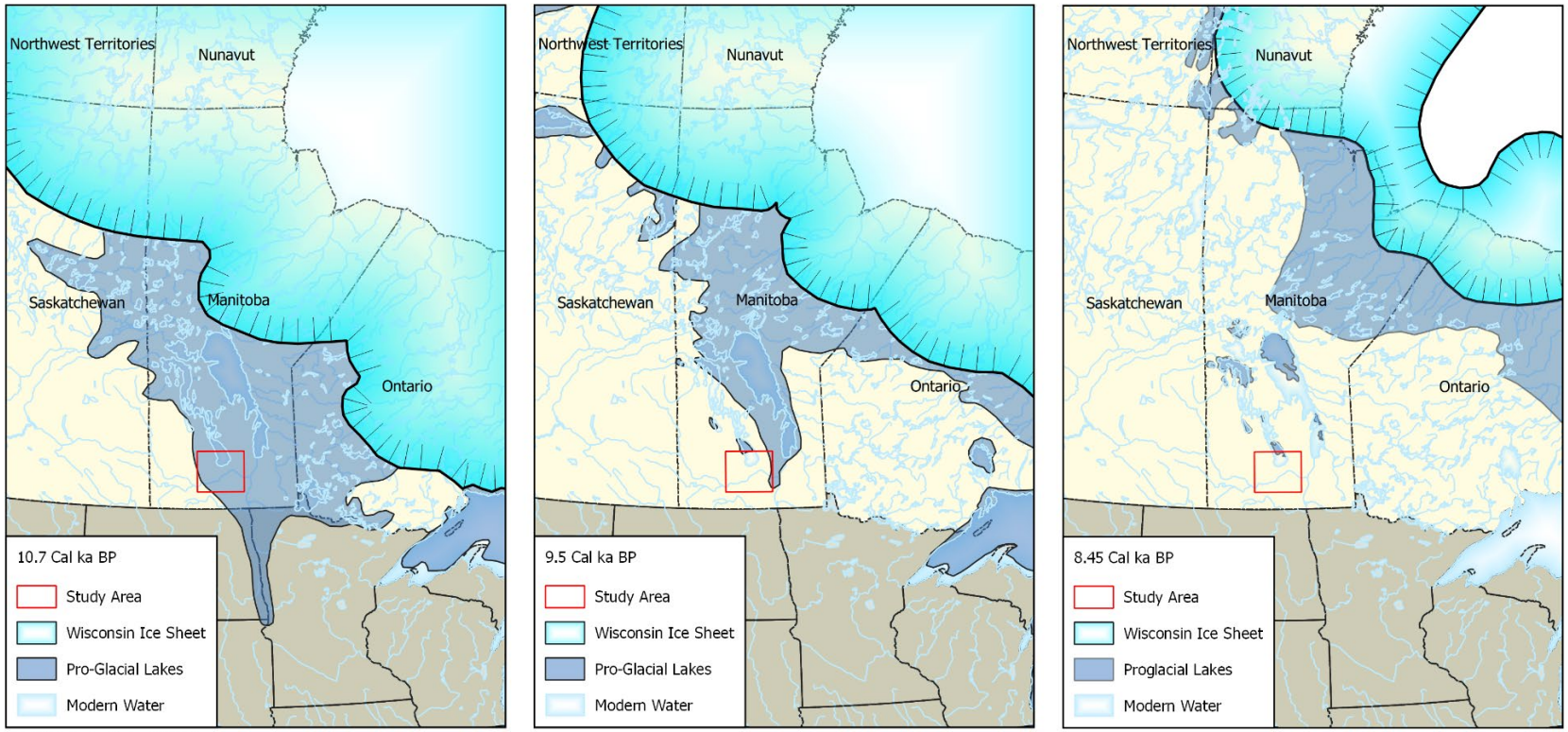
2.2 PALEO-ENVIRONMENT

The last great Ice Age, known as 'the Wisconsin Glaciation,' was responsible for creating the topography of Manitoba as it is known today. At its highest extent, the ice formed a glacier over two kilometres thick over the study region (Ledohoski 2009:10). By 18,000 years ago (ya), the glacier began to melt and by 10,700 ya, it had fully retreated from what is now southcentral Manitoba. The glacial melt waters collected along portions of the ice fronts, forming huge lakes. The largest of these glacial lakes was called Glacial Lake Agassiz. The Manitoba Escarpment forms the edge of the extent of Glacial Lake Agassiz and separated the Agassiz basin from the elevated areas to the west (Teller and Last 1981). This escarpment is found in the southern portion of the study area. Glacial Lake Agassiz would gradually drain from the study area via several outlets as the Wisconsin Ice sheet retreated in a generally north-east direction. The study area become subaerial by approximately 9,500 ya. It is important to note that Lake Manitoba was still undergoing rapid post glacial changes and its shoreline would not resemble its current extent until 5,000 ya. This was due to differential isostatic rebound of the northern half of the Lake Manitoba basin 'tilting' the basin forcing water to pool in its southern extent. This pooling and filling of the southern half of the basin was aided by periodic switching of the Assiniboine River, from its current Red River outlet to emptying into Lake Manitoba, as evidenced by buried fluvial deposits from sediment cores (Last and Teller 2002).

Following the retreat of the Wisconsin ice sheet and draining of the large interior proglacial lakes, dry cold air flowing from the still nearby ice mass created a boreal coniferous forest with large and expansive stands of conifers such as spruce (Fagan 2000:116). This environment persisted and aridity increased until approximately 7,000 ya when, the boreal coniferous forest gave way to a more established open prairie. This new environment referred to as the prairie peninsula featured a decrease in precipitation, increased temperatures and increased the salinity in lakes and ponds (Fagan 2000; Oetelaar 2011). Bison populations began to move north from the southern plains following the retreat of the boreal forests. This climatic aridity persisted until approximately 4,000 ya (Nicholson and Webster 2011) when climatic conditions began to become like current conditions. This period is often referred to as the Neoglacial period and features a milder mixed prairie parkland environment with small stands deciduous oaks and aspen and expanses of open tall grasslands (Kay 1998). Figure 1 shows the deglaciation of Manitoba.

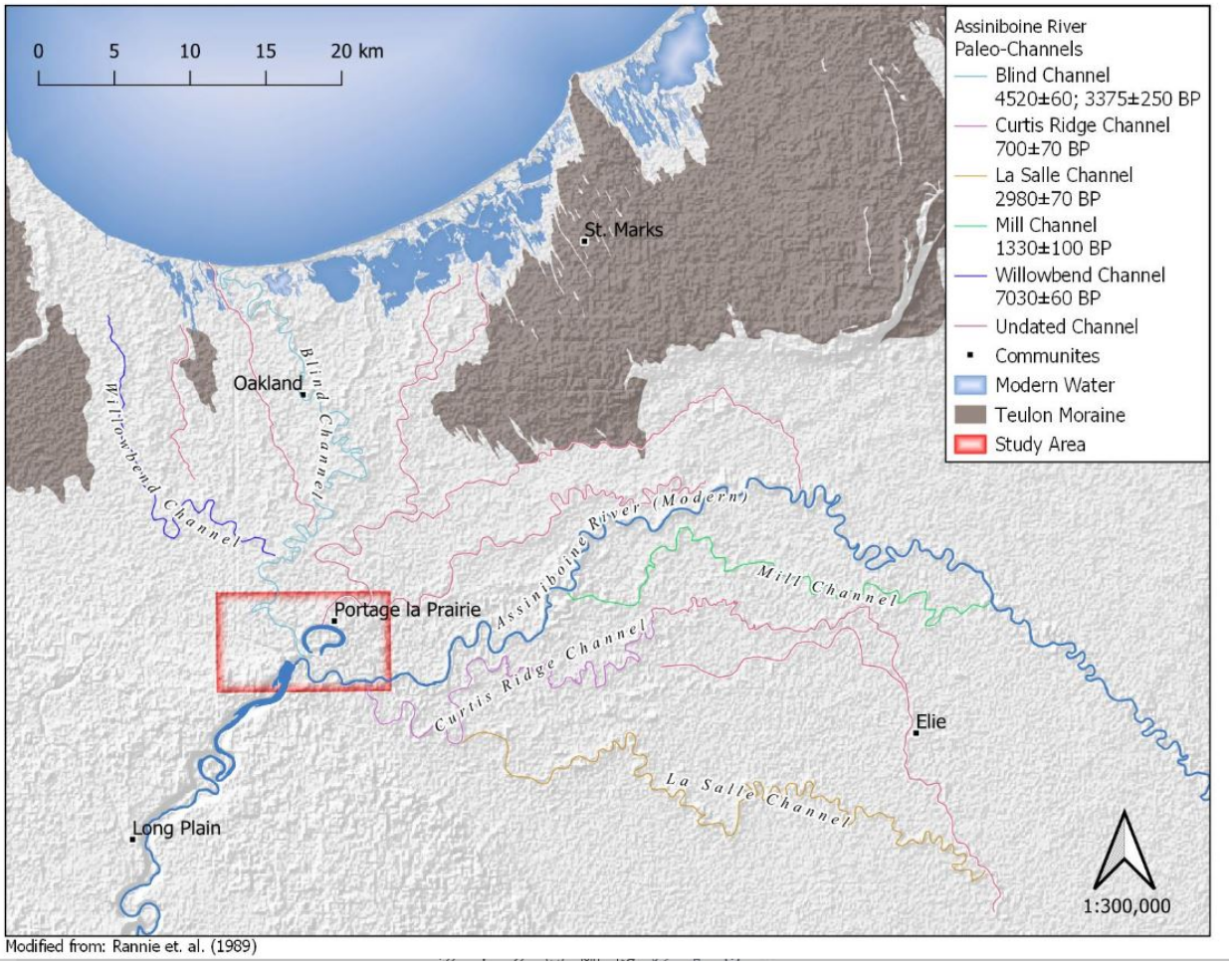
As the Assiniboine River emptied into the broad flat former lakebed of Glacial Lake Agassiz it created a large alluvial fan. During the construction of this fan, the river switched its outlet and course at least eight times, emptying into Lake Manitoba, being captured by the La Salle river, or followed a course connecting it with the more easterly Red River at several junctions. This periodic channel switching can be seen in several abandoned paleo channels within the study area as crop marks on orthophotography. The river established its general eastern course by around 3,000 ya and assumed its current channel by no later than 700 ya (Rannie and Teller 1989). Figure 2 shows the Assiniboine River and paleo channels.

Figure 1: Deglaciation of Manitoba



Modified from: Dyke (2004)

Figure 2: Assiniboine River Paleo Channels



2.3 CULTURAL SETTING

The cultural chronology for Manitoba is based on technological innovations and historical happenings. It comprises two major time periods: Pre-European Contact and Historic. These are further divided into Early, Middle, and Late sub-periods. The Pre-European Contact period dates from *ca*. 300-12,000 ya, while the historic period dates from after ca. 1700 (*ca*. 300 years ago to present), when Europeans and fur traders entered the area.

2.3.1 Pre-European Contact Period

2.3.1.1 Early Pre-European Contact Period (Paleo) *ca*. 6,500-10,000 ya

According to the archaeological record, the area surrounding Portage la Prairie has been continually occupied since the middle Pre-European Contact period (*ca*. 2,500-6,500 years ago); however, it is likely that the area has been occupied since glacial Lake Agassiz receded about *ca*.10,000 years ago. The peoples

who would have occupied this area were bison hunters, who followed the herds into the area from the south and the west (Pettipas and Buchner 1983)

2.3.1.2 Middle Pre-European Contact Period (Intensive Diversification) *ca.* 2,500-6,500 ya

The Middle Pre-European Contact Period is marked by a period of warmer and drier environmental conditions, which resulted in the northward expansion of the treeline over 200 kilometres north of the present forest limit. In southern Manitoba, deciduous trees moved further north, marking the initial occurrence of aspen parklands (Pettipas 2014). The increasing number of plant resources, expanding fish resources, and a broad range of game animals, required slightly different adaptive systems and subsistence strategies.

Several important cultural adaptations occurred within the middle pre-European contact period (Wright 1995), including the appearance of notched or stemmed projectile points, end scrapers, ground stone adzes and other cutting implements. The appearance of new style projectile points and the introduction of the atlatl (a spear extender, which provided leverage to the spear thus increasing the velocity and accuracy of the projectile) suggest adaptive technological changes for procuring food resources. Raw materials used by the middle pre-European contact period people became much more diverse, including the appearance and use of native copper which was used for making tools and adornments (Pettipas 1984). The peoples using such tools are considered by archaeologists to be mainly hunters and fishers who subsisted on a seasonally diverse diet of large and small game, fish, and local plants (Wright 1995).

2.3.1.3 Late Pre-European Contact Period (Woodland) ca. 300-2,500 ya

The introduction of native clay pottery and adoption of the bow and arrow marks the differentiation between the Late Pre-European Contact (*ca*. 300-2,500 years ago) and Middle Pre-European Contact periods. This period is also referred to as Woodland, which has shown to have first developed in eastern North America before moving westward. In Manitoba, the Woodland Period is further divided into two periods, Initial (*ca*. 2,500 years ago) and Terminal (*ca*. 1,000 years ago) which is based on vessel construction and stylistic attributes.

The Initial Woodland people using pottery are represented by the Laurel pottery that was conical in shape, manufactured using a coiling method and was decorated with various stamping techniques and incised design. The pottery is defined as coarsely tempered and conical in shape with straight necks and wide mouths and pointed bottom (Pettipas 1984). The Laurel lithic toolkit consisted of a variety of stone tools including scrapers, hammerstones, pipes and triangular-shaped projectile points, as well as tools manufactured from bone, wood, and antler (Stoltman 1973).

The Terminal Woodland Tradition contains several important pottery types that represent local variations that made them distinctive. Although pottery construction is believed to use similar techniques, there are signature differences within this tradition. For the study area, Blackduck, Selkirk and Sandy Lake pottery types are the main derivatives. The peoples associated with these types of pottery constructed globular shaped vessels made from masses of wet clay, using a lamination technique. Archaeologists believe that these pots were pre-formed in a woven bag that left a distinct fabric impression on the exterior. Vessel

rims, necks and lips were embellished with combinations of design attributes such as decorative punctates, small cord-wrapped-stick impressions, or incising (Pettipas 1984). It is thought that the makers of Sandy Lake ware were probably 'Siouan'. This is assumed based on Sandy Lake ware being recovered from sites identified as being occupied by the Dakota and in association with early French fur trade goods (LHU 2021; Taylor-Hollings 1999). Lithic tools associated with the Terminal Woodland sites include small triangular and side-notched projectile points, stone drills, and smoking pipes (Wright 1972).

The Late Pre-European Contact cultures were also characterized by burying their dead in linear or circular mounds (Syms 1978) and agricultural activities (Malainey 2020, Syms and Halwas 2019).

2.3.2 Historic Period (1700-1940)

Although there are distinct views on Indigenous and non-Indigenous interpretations of history, the European account of historical events provides written documentation of the history of the region. The Historic Period dates from when European and Canadian fur traders and explorers entered the area to trade goods for furs that could be exported to Europe. Indigenous oral histories were now augmented with primary records, including subjective materials (letters, diaries), statistical records (post inventory records, employee payrolls), maps and photographs.

2.3.2.1 Early Historic Period (1700-1821)

The arrival of Europeans into the Portage la Prairie area began during the early 18th century with the exploration of new fur trade routes. During this early period, traders were sent inland to cultivate trading relationships with local First Nation groups, while using established Indigenous travel routes (Thistle 1986). Indigenous individuals and groups acted as traders and middlemen and likely benefited from the increased competition between the Hudson's Bay Company and the Montréal-based independents, who were generally referred to as "les Canadians." In 1779, the Montréal traders formed an organization to reduce expenses and ease the rivalry between traders, which became the North West Company (NWC) (Ray and Heidenreich 1976). With the establishment of the fur trade, furs were traded for items of European manufacture, such as kettles, muskets, hatchets, and beads. Gradually, European trade goods filtered into the local Indigenous groups and traditional products such as clay pottery and lithic tools were replaced by copper pots and metal implements.

In 1738, La Vérendrye and his sons established Fort la Reine on the Assiniboine River near present day Portage la Prairie (Burpee 1927). The fur trading post served as the base of operations for much exploration north and west and was chosen in part to intercept the trade of the Indigenous traders crossing the portage to Lake Manitoba en route to the English posts on Hudson Bay. From the fort, explorers made their way to Lac des Prairies (Lake Manitoba) and Lake Winnipegosis, Lake Winnipeg, the Saskatchewan River, and the Missouri River. Abandoned in 1749, the fort was reconstructed in 1751 and burnt down a year later (Goldsborough 2019).

In 1794, the Hudson Bay Company (HBC) established a fur trade post on the Assiniboine River close to Fort la Reine. The HBC operated at Portage la Prairie until around 1821, the time of the amalgamation of the company with the NWC.

While most major fur trade posts were located strategically on waterways, overland access was just as important. An extensive network of cart trails and overland transportation routes that criss-crossed the southern Prairies, connecting various trade posts and communities supports the importance of overland access was established. Several cart trails were established along those originally used by First Nation groups who tracked wild game along its primal contours (Hall 1969).

2.3.3 Middle Historic Period (1821-1870)

As trade routes became established throughout the interior, European goods such as ceramics, copper pots, glass bottles, metal nails and tools became more conspicuous in the regional cultural inventory. This incremental change in the availability of European trade goods is reflected in the archaeological record.

The coalition of the HBC and the NWC in 1821 ended over 25 years of fierce competition between the two establishments and created a fur trading monopoly that covered one quarter of North America. This amalgamation also resulted in a tendency for some bands to congregate near a specific post, causing a more sedentary life way.

In 1832, the Portage la Prairie fort was re-established to replace Brandon House (1793-1811), located east of Brandon, along the Assiniboine River. It acted as a guard house to monitor the trade of Indigenous hunters from the Pembina and Turtle Mountain areas. By 1834, the Portage la Prairie fort appears to have been closed. By the middle of the 19th century, the Métis had become essential partners in the fur trade acting as interpreters, guides, messengers, transporters, traders, and suppliers (Kermoal n.d.). Due to their close ties with the fur trade, most Métis people were spread along the Canadian fur trade routes, including Portage la Prairie. Traditionally, the Métis were hunters and were dependent on the buffalo hunt. The Métis from Portage la Prairie were noted to participate in the buffalo hunt with the White Horse Plains hunters (Nor'wester 1860).

Permanent settlement in Portage la Prairie began after 1851, when the Reverend William Cockran established a mission there (Barkwell, 2013). By the late 1860s the parish river-lot survey system was expanded from the Red River Settlement up the Assiniboine River as far as Portage la Prairie (Government of MB n.d.). One of the first settler families in the district, Francis Ogletree purchased property (1869) near Portage la Prairie where he farmed for fourteen years. For the next twenty-one years he acted in various capacities including: drill instructor during the Red River uprising (1869-1870), police magistrate for the town of Portage la Prairie, Indian Agent for the area, and a member of the Legislative Council of Manitoba (1871-1876) and Manitoba Executive Council (1874) (MHS 2020). The preferred route falls within the Ogletree property.

2.3.3.1 Late Historic Period (1870-1940)

Throughout the Late Historic Period, even after the establishment of reserves by the treaty process, Indigenous peoples maintained traditional land use and the seasonal round of activities of hunting and fishing. Despite maintaining aspects of traditional land use, by this time material culture was almost entirely Euro-Canadian. Settlements and populations grew and oriented to a trading post-mission complex.

The two major trails in the study area were the Carlson Trail that ran east-west approximately 900 miles from Fort Garry (Winnipeg) to Upper Fort des Prairies (Edmonton) and the Yellowquill Trail which ran west

to Saskatchewan toward the headwaters of the Missouri River (Barker 1971). The Carlton Trail was the primary trail used by the Métis as they moved westward from the Red River following events of 1870 (Kermoal n.d.). Several unnamed minor trails can also be found within the study area. By the 1890s the cart trails had been replaced by the railway.

3.0 HERITAGE RESOURCE POTENTIAL

The assessment of heritage resource potential is based upon a consideration of the locations of documented archaeological sites, historic land use information, and the landscape characteristics that either positively or negatively influence archaeological site distribution. The criteria for evaluating archaeological potential are achieved by reviewing current land use, archival maps, photos, LiDAR, and mapping potential locations (e.g., types of landforms, nearness to documented heritage resources, proximity to historic settlement, proximity water). The results of this qualitative review are then used to determine the archaeological potential within the proposed Project Footprint using ArcGIS. For the purposes of this study, archaeological potential is defined as the likelihood of past activities having produced tangible evidence and property which may contain archaeological resources.

Lands are characterized as having high, moderate, moderate-low, or low heritage resource potential. These categories in theory affect the scope and level of effort recommended for future archaeological studies, proposed monitoring and mitigation activities, and basic heritage resource management approaches. Generally, the higher the characterization, the greater the level of archaeological investigation is expected by regulatory authorities. High potential areas are lands exhibiting many attributes that support past cultural activities and where you would expect significant finds during any disturbance of the ground. The less attributes exhibited, the lower the potential. Lands with higher archaeological potential would require more in-depth investigation, while archaeological investigations are not normally recommended for lands categorized as having low archaeological potential.

3.1 HERITAGE SITES

Ancient land use practices can be observed within the archaeological record. In relation to cultural ecology, archaeologists examine how past cultures lived on certain landscapes or in a specific environment at a particular past time (Cromley 1994). Within this landscape, certain features and areas contain tangible evidence of past people. Heritage resources were characterized for the study area based on the locations of previously recorded, archaeological sites, registered century farms and a compiled list of municipally and provincially designated sites. A search of historic trails and parish buildings as well as list of known cemeteries was also compiled.

The archaeological record provides physical and documented evidence of different cultural occupations that have occurred over millennia. The Province of Manitoba maintains archaeological site information in an archaeological site inventory database.

A review of existing registered archaeological sites in the study area was undertaken. A request was sent to the Manitoba Historic Resources Branch (HRB) to review the archaeological site inventory for registered sites within the study area. The archaeological sites identified in the study area total 14 registered sites. The documented archaeological sites (Table 1) reveal a human occupation of the area dating back to the

Middle Pre-European Contact period (*ca*. 2,500-6,500 ya). The sites have been recorded as surface finds or deeply buried, such as the historic Sioux burial discovered under a roadbed on Crescent Island.

Of the 14 registered sites, three (DlLn-001, DlLn-006 and DlLn-010) are located within 500 meters (m) of the proposed preferred route and alternative routes located on Crescent Island.

Table 1: Heritage sites recorded for the study area

Borden No.	Site Type	Period	Description
DlLn-001	Campsite Fur trade post	Historic Fort la Reine	Historic artifacts
DlLn-002	Isolated find	Pre-European contact	Grooved maul
DlLn-006	Campsite	Woodland	Prairie side-notched projectile point
DlLn-010	Isolated find	Pre-European contact	Hammerstone
DlLn-011	Campsite	Woodland	Besant and plains side-notched points
DlLn-012	Campsite	Pre-European contact Historic	No information provided
DlLn-013	Isolated find	Pre-European contact	Hammerstone
DlLn-014	Burial	Historic	Burials found during construction
DlLn-015	Burial	Historic	Graves
DlLn-016	Uninterpreted	Historic	Mid/Late 19th century to modern materials
DlLn-017	Burial	Historic Sioux	Graves
DlLo-Y1	Uninterpreted	Archaic, Woodland, Historic	Archaic and Woodland projectile points; cannonballs
DlLo-014	Campsite	Pre-European contact historic	Side-notched projectile point, historic ceramics, and glass
DlLo-Y1	Uninterpreted	Pre-European contact	Four hammerstones

Source: HRB

In the study area, two centennial farms (Table 2) have been recorded. Neither fall within 500m of the proposed preferred route or the alternative route located on Crescent Island.

Table 2: List of centennial farms in the study area

Centennial Farm	Original Date	Legal Description
S Family Farm	1869	Parish Lot 55
B Family Farm	1872	SW 4-12-7W

Source: HRB

All federally, provincially, and municipally designated sites relate to land use during the late historic period and consist of historic structures including churches, residences, and public buildings.

In the study area, 10 plaques for designated buildings have been recorded (Table 3). None fall within 500m of the proposed preferred route and alternative routes located on Crescent Island.

There are four recognized active cemeteries in the study area (Table 4). A portion of Hillside Cemetery falls within 500m of proposed preferred route and alternative routes located on Crescent Island.

There is the potential for active and/or abandoned graveyards or burials to be present within the study area.

There are two major historic trails in the study area (Table 5). Both of which fall within 500m of proposed preferred route and alternative routes located on Crescent Island.

Table 3: List of designated buildings in the study area

Plaque ID	Building name	Designation
F128	Portage la Prairie Public Building	National Historic Site of Canada
F8460	Portage la Prairie Armoury	Federal Heritage Building
P119	Portage la Prairie Indian Residential School	Provincial Heritage Site National Historic Site of Canada
P112	St. Mary's la Prairie Anglican Church	Provincial Heritage Site
P094	Portage la Prairie Land Titles Building	Provincial Heritage Site
M285	McCowan House	Municipal Heritage Site
M038	Portage la Prairie Dominion Post Office	Municipal Heritage Site
M257	Canadian Pacific Railway Station	Municipal Heritage Site
M352	Hill's Drug Store	Municipal Heritage Site
M260	Taylor House	Municipal Heritage Site
Plaque ID	Building name	Designation

Source: HRB

Table 4: List of recognized cemeteries in the study area

Cemetery	Legal Description
Dakota Tipi Cemetery	RL-25-PP
Hillside Memorial Cemetery	RL-23-PP
Old Sioux Village and Cemetery	11-07W
St. Mary's Anglican Church Cemetery	11-06W

Source: HRB

Table 5: List of centennial farms in the study area

Historic Trail	Legal Description
Carlton Trail	RL-42-PP, RL-44-PP, RL-45-PP, RL-46-PP, RL-47-PP, RL-49-PP through RL-54-PP, follows 1A,
Yellowquill Trail	RL-22-PP, RL-23-PP, RL-49-PP through RL-55-PP

Source: HRB

A review of archival and parish maps indicates that at least 66 parish buildings and six fur trade buildings were within the study area, most of which are located along the historic trails. Seventeen of the parish buildings are located within 500 metres of the PPR and alternative routes. All six of the fur trade buildings are located with the Project Footprint, with three located on Crescent Island.

4.0 SUMMARY AND RECOMMENDATIONS

The preliminary assessment of heritage resource potential for the Brandon–Portage la Prairie Area Restoration and Expansion Project's BP6/BP7 transmission line replacement (the Project) considered the locations of documented archaeological sites, historic land use information, and the land scape characteristics that either positively or negatively influence archaeological site distribution. Based on the qualitative review, the heritage resource concerns for transmission line routing and tower placement would be moderate to high for much of the study area due to the following:

- The region is comprised of an ancient and active riverine system with numerous relic oxbows, which are considered to have high archaeological potential.
- According to the archaeological record, the area surrounding Portage la Prairie has been continually occupied since the middle Pre-European Contact period; however, it is likely that the area has been occupied since glacial Lake Agassiz receded about *ca.*10,000 years ago.
- Three registered archaeological sites are within 500 metres of the proposed route. The low number of recorded archaeological sites in the area should not be considered an indication when evaluating the area's heritage potential. It is more likely the absence of formal archaeological fieldwork being conducted.
- The historical associations with the early exploration of the West during the French Regime is evident in the heritage value of Fort la Reine, which falls within 500 metres of the proposed preferred route.
- While the area has been developed over the past 150 years, activities such as agricultural cultivation, gardening and minor grading are not necessarily considered deep disturbance.
- The Anishinaabe, Dakota and Métis have long standing history in the area.

Potential impacts to heritage resources would occur. Based on the rich cultural history of the area and the high potential for heritage resources to be impacted during the construction phase when subsurface ground disturbance is required, such as installation of the transmission line tower, the following is recommended.

- A Heritage Resource Impact Assessment (HRIA) be conducted along the preferred route where new tower locations are to be constructed to determine nature, extent, and significance of any heritage.

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Appendix G
Manitoba Conservation Data Centre correspondence

Block, David

From: Murray, Colin (SD) <Colin.Murray@gov.mb.ca>
Sent: Wednesday, February 12, 2020 2:10 PM
To: Wiens, Jonathan
Subject: Data request J Wiens MBHydro 20200124 Portage area

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Jonathan

Thank you for your information request. I completed a search of the Manitoba Conservation Data Centre's (CDC) rare species database for your area of interest. This includes the primary location as defined in the data request; and a two kilometer radius buffer from the edge of the location boundary.
The search resulted in the following occurrences:

1. Within the footprint or primary location(s):

No listed or tracked species occurrences found at this time.

2. Within 2km of the footprint boundary:

TAXGROUP	SCINAME	COMNAME	SRANK	ESEA	SARA	COSEWIC
Vertebrate Animal	Ambystoma mavortium	(Western Tiger Salamander)	S4S5	NA	Special Concern	Special Concern
Vertebrate Animal	Dolichonyx oryzivorus	(Bobolink)	S4B	NA	Threatened	Threatened
Vertebrate Animal	Hirundo rustica	(Barn Swallow)	S4B	NA	Threatened	Threatened
Vertebrate Animal	Ichthyomyzon castaneus	(Chestnut Lamprey)	S3	NA	Special Concern	NA
Invertebrate Animal	Ligumia recta	(Black Sandshell)	S3	NA	NA	NA
Vertebrate Animal	Lithobates pipiens	(Northern Leopard Frog)	S4	NA	Special Concern	Special Concern
Vertebrate Animal	Macrhybopsis storeriana	(Silver Chub)	S5	NA	NA	NA
Vertebrate Animal	Melanerpes erythrocephalus	(Red-headed Woodpecker)	S3B	Threatened	Threatened	Threatened
Invertebrate Animal	Quadrula quadrula	(Mapleleaf Mussel)	S1	Endangered	Endangered	Endangered
Invertebrate Animal	Stylurus amnicola	(Riverine Clubtail)	S3	NA	NA	NA

3. General area records low locational accuracy:

TAXGROUP	SCINAME	COMNAME	SRANK	ESEA	SARA	COSEWIC

Invertebrate Animal	Bombus terricola	(Yellow-banded Bumble Bee)	S4S5	NA	NA	Special Concern
Vascular Plant	Carex echinodes	(Quill Sedge)	SNR	NA	NA	NA
Vascular Plant	Cornus alternifolia	(Alternate-leaved Dogwood)	S3	NA	NA	NA
Vertebrate Animal	Chaetura pelagica	(Chimney Swift)	S2B	Threatened	Threatened	Threatened

4. Found in broader area and similar habitat:

No listed or tracked species occurrences found at this time.

Further information on this ranking system can be found on our website at: http://www.natureserve.org/conservation-tools/conservation-status-assessment.

These designations can be found at:

http://web2.gov.mb.ca/laws/statutes/ccsm/e111e.php,

https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html and

http://www.sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1.

Manitoba's recommended setback distances can be found at: https://www.gov.mb.ca/sd/pubs/conservation-data-centre/mbcdc_bird_setbacks.pdf.

The information provided in this letter is based on existing data known to the Manitoba CDC of the Wildlife and Fisheries Branch at the time of the request. These data are dependent on the research and observations of CDC staff and others who have shared their data, and reflect our current state of knowledge. **An absence of data does not confirm the absence of any rare or endangered species.** Many areas of the province have never been thoroughly surveyed, however, and the absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present. The information should, therefore, not be regarded as a final statement on the occurrence of any species of concern nor should it substitute for on-site surveys for species or environmental assessments. Also, because our Biotics database is continually updated and because information requests are evaluated by type of action, any given response is only appropriate for its respective request.

Please contact the Manitoba CDC for an update on this natural heritage information if more than six months passes before it is utilised.

Third party requests for products wholly or partially derived from the Biotics database must be approved by the Manitoba CDC before information is released. Once approved, the primary user will identify the Manitoba CDC as data contributors on any map or publication using data from our database, as the Manitoba Conservation Data Centre; Wildlife and Fisheries Branch, Manitoba Sustainable Development.

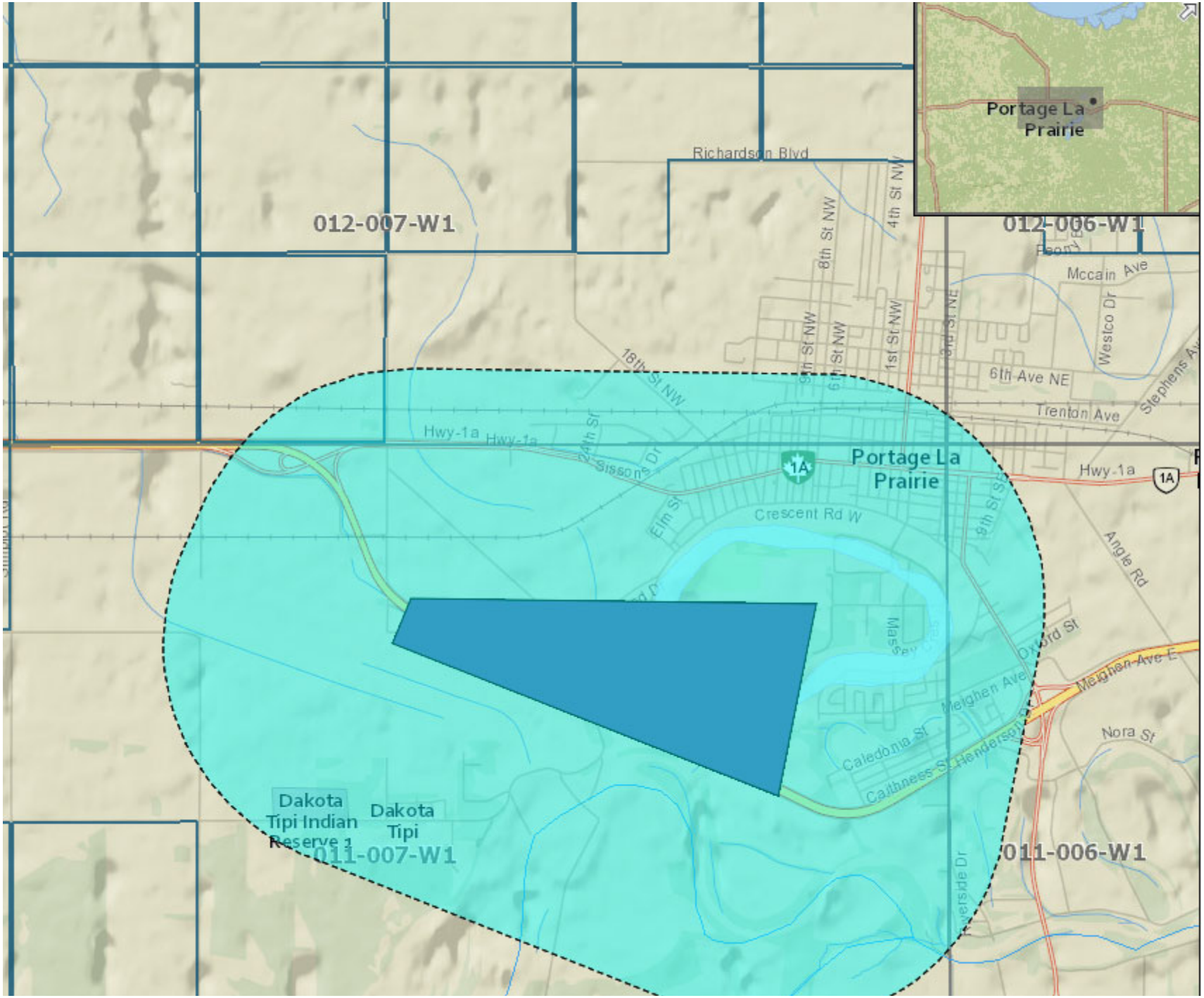
This letter is for information purposes only - it does not constitute consent or approval of the proposed project or activity, nor does it negate the need for any permits or approvals required by the Province of Manitoba.

We would be interested in receiving a copy of the results of any field surveys that you may undertake, to update our database with the most current knowledge of the area.

If you have any questions or require further information contact me directly at (204) 945-7760.

Colin

Reference screen clip:


Portage La Prairie
012-007-W1
012-006-W1
Richardson Blvd
8th St NW
4th St NW
5th St NW
6th St NW
1st St NW
3rd St NE
Mccain Ave
Westco Dr
6th Ave NE
Trenton Ave
Stephens Ave
18th St NW
Hwy-1a
Hwy-1a
24th St
St Sisson Dr
1A
Portage La Prairie
Hwy-1a
1A
Elm St
Crescent Rd W
9th St
Angle Rd
Oxford St
Meighen Ave E
Meighen Ave
Nora St
Caledonia St
Caithness St
Henderson
Dakota Tipi Indian Reserve 1
Dakota Tipi
011-007-W1
011-006-W1
Riverside Dr

Appendix H
Cultural and heritage resources protection plan

Final 1.0 2020_0610






STANDARD CULTURAL AND HERITAGE RESOURCES PROTECTION PLAN

Manitoba Hydro

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Document Owner
Licensing and Environmental Assessment Department
Transmission Planning and Design Division
Transmission Business Unit
Manitoba Hydro

Version - Final 1.0

List of Revisions

Number	Nature of Revision	Section(s)	Revised By	Date
Final 1.0	Document has been approved and published			2020_06109

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Key messages for construction

Workers in the field should remain vigilant to watch for and report any discoveries. Manitoba Hydro expects workers to report any findings to the Manitoba Hydro On-Site Supervisor or designate.

If human remains, a cultural and/or heritage site are found, activities stop at that location.

The Manitoba Hydro Licensing and Environmental Assessment Department is prepared to offer the required support to On-Site Supervisors including archaeological services, to preserve and protect cultural and heritage resources. LEA can be contacted at 1-877-343-1631 or leaprojects@hydro.mb.ca.

Potential fines

Under The Heritage Resources Act, any person who contravenes or fails to observe a provision of this Act or a regulation, order, by-law, direction or requirement made or imposed thereunder is guilty of an offence and liable, on summary conviction, where the person is an individual, to a fine of not more than $5,000. for each day that the offence continues and, where the person is a corporation, to a fine of not more than $50,000. for each day that the offence continues.

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Preface

This standard Cultural and Heritage Resources Protection Plan outlines protection measures and protocols that Manitoba Hydro, its contractors and/or consultants will undertake in the event of the discovery of previously unrecorded cultural and **heritage resources** during construction, maintenance or operation of an electrical or gas transmission line or facility.

The intent for this document is to be a straightforward and practical reference document for use by the Manitoba Hydro On-Site Lead, Environmental Inspector and/or Indigenous Communities and Organizations. Manitoba Hydro - Licensing and Environmental Assessment Department encourages anyone to provide feedback on this document and will review this plan on an annual basis. Feedback can be provided to LEAprojects@hydro.mb.ca.

Some words in the text are in **bold face** the first time they occur in the document and definitions are included in the glossary in section 3.0.

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Table of contents

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1.0 Introduction

Manitoba Hydro understands and appreciates the value that Manitobans place on cultural and heritage resources and the rich legacy found throughout our Province. Manitoba Hydro's commitment to safeguarding these resources has led to the development of this Cultural and Heritage Resources Protection Plan (CHRPP). The CHRPP will provide clear instructions if Manitoba Hydro, its contractors and/or consultants, discover or disturb a cultural or heritage resource and will determine the ongoing protection measures for the resources through processes outlined in this document.

1.1 Commitment to environmental protection

Protecting the environment is an integral part of everything Manitoba Hydro does. Manitoba Hydro accomplishes this by integrating environmentally responsible practices in all aspects of our business. Environmental protection can only be achieved with the full cooperation of Manitoba Hydro employees, consultants and contractors at all stages of the Project from planning and design through construction and operational phases.

The use of a Cultural and Heritage Resources Protection Plan (CHRPP) is a practical and direct implementation of Manitoba Hydro's environmental policy and its commitment to responsible environmental and social stewardship. It is a proactive approach to manage potential discoveries of **human remains**, cultural and heritage resources.

Manitoba Hydro is committed to implementing this CHRPP. Manitoba Hydro will also require companies that contract with us to follow the terms of this and other applicable plans.

1.2 Regulatory and policy setting

Legislation that commonly applies to cultural and heritage resources for construction, maintenance or operation of transmission lines or facilities includes: ***The Heritage Resources Act*** *(The Act)* and the ***Province of Manitoba Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains (Burials Policy)***. This CHRPP is consistent with and does not replace the above. In effect, the CHRPP builds on the protective measures afforded by *The Act and policy*.

1.3 Implementation

The goal of the CHRPP is to act as a reference manual to describe key actions in the event of discovery of cultural or heritage resources or human remains. Manitoba Hydro will inform relevant employees and contractors working on the Project of the contents of applicable regulatory specifications, guidelines, licenses, authorizations and permits, and of this Plan, and copies will be available from the On-Site Lead office.

The plan also allows for adaptive management to include new and evolving strategies, protocols and information to support and protect culture and heritage resources. Appendix B includes a Protocol template that interested communities and organizations can complete to augment and enhance this CHRPP.

This Protocol could provide feedback on items such as:

- Whether the community/organization wants Manitoba Hydro to contact them upon discovery of unrecorded cultural or heritage resources
- Who and how to contact the Community Representative(s) upon discovery of unrecorded cultural or heritage resources
- When the Community Representative(s) would like to be contacted
- Description of the Area of Interest the Community feels may contain heritage and **cultural resources** important to them
- General types of cultural and heritage resources that may be in Area of Interest
- Ceremonial or spiritual activities the community would like conducted prior to construction
- Any other concerns the community may have with regard to cultural and heritage resources
- Whether the community has received a copy of this Standard CHRPP

Upon the discovery of unrecorded cultural or heritage resources, Manitoba Hydro will follow the steps outlined in section 1.8 in conjunction with the applicable attached Protocols.

1.4 On-site project management structure

Manitoba Hydro staff and consultants will be required to undertake activities, steps, procedures and measures set out in the Figure 1-1 and Figure 1-2 should cultural or heritage resources or human remains be discovered during the construction, operation or maintenance of the project. There is a potential to discover cultural and heritage resources in many different locations and workers in the field should remain vigilant to watch for and report any discoveries. Manitoba Hydro expects workers to report any findings to the Manitoba Hydro On-Site Supervisor or designate.

The Manitoba Hydro Licensing and Environmental Assessment Department is prepared to offer the required support to On-Site Supervisors including archaeological services, to preserve and protect cultural and heritage resources. LEA can be contacted at 1-877-343-1631 or leaprojects@hydro.mb.ca.

In order to conduct any type of archaeological or heritage resource investigation, a Heritage Permit is required from the Historic Resources Branch (HRB) (Manitoba Sport, Culture and Heritage Department). The HRB is responsible for the issuance and management of heritage permits. Permits can only be issued to Registered Archaeologists; LEA has access to archaeologists to support any investigation.

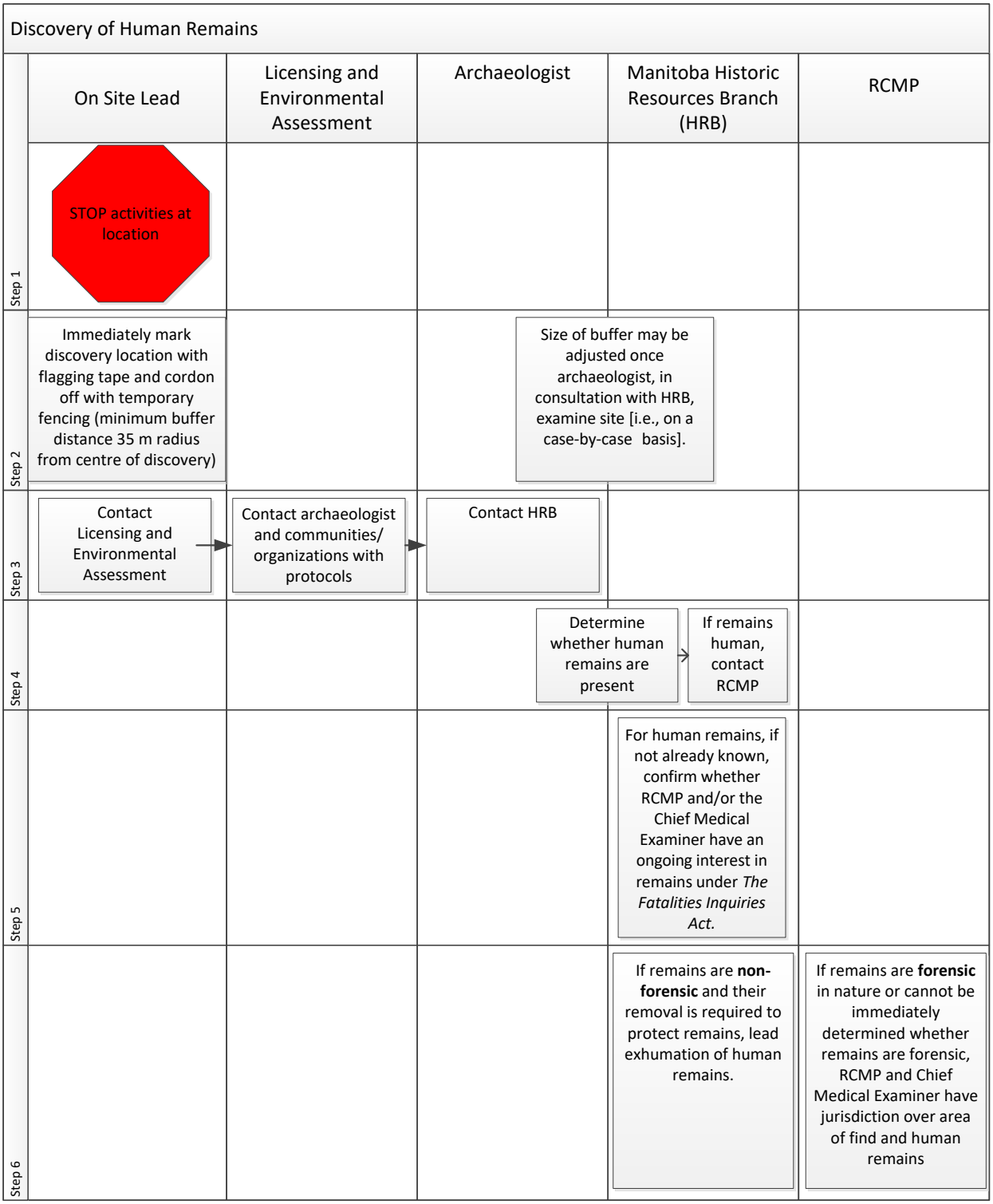
1.5 Human remains

The Heritage Resources Act (1986), Section 43 (1) states that "human remains" means:

> *"remains of human bodies that in the opinion of the minister have heritage significance and that are situated or discovered outside a recognized cemetery or burial ground in respect of which there is some manner of identifying the persons buried therein."*

Manitoba Hydro will not disturb or remove human remains from their original resting place unless removal is unavoidable and necessary. Out of respect for the remains, all work related to the remains will be conducted as much as possible out of the public eye. **Funerary (grave) goods** found with human remains will accompany human remains at all times. No reports related to any such find and its analysis will be published unless the Community Representative(s) consents to such publication, other than such reports provided to Manitoba Hydro and the Historic Resources Branch or other agencies as may be required by law. The following describes the practices that Manitoba Hydro will follow if **skeletal remains** believed or known to be human remains and/or accompanying grave goods are discovered or disturbed:

Figure 1-1 Discovery of human remains



Discovery of Human Remains					
	On Site Lead	Licensing and Environmental Assessment	Archaeologist	Manitoba Historic Resources Branch (HRB)	RCMP
Step 7		If human remains are left in place where discovered, Community Representative(s) may arrange for and facilitate an appropriate ceremony	HRB and/or archaeologist directs cautious investigation of surrounding surface prior to exhumation of remains to determine if other human remains or artifacts are in area		
Step 8			Locate and document human remains with GPS, record relevant data and submit with reports to HRB, construction supervisor and Community Representative(s)	Oversee basic non-invasive physical anthropological techniques, including drawings, sketches and initial measurements to assist in determining basic information about individual	
Step 9	Construction activities in vicinity of site that will not impact artifacts or related archeological activities may proceed	LEA would work with communities to decide whether and what type of analysis would be done on remains.	No construction activities within buffer until archaeologist has completed archaeological investigation		

1.6 Heritage resources

Heritage resources are the physical remains of past cultures. They are the product of human art, workmanship or use, including plant and animal remains that have been modified by or left behind due to human activities.

The *Manitoba Heritage Resources Act* (1986) defines "Heritage Resource" as:

(a) a heritage site;

(b) a heritage object, and;

(c) any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof (Section 1).

There are two types of heritage resources, **artifacts** and features. Heritage objects (artifacts) can be as small as a single stone flake (a product from stone tool production) or as large as a shipwreck. Other types of artifacts can include butchered animal bones, pottery, and historic materials such as nails, bottle glass, beads that are at least 75 years or older. Features are in situ (or in place) objects or changes to the landscape that are non-portable, meaning that they cannot be easily removed from their original location. Examples of features include petroforms (stones that have been placed in a shape or design and may be an effigy of an animal or thunderbird nest). Stones were also used as waymarkers or could indicate a food cache or burial location.

All heritage resources, whether a single isolated find (such as single artifacts) or a site with numerous artifacts and/or features, are protected under the Act. These physical remains can provide some evidence of specific activities such as campsites, work stations, quarries, kill sites, and post-contact settlement, industry and events. Deliberate destruction or disturbance of heritage resources is considered an offence. Certain heritage resources have special consideration such as pictographs, petroforms or ceremonial sites and represent a connection to First Nation and Metis to the landscape. Cultural resources

1.7 Cultural resources

For the purposes of this plan, Manitoba Hydro defines Cultural resources as an object, site or location of a traditional or cultural practice that is the focus of traditional or contemporary use and is of continuing importance to people. Some examples include important resource gathering areas, sites of spiritual significance or ceremonial sites.

Although there are some commonalities, each community has a unique interpretation of what the cultural resource value represents.

1.8 Practices that Manitoba Hydro will follow if cultural and heritage resources are found

Manitoba Hydro and its contractors will leave all artifacts **in situ**, that is, in the same position and will not remove objects from the site until advised by the archaeologist. There will be no activities within the buffer until the archaeologist has completed their archaeological investigation. No reports related to any such find and its analysis will be published, other than such reports provided to Manitoba Hydro and the Historic Resources Branch or other agencies, as may be required by law.

The following describes the practices that Manitoba Hydro will follow if cultural and heritage resources are found:

Figure 1-2 Discovery of cultural and heritage resources

Discovery of Cultural and Heritage Resources				
	On Site Lead	Licensing and Environmental Assessment	Archaeologist	Manitoba Historic Resources Branch (HRB)
Step 1	STOP activities at location			
Step 2	Contact Licensing and Environmental Assessment	Contact archaeologist and communities/ organizations with protocols	Contact HRB	
Step 3	Establish buffer around find (minimum 35 m radius from centre of discovery)			
Step 4	Talk to archaeologist and immediately email them photos of find		Talk to On Site Lead, review photos and determine significance of find	
Step 5			Obtain Heritage Permit from HRB	
Step 6			Direct cautious exploratory investigation to determine if other artifacts in area	
Step 7		If discovery includes sacred or ceremonial objects, Community Representative(s) may arrange and facilitate appropriate ceremony		

Discovery of Heritage Resources				
	On Site Lead	Licensing and Environmental Assessment	Archaeologist	Manitoba Historic Resources Branch (HRB)
Step 7			Undertake: extended surface reconnaissance; - shovel tests at regular intervals perpendicular and parallel to artifact deposit; - controlled collection of data about artifacts, including mapping using global positioning system or chain and compass; and - test excavations, if necessary	
Step 8			Locate and document finds with GPS, record relevant data	
Step 9			Collect and place artifacts in protective container include date, project, contents, coordinates and other information, including site classification	
Step 10				Evaluate heritage resource site and findings presented by archaeologist to determine if further mitigative action is necessary before construction in site vicinity may continue
Step 11	Construction activities in vicinity of site that will not impact artifacts or related archeological activities may proceed		If MH cannot avoid site based on progress of construction, direct site's removal by standard and most appropriate excavation methods.	No construction activities will take place at site until HRB is satisfied that site removal is complete and meets provincial standards
Step 12			Submit copies of technical data and reports to HRB and MH	

2.0 Reporting and follow-up

The archaeologist will establish and maintain a record for each discovered or disturbed heritage object and of any human remains found during construction. Information will include the **provenience**, artifact chain of custody, as well as a conservation and /or identification plan for the heritage resource or resources associated with each record. This is a requirement of *The Heritage Resources Act*. The Province of Manitoba manages a descriptive inventory regarding the physical location and composition of archaeological sites. All artifacts and field-collected data such as notes, photographs and geo-referenced information is provided to the HRB who has ownership of heritage resources found in the Province.

The archaeologist will prepare an annual report, as well as updated summaries and technical reports as are necessary, to the HRB as partial fulfillment of the Heritage Permit and to Manitoba Hydro who in turn will share with the applicable Community Representative(s). The report will provide the following information:

- A record of the human remains found. This will include the reporting, exhumation and reburial of the found human remains per the Provincial policy, the date of the report and the process by which Manitoba Hydro managed, honored and reinterred the remains.
- A record of archaeological investigations and finds documented throughout each year.
- A summary of any directions provided by the Community Representative(s) regarding permission granted to conduct specialized analysis (where such permission is required).
- A record of the heritage objects that Manitoba Hydro found and the process by which they managed the heritage objects.
- Any additional information concerning matters of significance related to heritage resources.

Manitoba Hydro will treat information shared by Indigenous communities regarding burial sites, sacred sites and other sites traditionally and presently used for cultural and ceremonial purposes as confidential and may only be shared with the Province or other authorities if agreed upon by the community to which the resource is associated.

Specific information regarding details or locational information of these cultural or ceremonial sites will not be included in the recording or reporting processes nor included in the HRB's site database.

Manitoba Hydro appreciates that this is sensitive information; the reports will be treated as confidential, unless otherwise authorized or specified by the Community Representative(s), if applicable, in discussion with the HRB.

The archaeologist will prepare an overview of the annual report and provide it LEA to review with the On-Site Supervisor. The overview report will not contain confidential information but will include information required by the On-Site Supervisor in order to fulfill regulatory and managerial responsibilities.

If requested, the archaeologist will meet with the applicable Community Representative(s), HRB and the Manitoba Hydro Licensing and Environmental Assessment Department to review the reports.

3.0 Glossary of terms

Artifacts	Any object made or modified by a human being.
Caches	Rock features in which supplies were stored.
Cultural Resource	An object, site or location of a traditional or cultural practice that is the focus of traditional or contemporary use and is of continuing importance to people.
Diagnostic	Any artifact that provides information as to cultural affiliation or age.
Exhumation	The act of removing a buried, or once buried, human body from the grave or found location.
Funerary goods	Items placed with a person at the time when they were buried. Often referred to as Grave Goods, these items are treated no differently than the person's actual skeletal remains.
Forensic	Of interest to law enforcement or Office of Chief Medical Examiner.
Heritage Resource	The Manitoba Heritage Resources Act (1986) defines "Heritage Resource" as: (as) a heritage site; (b) a heritage object, and; (c) any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof (Section 1).
Human Remains	The remains of human bodies, normally referring to those recovered in the skeletal form. This may range from a single bone or tooth to complete skeletons.
Identification	Refers to the process of examining human skeletal remains in order to determine jurisdiction and disposition of the remains. The may be done by archaeologists trained in human osteology, or physical anthropologists. Age at death, sex, height, general health, relative age: recent, early contact or ancient age may be possible along with ethnic identification.
In situ	An artifact is found in the exact spot that it was probably deposited at some time in the past.
Manitoba's Burials Policy (1987)	Short name of: ' *Province of Manitoba Policy Concerning the Reporting, Exhumation, and Reburial of Found Human Remains*.' This is the 1987 Provincial Cabinet approved policy based on *The Heritage Resources Act* (1986) governing and directing the actions, responsibilities, duties and task to be undertaken upon the discovery of found human remains in Manitoba.
Matrix	The consistency and quality of the soil.

Morphology	The form, structure and method by which an object is created.
Non-Forensic	Not of interest to law enforcement or Office of Chief Medical Examiner.
Ochre	An earthy clay colored by iron oxide – usually red, but can be yellow.
Provenience	The original place of an artifact. Can be measured by two or three-points.
Stratum	A layer of soil that is distinct and separate from that above and below it.
Skeletal Remains	Skeletal remains are all that is left of a corpse after nature has taken its course and has disposed of skin, tissue, and any other organ that may cover the skeletal frame.
The Heritage Resources Act (1986)	The Provincial legislation (law) governing the physical heritage of all Manitobans, located in Manitoba on either provincial crown lands or private lands within the province of Manitoba.
Way-markers	A sign or feature that marks a portage or trail or announces a change in direction.

Appendix A: Resources Identification Guide

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Examples of cultural and heritage resources of potential interest

The following are some examples of surface or sub-surface heritage objects or features that may be encountered in the field that have the potential to be of archaeological interest or cultural significance. These descriptions are provided for information only. When the features described in these examples are encountered in the field, or when it is otherwise believed that a site potentially may be of archaeological interest, a Manitoba Hydro On-Site Supervisor/delegate or Environmental Inspector/Officer must be notified.

In situ artifacts

Projectile points, pottery, historic trade goods and thousands of other types of artifacts have been recovered from across the Province. Before collection, the artifact will be photographed and the surrounding vegetation and soils described in detail. If a diagnostic artifact is found during a controlled surface collection, the recovery of the artifact will not take place until mapping is complete.

Often metal objects are found abandoned along old portage routes, former trails and at long-forgotten cabin sites. This old, blue enameled kettle was found in the hollow of a tree with tin cups nestled inside. The way that metal tins were constructed can be dated. Glass fragments can also be identified as belonging to a certain time period. The morphology and markings on bottles help archaeologists to date sites.

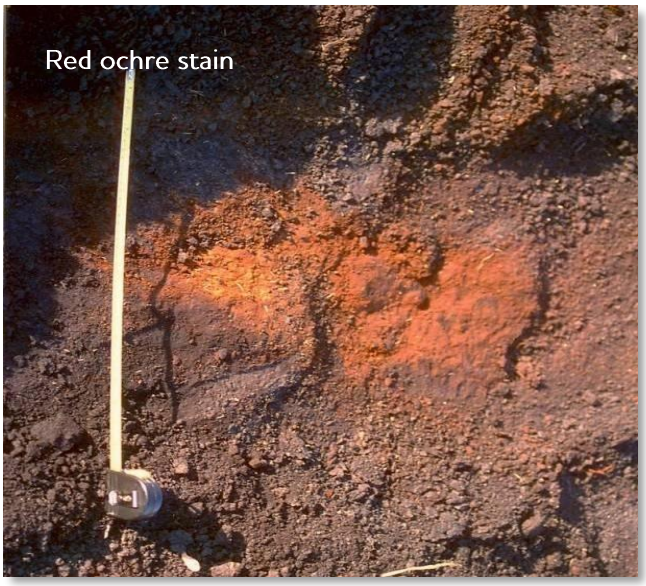

Pre-contact pottery sherd


Historic period kettle and tin cups


Projectile point (left) and lithic flake (right)

Soil Staining

Discolourations in the soil may indicate an archaeological site. The following examples are common colours associated with artifacts, features that have been found within the Province.



Red or yellow **Ochre** or rust stains can be found in the soil. They can be the result of oxidized metal fragments or nails, red or yellow ochre nodules may indicate a burial or ceremonial activity.

Soil staining can also be found in the form of charcoal flecks and white ash from a hearth or fire pit. Black soil stains may indicate human activity and organic materials or a living floor. Cultural strata can vary in depths depending on the length of occupation at the site. The presence of burned bone, fire-cracked rock, stone chips, pottery and other objects may be found in association with soil discolouration and would confirm the soil staining is a cultural layer.


Ash and organic soil staining of a hearth feature

Animal Bone

Animal Bone (mammal, bird, fish) at a site can indicate the kinds of resources that were being used as food as well as indicate seasonality of occupation.

Animal Long Bone with red staining

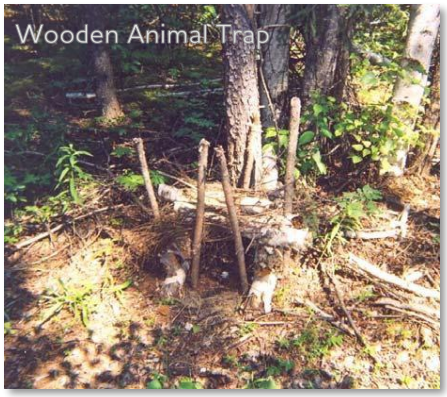
Bone was also an important material for tool manufacturing. Common bone tools include fleshers and beamers fashioned from large mammal long bones, barbed spear points and harpoons, awls and needles. Bones at a site can indicate the kinds of animals that were being used as food. The ulna of swans, eagles and other large birds were used for bird whistles.

Bison bone fragments

Key features to look for on bones to determine if they have been deposited by humans include signs of cut-marks or burning or staining which may indicate human modification by various butchering or processing techniques.

Culturally modified trees

Occasionally evidence of cultural practices is found in the form of modified trees such as the birch trees noted in this photograph. Birch bark was used for many purposes such as storage baskets, canoes and more recently, birch-bark biting crafts. Cut wood has been used to construct an animal traps, as a material for building or for fireword and indicates that humans have been in the area.



Stone features

There are many different kinds of stone alignments that have been constructed by humans: **Way-markers, caches**, ceremonial sites, building foundations, tepee rings and burials are the major rock features that are found during archaeological investigations. These can be on or above the ground surface or buried features.

Ground or Structural Features

It is especially important to note unusual ground features. Depressions or mounds that are out-of-place from the surrounding landscape may indicate an underlying structure or possible burial. The manner in which structural features are constructed can be dated.


Log Cabin


Cellar Depression


Stone Building Foundation

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Appendix B: Cultural and heritage resource protection protocol

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CULTURAL AND HERITAGE RESOURCE PROTECTION PROTOCOL

Community/Organization: _____

1. Do you want Manitoba Hydro to notify your community/organization about cultural and heritage discoveries?

   Yes ☐ No ☐

2. If yes, we would like to be notified about the following type of discoveries:

Human remains	Yes	☐	No	☐
Heritage/cultural resources (pictographs, petroforms, bone tools)	Yes	☐	No	☐

3. Leadership have chosen _____as the community representative that Manitoba Hydro should contact for heritage or cultural resources discoveries

Phone number: _____

Cell phone: _____

Email address: _____

Preference for contact _____

(i.e.: cell phone, email)

4. Should a previously unrecorded heritage or cultural resource be encountered, would your community like to conduct a ceremonial or spiritual activity?

Yes ☐ No ☐

5. Could you please draw the area of interest to your community for cultural and heritage resources on the attached map? This information can be kept confidential.

6. Are you aware of recent discoveries of the following in the area near the project:

Human remains	Yes	☐	No	☐
Heritage/cultural resources	Yes	☐	No	☐

7. Have you received a copy of the Cultural and Heritage Resources Protection Plan?

Yes ☐ No ☐

Date: _____

Filled out by (Please print): _____

Signature _____

Appendix I

Wildlife timing windows, setbacks and buffers

Timing windows

Project Wildlife Reduced Risk Timing Windows

Species	Sensitivity	January		February		March		April		May		June		July		August		September		October		November		December	
Mammals	Denning Sites																								
Amphibians/Reptiles	Amphibian Bearing Wetland																								
Snakes	Hibernaculum																								
Bats	Hibernaculum																								
Birds	Breeding and Nesting																								
Fish	Spawning																								

Reduced Risk to Wildlife

Sensitive Time Period for Wildlife (Where construction activities occur during this period, mitigations measures will be prescribed on a site by site basis)

Examples of Mitigations that may be approved by Licensing and Environmental Assessment Department during Sensitive Time Period for Birds or Amphibians/Reptiles are found in Appendix E and M.

Buffers and setbacks

Feature	Activity	Non Frozen Ground Setback Distance[2]	Frozen Ground Setback Distance[2]	Vegetated Buffer Distance[3]
Vegetation				
Plant Species at Risk	Tower Foundation Siting	100m	100m	
	Clearing And Construction	30m		30m
	Maintenance	30m		30m
	Access Trail	30m	30m	
Anthropogenic				
Heritage and Cultural	All	Varies	Varies	Varies
Amphibians				
Northern Leopard Frog (known breeding pond, watering site)	Tower Foundation Siting	30m	30m	
	Clearing And Construction	30m		30m
	Maintenance	30m		
	Access Trail	30m	30m	
Reptiles				
Garter Snake Hibernaculum	Tower Foundation Siting	200m	200m	
Landforms				
Wetlands	Clearing And Construction			30m
	Maintenance			30m
	Access Trail			30m
	Hazardous Material Handling/Storage	100m	100m	
	Soil Stockpiles	30m		30m
Sharp-tailed Grouse				
Lek site (dancing breeding site)	All	1000m[5]	1000m[5]	1000m[5]
Mammals				
Mineral Licks	All	120m		120m
Occupied Mammal Dens[4] (Red fox, Gray fox, Coyote, Wolf, Bobcat, American badger, American marten, Fisher, Least weasel and Raccoon)	All	50m	50m	

[1]All measurements are from edge of feature

[2]No Work Allowed without Manitoba Hydro Licensing and Environmental Assessment Department review and approval, which may be subject to regulatory approval.

[3]Shrub and Herbaceous Vegetation Retained)

[4]Bear/Mammal den sites are highly variable and may be found in caves, crevasses, overturned trees, open ground nests, and low-sweeping branches of a coniferous tree.

[5]Do not plan to carry out construction activities within this area between March 15 to June 1st. l If construction activity is required within this area between April 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options.

Appendix J
Construction related greenhouse gas emissions

BP6/BP7 – CONSTRUCTION RELATED GREENHOUSE GAS EMISSIONS ASSESSMENT

Energy Supply Planning Department
Integrated Resource Planning

PREPARED BY:

K. M. SHAW, P. ENG. _____

REVIEWED BY:

S. COUGHLIN, M. SC. _____

APPROVED BY: _____

NOTED BY: _____

DATE: APRIL 2021

REPORT: IRPD 21_06

Manitoba Hydro

Final Version

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Table of Contents

List of Tables

1 PURPOSE OF THIS REPORT

This report summarizes the estimate of greenhouse gas emissions ("emissions") related to the rebuilding of a 8.5 km section (from the Portage-Saskatchewan Station to west of the Portage Bypass) of the BP6/BP7 transmission line damaged by the 2019 snowstorm and ongoing maintenance of that section (during the operation and maintenance ("O&M") phase). BP6/BP7 is a 115 kV double circuit transmission line between Brandon and Portage la Prairie.

The main purpose of this report is to function as a point of reference for the environmental assessment ("EA") of the BP6/BP7 Transmission Project and to document the applied emissions estimation methodologies and assumptions. Construction related emissions include construction activity emissions (including supply-chain emissions), permanent land-use change emissions along the right-of-way ("ROW"), and ongoing BP6/BP7 maintenance emissions.

While this assessment draws on methodologies from previous greenhouse gas ("GHG") life cycle assessments ("LCAs"), such as Jeyakumar, B., & Kilpatrick, R. (2015), and it strives to follow LCA principles, it is considered a high level estimate of construction related GHG emissions, not a LCA. This was deemed an appropriate approach as potential emissions related to the construction of BP6/BP7 are small relative to other similar projects (e.g., Jeyakumar, B., & Kilpatrick, R. (2015)).

Only emissions related to the construction of the 8.5 km segment were assessed; this was not a comprehensive GHG mitigation assessment (e.g., Manitoba Hydro (2021)) which would incorporate estimates of all relevant GHG effects (both emissions and emission reductions), primary and secondary, of a project. For example, the beneficial impact of BP6/BP7 on Manitoba Hydro's system-wide losses over the life of BP6/BP7 was not assessed herein: potential GHG benefits due to improved system efficiencies are considered a qualitative benefit (i.e., outside the scope of this assessment) of the BP6/BP7 Transmission Project but, due to the low level of direct GHG emissions, could easily outweigh the construction related emissions estimated herein. Emissions related to the salvage of damaged infrastructure has also not been assessed.

A GHG mitigation assessment, and normally an LCA, would compare a "project scenario" with a "baseline scenario". The scope of this assessment did not consider potential alternatives to BP6/BP7 that could occur in the absence of the project. Emissions estimates presented herein are absolute BP6/BP7 emissions (i.e., the baseline scenario for this assessment is, by default, a "do-nothing" scenario), not incremental[1] BP6/BP7 emissions, which are normally lower.

[1] Note: For clarity, the methods related to land use change emissions (Section 4) are temporally incremental; but they are not incremental relative to project alternatives.

2 SUMMARY OF CONSTRUCTION RELATED EMISSIONS

Table 1 is intended to provide a high-level approximation of construction related emissions, indicating the order of magnitude of potential emissions. Aggregated construction related emissions for the 8.5 km section of BP6/BP7 are 2.5 kilotonnes ("kt") of carbon dioxide equivalent ("CO_2e"). While aggregated emissions are presented to the nearest tonne ("t") in Table 1, this is only done for comparison purposes; it is not intended to imply that this level of accuracy was achieved in the assessment of construction related emissions. The majority of construction related emissions are the result of supply-chain emissions embedded in the materials of BP6/BP7 components (e.g., towers and conductors).

Table 1 Summary of Construction Related Emissions

Activity	t CO_2e	% of total
Construction: Material Supply-Chain	1,827	74.1%
Construction: On-Site Energy	231	9.4%
Construction: Labour Transport	5	0.2%
BP6/BP7 Maintenance	200	8.1%
ROW Land Use Change	202	8.2%
Total	**2,465**	

Construction of BP6/BP7 is assumed to require minimal clearing (i.e., 1 hectare) of forested-land. As such land-use change emissions are minimal (i.e., 0.2 kt) for the BP6/BP7 Transmission Project. Emissions resulting from on-site energy use during construction are estimated to be 0.23 kt. For comparison, this is less than 1% of the annual emissions from Manitoba Hydro's existing fleet (25 kt of CO_2e in 2019) [2].

[2] [Manitoba Hydro, 2020a]

3 CONSTRUCTION ACTIVITY EMISSIONS – METHODOLOGY

Construction activity emissions will result from the construction of the 8.5 km segment of BP6/BP7. The first 3 km (approximate) follows the existing BP6/BP7 route and will therefore not require a new ROW or the construction of new towers as they have already been repaired. Some reconductoring may be required on the first 3 km, however, for the purposes of this assessment, all proportional assumptions (e.g., labour estimates, conductor length) herein are assumed to apply to 5.5 km, not 8.5 km. Based on input from Manitoba Hydro design staff, this was deemed a reasonable assumption. On-site construction emissions are compared to embedded supply-chain emissions; supply-chain emissions have been estimated at a high-level to provide a useful point of comparison with direct on-site construction emissions within the BP6/BP7 section.

The estimate of construction activity emissions incorporated into this assessment does not have a high-level of precision. As construction activity emissions are relatively small for BP6/BP7, this was deemed an appropriate approach; it was deemed reasonable to use readily available construction information[3] and LCA emissions factors ("EFs") and not undertake any comprehensive additional analyses. However, where detailed construction information was readily available it has been incorporated.

Assumptions related to the construction of BP6/BP7 are based on both project specific details and assumptions incorporated into the recent construction emissions assessment of PW75[4] (also a 115 kV line), which incorporate assumptions from the Pointe du Bois Transmission Project Environmental Assessment Report ("PdB Transmission Project EAR"[5]). Construction assumptions incorporated into this assessment are intended for emissions estimation purposes only.

3.1 Construction Activities

Construction activities for BP6/BP7 have been broken down into three major activities:

1. Manufacture of new BP6/BP7 components (supply-chain)
2. Transportation of BP6/BP7 construction materials (supply-chain)
3. Construction of the new BP6/BP7 section

[3] Note: All construction information incorporated into the final EA may not have been available at the time of this assessment. Some conservative assumptions made herein may not match final design and were chosen to avoid emission underestimation.
[4] PW75 is a proposed 115 kv transmission line between the Whiteshell station and Pointe Du Bois generation station.
[5] [Manitoba Hydro, 2014a; Manitoba Hydro, 2014b]

3.1.1 Manufacture of New BP6/BP7 Components (Supply-Chain)

Material estimates for BP6/BP7 components (Table 5) are both based on project specific details and assumptions incorporated into the recent construction emissions assessment of PW75[6]. Key assumed design elements are as follows:

1. The rebuilt section of BP6/BP7 will be 5.5 km long (of the 8.5 km total length).
2. BP6/BP7 is designed for six (two sets of three conductors) 336.4 kcmil 30/7 Strands "ORIOLE" ACSR (Aluminum Conductors, Steel Reinforced) conductors, 18.85 mm in diameter, to be carried by the structures. Each conductor is assumed to be 5% longer than the length of the line to account for jumpers, wastage, sag, and maintenance spares.
3. It is assumed BP6/BP7 will include one ground wire strung at the apices of the structures. This will be galvanized steel stranded conductor approximately 9 mm in diameter.
4. The spans between the structures will range between be 300 m and 345 m. With new towers only required for 5.5 km of the section, it is assumed 20 towers will be required (matching the number of assumed salvaged towers), but this may not match final design.
    a. "*Heavy angle and dead-end structures will be required at specific locations to accommodate line redirection and to terminate the transmission line into the stations."* [Manitoba Hydro, 2014a][7] Based on the number of directional changes in the Final Preferred Route, 12 dead-end towers will be self-supporting steel lattice structures. While they may not all be "F Structures", the strongest and heaviest dead-end structures, for conservativeness their weights were all assumed to be 13.6 tonnes. This weight was based on recent 115 kV projects.
    b. The remaining eight towers will be typical suspension towers, either guyed lattice or self-supporting. As the final design is undetermined, and its less likely guyed designs will be used, all towers were assumed to weigh 5.9 tonnes, the weight of the heavier typical self-supporting suspension towers in recent 115 kV projects (assumed weight of the guyed towers is 4.5 tonnes).
5. "*Mat foundations are typically 3 m x 3 m and 3 m deep. Where soil conditions permit, pile foundations are augured cast-in-place piles, generally about 0.9 m in diameter extending about 10 m deep. Heavy angle or dead-end structures can also require mat or pile foundations, with mat foundations being about 4 m x 4 m mats constructed 3 m deep. Pile foundations for heavy or dead-end structures consist of four 1.2 m diameter concrete piles extending about 12 m deep. Dimensions are subject to detailed design and will vary*

[6] [Manitoba Hydro, 2021]

[7] PdB Transmission Project EAR – Chapter 2.2.1.1 (*Project Description – Project Components - Pointe du Bois to Whiteshell Stations 115 kV Transmission Line (PW75) - Structures*), p.2

according to specific ground conditions." [Manitoba Hydro, 2014a][8] Helical piles could also be used, but concrete piles were assumed for this assessment.

   a. As mat foundations are heavier, it was assumed all dead-end towers would require 4 mat foundations (461 tonnes[9] per tower), one for each tower leg. For conservativeness, it was assumed the location of these towers may not be adjustable to ensure piled foundations could be used.
   b. The weight of one 3 m x 3 m mat foundation (65 tonnes) is slight larger than four 0.9 m in diameter pile foundations (61 tonnes). It was assumed that the final design would only select self-supporting suspension towers (requiring four foundations) on terrain where soil conditions permitted pile foundations, otherwise a guyed lattice tower with one mat foundation would be chosen. For conservativeness, the higher 65 tonne value was assumed for all suspension towers.

6. Based on general transmission design guidelines it was assumed each dead-end tower would require 54 insulators and each suspension tower would require 21 insulators. Based on recent Manitoba Hydro projects, each dead-end insulator was assumed to be 7 kg and each suspension insulator is assumed to be 4 kg.
7. For consistency and conservativeness, India will be the presumed source location for all above ground transmission components.
8. The original source for cement is assumed to be Edmonton, based on recent projects and Canadian availability. For PW75 it was assumed that "*Aggregate material will be required for tower foundation construction. This material will generally be obtained from within the ROW and existing licensed borrow areas. In the event that additional borrow area locations are developed, it is expected that these areas will be very small in size and situated close to existing access."* [Manitoba Hydro, 2014b][10] However, given the prairie land-cover for the BP6/BP7 ROW it is reasonable to expect aggregate material will likely be sourced from outside of the ROW from local suppliers (no new borrow areas would need to be developed).[11] It is assumed that concrete will be mixed near or on-site.
9. Although multiple manufacturing processes will be required for the manufacture of conductors and towers, uniform material specific EFs will be applied separately to the

[8] PdB Transmission Project EAR – Chapter 2.2.3.1 (*Project Description – Project Components – Project Construction – PW75 115 kV Transmission Line*), p.15

[9] Note: Assumed concrete density of 2.4 tonnes/m^3. Comparatively, four piles would weigh 130 tonnes.

[10] PdB Transmission Project EAR – Chapter 7.2.1.1 (*Effects Assessment and Mitigation – PW75 115 kV Transmission Line – Physical Environment - Physiography*), p.2

[11] Note: Based on the conservative estimate of the mass of concrete (Table 5) and the "Road Transport" EF (Table 2), "Material Supply-Chain" emissions would increase by 4 kt (cement to concrete ratio of 0.25 assumed) for every 10 km of distance between the aggregate source supplier location and the ROW. This is relatively small compared with the 1,950 kt total emissions value and has been excluded as no specific supplier has been identified.

weight of aluminum (wire EF) and steel (bars EF). EFs for other materials (e.g., ceramics) is based on the overall average of these two main materials.

3.1.2 Transportation of BP6/BP7 Construction Materials (Supply-Chain)

BP6/BP7 components will likely be manufactured internationally (but could possibly be manufactured in Canada). For this assessment, India was selected as the presumed source location because application of that assumption results in higher emissions; but, the actual source location of the units is unknown at this time. Metal-based materials and equipment will be assumed to be transported by ocean to Vancouver, then by rail to Portage la Prairie, and then by road to site. Cement is assumed to be transported by rail from Edmonton to Portage la Prairie and then by road to site. Transportation emissions for diesel are embedded in the "Produce and Deliver Diesel" EF (Table 2). Transportation emissions for aggregate are embedded in on-site emission calculations[12].

Alternative source locations (than India) for steel, aluminum, and other materials would likely result in lower transportation emissions. However, Table 3 shows that transportation emissions make up less than 10% of overall supply-chain (i.e., life cycle ("LC")) emissions for these materials, even with this conservative assumption.

3.1.3 Construction of the New BP6/BP7 Section

Estimated workforce requirements were assumed to be proportional to the project scope presented in the PdB Transmission Project EAR:

- 100 person-months (842 person-months[13] * 5.5 km/46.5[14] km) for the construction of BP6/BP7, including the mobilizing phase, clearing, construction, and demobilization.

"*It is expected that…existing local accommodations will be used for the most part for housing the transmission construction workforce*." [Manitoba Hydro, 2014a][15] The assumed housing location for the workforce is Portage la Prairie due to its relative proximity to BP6/BP7.

[12] Note: PW75 labour estimates, which were used as a reference, assume the inclusion of the use of borrow areas and collection/crushing of backfill material.

[13] [Manitoba Hydro, 2014a]

[14] Note: PW75 is assumed to be 46.5 km in length.

[15] PdB Transmission Project EAR – Chapter 2.2.3.1 (*Project Description – Project Components – Project Construction – PW75 115 kV Transmission Line*), p.17

Construction equipment will include feller-bunchers, skidders, bulldozers, drill rigs, backhoes, excavators, cranes, trucks, and other equipment. [Manitoba Hydro, 2014a][16] This assessment assumes that the typical construction vehicle would be an aerial device vehicle (e.g., a bucket truck) and that the vehicles would be left on-site while workers commuted from Portage la Prairie daily. It is assumed that there will be one major construction vehicle for every three workers and that workers will arrive on site using one light duty truck for every three workers. Construction vehicles are assumed to consume, on average, twice the 3.4 L/hour rate of fuel required to continually idle without load over the course of 10 hours a day. The doubling incorporates a high-level estimate of average vehicle loading under various seasons and work requirements.

An exception to the above is that, in addition to the assumed 6.4 L/hour average consumption rate (per vehicle) throughout construction, additional fuel is assumed to be consumed for the two most energy intense construction activities:

- Based on assumptions from similar projects, 900 L of diesel fuel is consumed for every hectare ("ha") of forested area cleared on the ROW. However, only 1 ha of ROW is assumed to require clearing.
- While crane erection of the towers is presumed, for conservativeness it has been assumed that all towers are erected via heavy duty helicopter at a rate of 750 L of fuel per tower.[17]

3.2 Key Assumptions and Inputs

Table 2 lists the EFs applied for the assessment of construction emissions. These EFs were selected for the LCA of the Manitoba–Minnesota Transmission Project ("MMTP")[18] and reapplied for this high-level estimate.

To provide a more complete understanding of the impact of specific input assumptions, Table 3 presents EFs for aggregated activities closely aligned with the three main activities laid out in Section 3.1. Table 4 lists the key assumptions used in the estimate of construction emissions. Rationale for the selection of these values are described in Section 3.1 and additional assumption detail is described in Section 3.1.

[16] PdB Transmission Project EAR – Chapter 2.2.3.1 (*Project Description – Project Components – Project Construction – PW75 115 kV Transmission Line*), p.16

[17] Note: Assumed helicopter burn rate of 500 gallons of fuel per hour and erection rate of 25 towers per 10-hour day. For the purposes of this assessment, the full LC EF for diesel combustion was assumed equivalent to that of aviation fuel.

[18] [Jeyakumar & Kilpatrick, 2015]

Table 2 Life Cycle Activity EFs

Activity	CO_2e	Unit	Source
Ocean Transport	15.84	g/tonne-km	NREL
Rail Transport	18.97	g/tonne-km	NREL
Road Transport	79.91	g/tonne-km	NREL
Mine Iron Ore	43.04	g/kg of ore	StatsCan
Produce Galvanized Steel Sheet	2,706.09	g/kg steel	NREL
Forge Steel into Bars/Wire/Other	354.61	g/kg steel	Chalmers University
Mine Bauxite	9,627.19	g/kg aluminum	NREL
Produce Aluminum Ingot			
Produce Aluminum Conductor	860.00	g/kg aluminum	Chalmers University
Produce Cement	928.39	g/kg of cement	LCI of Portland Cement
Produce and Deliver Diesel	979.29	g/L of diesel	GHGenius
Combust Diesel	2,803.53	g/L of diesel	ECCC

Table 3 Life Cycle EFs for Aggregated Activities

Activity	CO_2e	Unit
Transport from India to BP6/BP7	320	g/kg material
Transport from Edmonton to PB 6&7	24	g/kg material
Full LC - BP6/BP7 Material	4,929	g/kg material
Full LC - Cement for Concrete Foundations[19]	143	g/kg concrete
Full LC - Diesel Combustion	3,783	g/L of diesel
Labourer Transport to BP6/BP7	6,809	g/vehicle-day
Construction Vehicle Emissions	257,231	g/vehicle-day

[19] Note: "g/kg material" EFs exclude non-cement concrete materials (i.e., aggregate and water): supply-chain emissions for cement was incorporated into the "Full LC – Cement For Concrete Foundations" but "supply-chain" emissions for the extraction the manufacture of aggregate (and water) is incorporated into the calculation of direct onsite construction emissions (labour estimates assume the inclusion of the use of borrow areas and collection/crushing of backfill material). As noted in Section 3.1.1, potential emissions from the transportation of aggregate were excluded due to insignificance.

Table 4 Construction Emissions – Key Input Assumptions

Assumption	Value	Unit	Source
Total # of Transmission Towers	20		Manitoba Hydro
Average Transmission Tower Mass	10.52	tonnes	Manitoba Hydro
Conductor Mass - Steel	0.31	tonnes/km	[Midal Cable, 2010]
Conductor Mass - Aluminum	0.47	tonnes/km	[Midal Cable, 2010]
Ground Wire Mass (Steel)	0.39	tonnes/km	[Super Metal, 2009]
Light Duty Truck Mileage	0.15	L/km	Manitoba Hydro
"Aerial Device" Mileage	0.50	L/km	Manitoba Hydro
"Aerial Device" Vehicle Idling (no load)	3.4	L/hour	Oak Ridge National Lab
ROW Clearing - Additional Energy	900	L/ha	Manitoba Hydro
Tower Erection - Additional Energy	750	L/tower	Manitoba Hydro
India to Vancouver by Ocean	17,500	km	sea-distances.org
Vancouver to Portage la Prairie by Rail	2,220	km	Google Maps
Edmonton to Portage la Prairie by Rail	1,220	km	Google Maps
Portage la Prairie to BP6/BP7 by Road	6	km	Google Maps
Hours per Construction Day	10	hours	Manitoba Hydro
Construction Days Per Month	20	days	Manitoba Hydro
Vehicle Ratio (Labour & Construction)	3	persons/vehicle	Manitoba Hydro
Construction Labour for BP6/BP7	1,992	person-days	[Manitoba Hydro, 2014a]

Table 5 summarizes the mass of construction materials required for the construction of BP6/BP7. The majority of manufactured material is required for towers and conductors.

Table 5 Construction Material – Mass Summary (tonnes)

Construction Material	BP6/BP7
Aluminum	16
Steel	224
Other	5
Material Total (Excluding Foundation)	**245**
Concrete[20] Foundation	6,048

[20] Note: As detailed in Section 3.1.1, this is a conservatively high estimate. Actual concrete will likely be much less.

4 BP6/BP7 LAND USE CHANGE EMISSIONS – METHODOLOGY

For estimating land use change impacts, this assessment followed similar methods to those used for the LCA of the MMTP[21] and the GHG Mitigation Assessment of the PdB Unit Replacement Project[22]. From a carbon content perspective, only forestland within the project ROW footprint is permanently[23] disturbed. It is assumed it will be converted to "Non-Treed" land (Table 6). While this land could convert to a variety of low-lying vegetation land-types the "Non-Treed" carbon content of 15 tonne C/ha (Table 6) was deemed a reasonable approximation of the final mix. "*Other areas of low-lying vegetation such as wetlands, peatland, agricultural, riparian and shrub lands along the ROW are assumed to be minimally disturbed and, when disturbed for construction, are assumed to return to their natural state within the project life."* [Jeyakumar & Kilpatrick, 2015] This assessment assumes only above ground carbon content is permanently disturbed: "*Carbon content of soils is assumed to be unchanged after clearing*." [Jeyakumar & Kilpatrick, 2015]

Since most of the new route is on developed lands only minor clearing activities will be required in a few locations: While the actual transmission route is not final, only 1 ha (Table 7) of forestland is assumed to be permanently disturbed. That 1 ha of forestland is assumed to be completely cleared and converted to low-lying vegetation. Some land will be permanently converted to concrete for tower foundations. The total area covered by foundations will be less than 0.1 ha, thus, for conservativeness, 0.1 ha of is assumed to have a final modified carbon state of 0 t/ha (lowering the average modified state from 15.3 tonne C/ha to 13.8 tonne C/ha).

The BP6/BP7 ROW will require temporary land disturbances (e.g., borrow pits, temporary access roads, marshalling yards); however, net emissions from these temporary disturbances are assumed to be zero/immaterial within the full operational life of BP6/BP7; unless they are also within current forestland within the ROW, they are assumed to return their original state, from a carbon content perspective.

This assessment follows IPCC (2003) direction on calculation methodology while using Manitoba specific carbon contents, for different forestland types, from Shaw et al. (2005). Biomass assumptions in Table 6 are Manitoba specific, not ROW footprint specific.

[21] [Jeyakumar & Kilpatrick, 2015]

[22] [Manitoba Hydro, 2020]

[23] Note: The assumption of permanence focuses on the life of BP6/BP7. However, ROW impacts can be expected to persist beyond their end of life as well.

Table 6 Manitoba specific forest above ground biomass (tonne C/ha) [Shaw et al., 2005][24]

Dominant Stand Species	Stands in Sample	Total Live Tree Carbon
Non-Treed	**3**	**15.33**
Jack Pine	16	23.13
Black Spruce	19	32.37
White Spruce	2	88.50
Coniferous (i.e., Needle)	**37**	**31.41**
Balsam Popular	2	95.00
White Birch	3	50.67
Trembling Aspen	11	49.00
Deciduous (i.e., Broadleaf)	**16**	**55.06**
Mixed	**8**	**69.00**

For conservativeness, the entire 1 ha of converted forestland was assumed to be "Mixed Deciduous/Coniferous."[25]

Table 7 PW75 – Current State Forestry Breakdown Summary

Dominant Stand Species	Forestland Withdrawal (ha)	Above Ground Biomass (tonne C/ha)
Mixed Deciduous/Coniferous	1	69.00
All Stands	**1**	**69.00**

Land use change emissions are estimated using Equation A. Equation A assumes all carbon is released as carbon dioxide ("CO_2") as all biomass is combusted (either within the ROW or productively harvested for use elsewhere). CO_2 emissions are assumed to occur at, or soon after, the time of clearing; it is assumed that there is no significant decay[26]. These assumptions are consistent with mitigation measures outlined in Manitoba Hydro (2014b).

Equation A: CO_2e emissions (tonnes CO_2e) = Area Effected (ha) * [Original Carbon State (tonne C/ha) - Modified Carbon State (tonne C/ha)] * 44/12[27]

[24] Note: Based on data from 64 tree stand samples provided on pages 89-90 and 108-109 of Shaw et al. (2005). Above ground biomass includes stem wood, stem bark, branch, and foliage carbon. Shaw et al. (2005) listed both a dominant and co-dominant species for each tree stand. "Mixed" stands were stands where a coniferous species was dominant and a deciduous species was co-dominant, or vice versa.

[25] Note: The mixed stands in Shaw et al. (2005) had consistently higher above grounds carbon contents which is generally expected from more diverse forestlands.

[26] Note: The combustion of cleared debris is the preferable disposal method, compared with gradual decomposition, as the carbon is released as CO_2 and not methane, which has a higher global warming potential (25 compared to 1).

[27] Note: 44/12 is the approximate ratio of the molecular weight of CO_2 (44) to that of carbon (12).

Land use change emissions as a result of the construction of BP6/BP7 are estimated to be 0.2 kt of CO_2e; Table 8 summarizes the key inputs assumed for that estimate.

Table 8 BP6/BP7 – ROW Land Use Change Summary

Land Use Change Component	Value	Unit
Area Affected (ha)	1	ha
Carbon Content - Original State	69.0	tonne C/ha
Carbon Content - Modified State	13.8	tonne C/ha
Permanent Carbon Change	55.2	tonne C/ha
Total GHG Released	202.4	tonne CO_2e/ha
Total GHG Released	**0.20**	**kt CO_2e**

5 LINE MAINTENANCE EMISSIONS – METHODOLOGY

BP6/BP7 will require maintenance during the O&M phase:

1. "*The inspections of the transmission line will include air patrols, ground patrols and nonscheduled maintenance by air or ground in the event that unexpected repairs are required. Ground travel can include snowmobile, flex-track type or road vehicles. Regular inspections will typically occur once per year by ground and can occur up to three times per year by air."* [Manitoba Hydro, 2014a][28]
2. *Vegetation management within the ROW is required for public and employee safety, as well as the reliable operation of the line. The ROW will be maintained on an ongoing basis throughout the life cycle of operation. An integrated vegetation management approach will be undertaken to address undesirable and non-compatible vegetation issues within the ROW. Vegetation control methods on Manitoba Hydro's ROWs are achieved primarily through mechanical control (wheeled or tracked prime movers with drum or rotary cutters, mulcher, feller-bunchers, bulldozers with modified brush blades, etc.), herbicides, and manual control (chain saws, brush saws, and brush axes).* [Manitoba Hydro, 2014a][29]

Based on emissions from Manitoba Hydro's entire vehicle fleet (25 kt of CO_2e)[30] and the size of Manitoba Hydro's existing transmission (13,800 km) and distribution (75,500 km) infrastructure[31], at a high level additional O&M emissions due to BP6/BP7 are expected to be in the 0 to 5 tonnes of CO_2e per year range (including air patrols).

An assessment of supply-side emission related to O&M materials was excluded from this assessment and presumed to be relatively negligible. The quantity of material required to construct BP6/BP7 will be higher than any material required for repairs during ongoing maintenance.

At a high level, additional O&M emissions are expected to be less than 0.005 kt of CO_2e per year; a conservative upper limit of 0.2 kt will be assumed for the entire life of BP6/BP7.

[28] PdB Transmission Project EAR – Chapter 2.2.4.1 (*Project Description – Project Components – Project Operations and Maintenance – PW75 115 kV Transmission Line*), p.20

[29] PdB Transmission Project EAR – Chapter 2.2.4.1 (*Project Description – Project Components – Project Operations and Maintenance – PW75 115 kV Transmission Line*), p.20-21

[30] [Manitoba Hydro, 2020a]

[31] [Manitoba Hydro, 2020b]

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