

## **2.0 Project description**

### **2.1 Project planning and alternative means**

#### **2.1.1 System planning**

Manitoba Hydro's System Planning Department begins its transmission line projects with assessing the need for the project, developing alternative concepts to completing the project from an electrical transmission system perspective, and identifying a preferred concept. Following this, various departments within the Transmission Business Unit at Manitoba Hydro begin the process of planning the transmission routing process, including defining the start and end points, as well as initial design concepts such as tower design and right-of-way width.

As indicated, due to the size and location of the customer's load, the existing 115 kV system does not have the long-term capacity and a new 230 kV line has been assessed as the being the best option to supply the required 40 MW load. There are two 115 kV lines (BP6 and BP7) that are located close to the proposed site in the Poplar Bluff Industrial Park, but these would not be feasible options as they already serve the customers in the towns of Austin, McGregor and Carberry, and do not have the capacity to service the additional load.

Several alternatives were examined to supply 230 kV and the most suitable with adequate capacity in the customer's area was assessed as being line P81C. Tapping P81C would be considerably less expensive and have a shorter distance and construction timeline than tapping other existing lines such as D54N, or building a new transmission line from Portage South Station. In addition to greater costs than the selected option of tapping into the P81C line, a new line from Portage South station would involve extensive station upgrades before the line could be built.

#### **2.1.2 Routing alternatives**

With the end point established and the decision made to tap into the existing P81C transmission line, the process of selecting a preferred route from among various alternatives was initiated. As the process used to select a Final Preferred Route for a transmission line provides the first and best opportunity to mitigate any potential adverse effects there was considerable effort invested in the routing process, and this is summarized separately in Section 2.4 and in more detail in Appendix A.

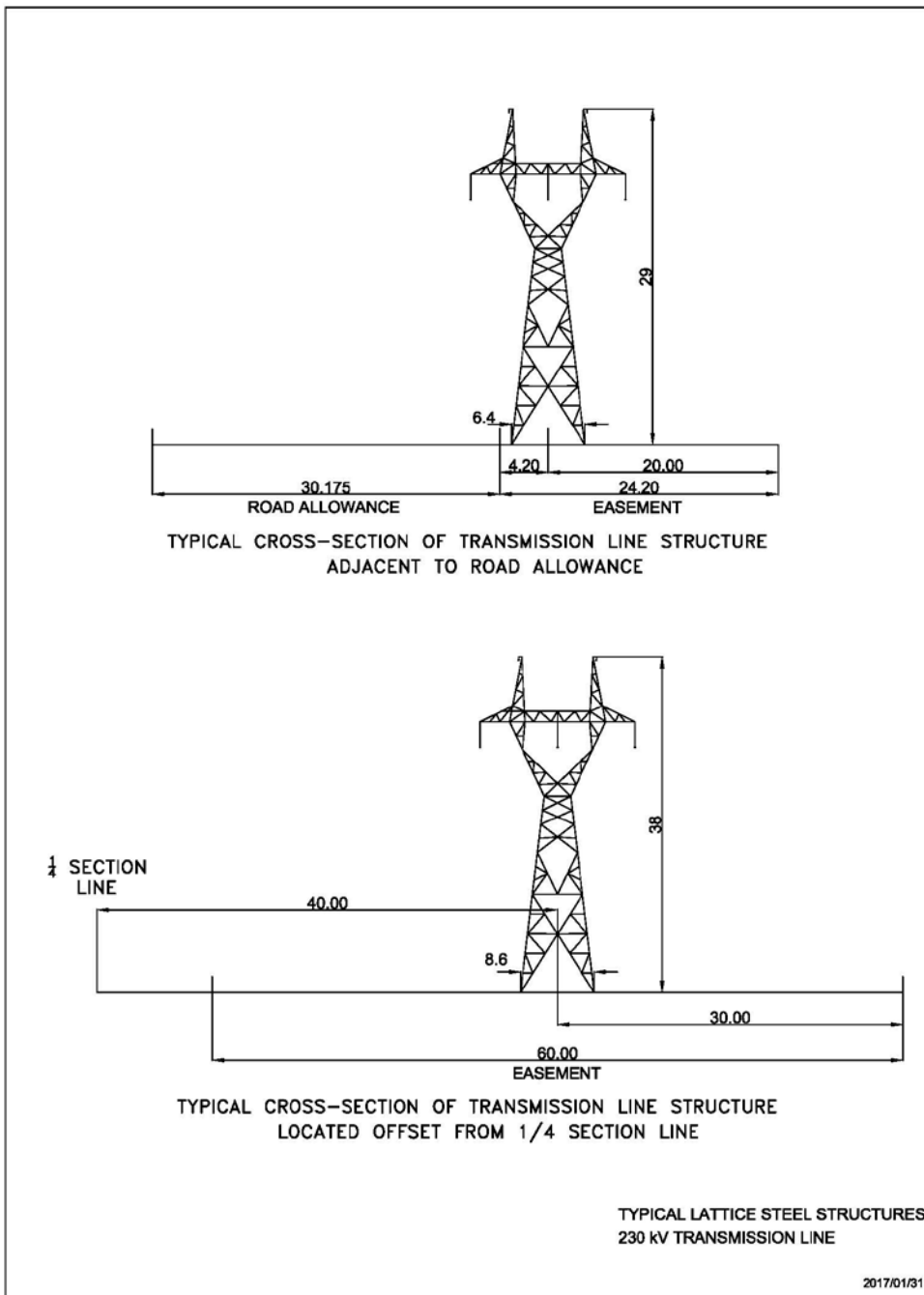
### 2.1.3 Structure options

As with all new transmission projects, structure designs were considered on the basis of several engineering and environmental factors including expected load, conductor sizing, land use and type, route alignment, and soil conditions. Based on a preliminary analysis of soil types in the region it was determined that helical driven piles may be required, as the standard augured foundations would have challenges with poor soil conditions. Therefore, self-supporting lattice steel suspension structures were selected for use in these areas as they allow for longer spans reducing the total number of towers in agricultural fields, and are compatible with helical pile foundations. Tubular steel H-frame type structures were chosen for angle structures as they have smaller footprints than self-supporting steel lattice angle structures, which reduce the right-of-way (ROW) width requirements and allows the structures to be closer to the road allowance. While the use of cast-in-place foundations required for tubular H-frame angle structures are more challenging to install there are only an estimated eight angle structures required for the Project. This combination of steel lattice suspension and tubular H-frame steel angle structures was designed to be cost-effective and was assessed as having the least effects on existing agricultural land use by maximizing span length and reducing ROW width.

## 2.2 Project components

### 2.2.1 ROW requirements

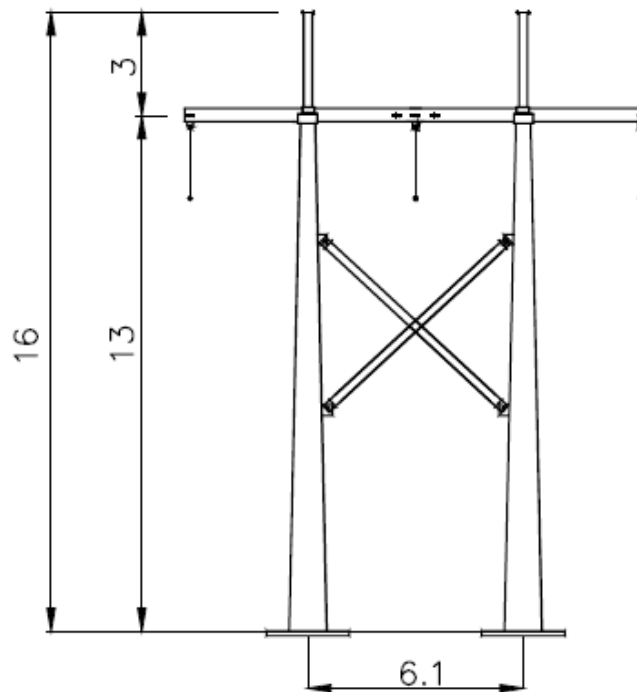
ROW width is determined by a variety of factors, such as structure height, span length, conductor type, conductor swing clearances and existing land use. Figure 2-1 shows two ROW configurations as the easement required for the ROW changes depending on aspects such as being offset of a quarter-section line, or adjacent to a road allowance. An easement of 24.2 m is required adjacent to road allowances and 60 m (30 m either side) when offset a quarter-section line or along the length of line traversing an abandoned rail bed.



**Figure 2-1 Project transmission line self-supporting steel lattice suspension towers and dimensions (m)**

## 2.2.2 Structures

Based on preliminary design it is estimated that 43 self-supporting lattice steel suspension and one light angle structures (Figure 2-1) will be required. The suspension tower height is approximately 29-38 m, with a range of footprint size from 6.4 m x 6.4 m to 8.6 m x 8.6 m. If tower extensions are necessary at transportation crossings the tower heights and footprints may increase. It is estimated that a total of eight tubular steel H-frame heavy angle structures (Figure 2-2) will be required. The heavy angle tower height is approximately 16m with a 6.1 m x 6.1 m tower footprint. Spans between towers are expected to be approximately 300-450 m depending on site conditions.



TUBULAR STEEL ANGLE STRUCTURE  
TF-201

**Figure 2-2 Project transmission line tubular steel h-frame angle tower and dimensions (m)**

### 2.2.3 Conductors and insulators

The transmission line will be a single-circuit line configuration consisting of three 795 MCM 26/7 ACSR (Aluminum Conductors, Steel Reinforced) conductors. Each conductor consists of aluminum strands wrapped around a centre 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 2010). The minimum ground-to-conductor clearances for 230-kV power lines are as follows:

- Farmland: 6.1 m;
- Road and Highways Crossings: 6.325 m;
- Railways: 9.3 m;
- Underground Pipelines: 6.1 m;
- Watercourse – Class 0: 6.1 m;
- Watercourse – Class 1: 7.3 m;
- Watercourse – Class 2: 9.3 m; and
- Watercourse – Class 4: 13.3 m.

The proposed route is 16.5 km from the existing line (P81C) at the south to the Roquette facility in the north, and involves one highway crossing, no railway or navigable water crossings, no transmission line crossings and two distribution line crossings.

### 2.2.4 Ground wires

Two ground wires (skywires) will be strung at the peak of the transmission structures to provide, communication, grounding and lightning protection. One of these ground wires will be an Optical Ground Wire (OPGW) that will provide telecommunications during the transmission line operation.

### 2.2.5 Tap connections

To connect the proposed transmission line to the existing P81C transmission line at its south end requires a facility to allow P81C to operate as a three-terminal line. It will be located in the right-of-way (ROW) of P81C and fenced (Figure 2-3). The approximate size of the site is 55 m x 55 m. Inside the fenced area will be two steel lattice structures and three 230 kV Vertical Break Switches with six support structures. The structures will be supported on foundations selected depending on the soil conditions. Conductor (1272 and 795 MCM ACSR) will be used to make the connections between the transmission lines, structures and equipment. A permanent ground grid will be installed 150 mm below crushed rock and both will extend 1 m beyond the fence perimeter. The northern termination point of the proposed transmission line will be on customer-owned structures

and equipment located on customer-owned property and are not included as part of this assessment or Project description.



**Figure 2-3 Project connection to P81C near existing Tower 263**

## 2.3 Project routing

### 2.3.1 Methods

A detailed Project-specific discussion of the routing process can be found in Appendix A. In general, transmission line routing represents a powerful mitigation tool in limiting potential effects to people and the environment. The challenge is that there are typically competing perspectives on concerns or priorities for any given area requiring a structured, iterative process to balance multiple perspectives and limit overall project effects.

Manitoba Hydro uses methods adapted from those developed by the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC) for use as a tool in routing new overhead transmission lines (EPRI-GTC 2006). The EPRI-GTC method has been successfully applied on more than 200 linear projects across North America, and is a quantitative, GIS-based tool in evaluating the suitability of an area for locating new overhead transmission lines. It uses geospatial information (where features and activities occur on the landscape) and models developed to analyze information grouped into the following three 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; and

- 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 modelling integrated the geospatial data for a data planning area, which formed the Regional Study Area (RSA) for the assessment, and weightings were applied to each perspective to represent the values that each holds for different features on the landscape. “Areas of Least Preference” included locations where routing may not be feasible due to physical barriers, administrative regulations, incompatible land uses, and/or locations where substantial regulatory limitations would be expected. The Areas of Least Preference used for this Project were as follows:

- Contaminated sites;
- Buildings;
- Non-spannable waterbodies (>450m)
- Heritage plaques;
- Recreational centers (golf, skiing, etc.);
- Known archaeological sites;
- Indian Reserves/TLE selections;
- Towers and antennae; and
- Wastewater treatment areas.

As described in Appendix A, the Alternative Route Evaluation Model (AREM) was developed by the Project team. The team determined the criteria in the model, as well as the relative weights of each criterion, based on the experience gained from previous Manitoba Hydro transmission projects that utilized this routing methodology.

As Manitoba Hydro adapts its route evaluation criteria to the characteristics of the RSA and proposed transmission line design, the Built perspective portion of AREM was adapted as follows (including the weight assigned):

- Relocated residences within the right-of-way (30%);
- Potential relocated residences from the edge of right-of way to 100m (18%);
- Proposed developments within the right-of-way (17%);
- Length of diagonal crossings (km) of agriculture cropland (11%);
- Special features such as schools, daycares, churches etc. (7%);
- Proximity of the route to residences (100-400m) to the edge of right-of-way (6%);
- Current agricultural land use (value) in the right-of-way (4%);
- Proximity to buildings and structures (100m) to the edge of right-of-way (3%);
- Land capability value for agriculture in the right-of-way (2%); and
- Historic/cultural resources (250m) to the edge of right-of-way (2%).

The Natural environment perspective was exclusively (100%) focused on the small pockets of wooded/shrub areas, and the Engineering perspective was focused on construction/design costs (85%) and biosecurity costs associated with the location of the transmission line on agricultural lands (15%).

The AREM generated statistics for criteria on each alternative route segment and then Manitoba Hydro engineering, environmental and engagement discipline experts reviewed the AREM outputs in a technical workshop to determine route alternatives to be presented for public and indigenous engagement.

Based on feedback gathered during the public and Indigenous engagement processes (sections 3 and 4), any additional concerns or proposed additional segments were then included in evaluation with original route alternatives to determine inputs into a Preference Determination Model (PDM). The Final Preferred Route was selected by the Project team using the PDM criteria and weightings as described below:

- Cost (40%) - high-level construction estimates;
- Community concerns (30%) - input received from the public and Indigenous engagement processes;
- Natural environment concerns (7.5%) –aspects such as amount of wooded areas/wildlife habitat affected;
- Socioeconomic concerns (7.5%) – aspects such as distance to residences, amount of agricultural land crossed;
- Risk of schedule delays (10%) – aspects such as regulatory approvals, seasonality of construction, overall level of complication expected that could result in delays; and
- Impacts to system reliability (5%) – aspects such as proximity of the route to existing lines, as well as the number of crossing points with other transmission lines.

## 2.3.2 Routing considerations

### 2.3.2.1 Opportunities and constraints

The challenge for routing was to connect the proposed facility in the northeast of the Project RSA with P81C transmission line located approximately 11 km due south. While Appendix A provides further detail on the routing process, there were several opportunities and constraints that influenced route planning in the RSA. The new Bipole III transmission line runs north-south along the western border of the RSA; crossing that project was not desirable from a system reliability perspective. The land to the east of the RSA contains the Assiniboine River, and issues associated with having to span the width, and/or flooding and steep/unstable land. The area to the east also had several irrigation pivots and Southport airport. Much of the land to the south is Long Plain First



Nation's Reserve or Treaty Land Entitlement land. These constraints served to move the southern tap point along P81C further to the west. The presence of an abandoned rail bed (an existing linear disturbance) provided an opportunity for a more direct route towards the termination point at the Roquette Pea Processing Plant facility.

### 2.3.2.2 Engagement inputs

During the public engagement process (Section 3.3) there were several discussions about possible route modifications. Some were discarded as landowners gained a better understanding of the routing process, but adjustments were made based on input. One landowner proposed a route modification to place the transmission line on the eastern edge of a parcel of land to minimize potential effects on agriculture. As this option moved the transmission line in closer proximity to a residence and would need to have the line placed in-field that would interfere with manoeuvring farm equipment around the structures, it was not pursued further. In addition, several landowners in the centre of the Project RSA expressed a preference for the alternative segment that routed over wet low-lying land, and so this was selected over the segment displayed as preferred in the map.

During the Indigenous engagement process (section 4.3), Long Plain First Nation representatives noted that their land use planning process was nearing completion and would involve the conversion of private lands north of the Reserve to reserve status by 2018. In terms of routing, representatives recommended routing along the abandoned rail bed to minimize effects. They also suggested that the route could follow the Yellowquill Trail beside the Assiniboine River, as this is no longer used for travel. Manitoba Hydro is using the rail bed in several areas, but slope stability and risks of flooding preclude the use of routes near the Assiniboine River.

In general, most participants indicated that the current options being presented were acceptable and as indicated in the engagement sections, did not raise many concerns. Following the existing rail bed, existing transmission lines and mile lines were viewed favorably. Avoidance of homes was also viewed positively and avoiding alternatives that "box" (transmission line located on two edges of a parcel) landowners in would be much preferred.

The preferred route location (Map 2-1) was preferred by most participants. Those landowners with property in northern section of the transmission line had a stronger preference for the preferred route and not the alternative segments. For those with property in the central area, concerns were raised regarding aerial application, future land potential and diagonal crossing of agricultural lands, and they had a preference to move away from residences and use more of the wet, low-lying land on the alternative. The process resulted in the selection of a Final Preferred Route, as shown previously in Map 1-1.

## 2.4 Easement procurement procedures and compensation

Once the Final Preferred Route is determined Manitoba Hydro can begin the process of acquiring easements from the landowners; however, construction cannot begin until approval is received. For this Project, the routing process resulted in a proposed route where no Crown lands are affected, and private land easements were minimized through the paralleling road allowances. In the case of privately owned lands, easements are secured through an agreement with the property owner.

The conventional terms of the ROW easement agreement provide that:

- 1) Manitoba Hydro acquires the right to construct, operate, maintain and repair the transmission line within the ROW, while the landowner retains title to the land and, where applicable, continues to use the land in a fashion compatible with the transmission line ROW requirements.
- 2) The landowner can continue to use the land (i.e., for farming, grazing or other compatible uses) as long as 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.
- 3) Manitoba Hydro personnel are permitted to enter and use the ROW for construction, inspection, maintenance or repair of the transmission line facilities.

Land Compensation is a one-time payment to landowners for granting of an easement for a transmission line ROW. The following factors are used to determine Land Compensation:

- Total area (acres) of easement required by Manitoba Hydro for the transmission line ROW;
- Current market value of the land (per acre); and
- Easement compensation factor (150%), which is determined based on the size and type of the transmission line.

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 satisfaction of the landowner, any damage to a landowner's property; and
- Compensate a landowner for damages such as the reapplication or rejuvenation of compacted top soil where the remedial work requires farm machinery and the expertise of the landowner.

In the instance of damage to cultivated agricultural lands, a landowner would be compensated for the amount of loss due to damage if crops were in place prior to the construction of the transmission line. This compensation is based on the current value of the harvested crop (Manitoba Agricultural Services Corporation [MASC] insured value in dollars per bushel), multiplied by the acres of damaged area and multiplied by the crop owner's yield of that same crop (based on MASC Area bushels per acre yield).

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 in an area of overlap around each tower structure;
- Additional time required to manoeuvre farm machinery around each structure; and
- Double application of seed, fertilizer and weed control in the area of overlap around each tower structure.

Structure Impact Compensation takes into consideration:

- The type of agricultural land;
- The type of tower structure constructed on the land; and
- The location of the tower structure in relation to property lines.

Manitoba Hydro prepares a compensation schedule semi-annually based on current data provided by MASC.

Ancillary Damage Compensation is a one-time payment (for each occurrence) when Manitoba Hydro's use of the ROW directly or indirectly affects the use of the property. Ancillary Damage Compensation is negotiated. Landowners may be compensated for the following:

- Agricultural effects such as irrigation and drainage;
- Constraint effects such as restricted access to adjacent lands; and
- Traditional effects such as highest and best use of land.

## 2.5 Project construction

### 2.5.1 Schedule and workforce

Table 2-1 shows the construction schedule and anticipated workforce. 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 late 2017. The spring and summer of 2018 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 late fall 2018. As most of the land is currently used for agriculture, clearing of bush/wooded areas should be limited. Construction will continue into early 2019, with completion prior to any sensitive spring (e.g., breeding/rearing) environmental timing windows. Construction will take place in four phases: clearing, foundations, tower assembly/tower erection and conductor stringing. Total duration of construction may be up to six months. The in-service date for the Project is currently planned for March 2019. Clearing will require a minimal workforce of up to 10 workers. Each of the other three phases identified above will required a workforce of approximately 30 workers.

**Table 2-1 Construction schedule and workforce**

Construction phase	2018/2019 Schedule						Workforce
	October	November	December	January	February	March	
Mobilization / clearing	■						10
Tower foundations	■						30
Tower assembly				■			30
Conductor stringing				■			30
Demobilization / clean up						■	30

## 2.5.2 Mobilization and access

The first step in Project construction is the mobilization of a workforce to an area. Mobilization includes the movement of Manitoba Hydro staff and contractor staff, vehicles and equipment to the job site. It also involves the presence of the workforce at accommodations in the local community, and during regular access to the work site. No construction work camps will be required 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.

After property easements for the required ROW have been secured through direct negotiations with affected landowners the route will be surveyed to establish a centerline for the transmission line. The edges of the ROW will also be surveyed and flagged to

establish the limits for tree clearing (where required). It is during this survey that tower locations will be established.

Transmission line construction will begin once the ROW is prepared. The basic construction steps involve foundation installation, assembly and erection of structures, stringing of conductors, cleanup, and then commissioning.

Clearing and construction equipment can include the following:

- Materials delivery trucks and trailers;
- Drill rigs and concrete trucks for cast-in-place piles;
- Backhoes with attachments for installing re-bar cages for piles;
- Backhoes with specialized heads for installing screw piles;
- Welding trucks and equipment;
- Loaders and cranes for assembling and erecting towers;
- Stringing equipment such as tensioners and pullers; and
- Other smaller equipment for transportation and other minor tasks as required.

Access for construction (and subsequent line maintenance activities) will generally occur along the ROW 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 ROW from provincial crown lands.

### 2.5.1 Marshalling yard

A material marshalling yard (approximately 100 m x 100 m) will be established near the transmission line route for the storage and assembly of construction materials and equipment for eventual deployment to the construction site. The location of the marshalling yard will be determined during the course of developing detailed construction specifications and contract arrangement. The intent will be to place the marshalling yard as close to the ROW as possible to minimize additional noise and traffic.

### 2.5.2 Right-of-Way clearing

Since the majority of the route is located in agricultural areas only minor clearing activities will be required in a few locations to remove trees. Clearing and disposal of trees on the proposed ROW will be undertaken in advance to facilitate construction activities. ROW 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 (see section 9).

Final clearing methods will be determined based on detailed surveys of the transmission line routes, and site specific identification of environmentally sensitive features.

### 2.5.3 Geotechnical investigations

Geotechnical investigations involve the excavation of test pits and/or soil drilling to create a soil profile that is used by civil designers in the development of foundation designs. Investigations take place as the ROW is cleared to allow access. Test pits located at tower foundation sites are excavated by a tracked excavator, or drilled using an auger. They are backfilled once tests are complete.

### 2.5.4 Tower construction and conductor stringing

#### 2.5.4.1 Overview

Transmission line construction involves several stages, including installation of tower foundations, assembling and erecting structures, and stringing of the conductor and overhead ground wires. The different stages require the use of various types of vehicles and heavy equipment, and involve a range of skills and trades.

Currently both structure and conductor designs are subject to final detailed design. Unless otherwise specified, the following descriptions are based on current design and on prior experience with similar projects and conditions. The dimensions provided for the various structure and foundation types are subject to revision in the course of final design and confirmation of field construction conditions.

#### 2.5.4.2 Foundation installation

Self-supporting lattice steel structures will be supported by either mat or helical pile foundations. Helical pile foundations will involve individual piles or pile groups, for each leg of the structure. Tubular steel pole structures will be supported using cast-in-place (CIP) concrete piles. CIP piles will involve single piles supporting each pole. Where wet or unstable soil conditions are encountered, foundations may be installed to provide additional soil stability. Granular materials required for construction will generally be purchased from local suppliers and it is not anticipated that any new borrow areas would need to be developed.

#### 2.5.4.3 Structure and conductor installation

Tower structure assembly is currently planned to involve either assembly 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 for approximately two days as 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 assembled insulator strings will be attached to the structure cross-arms prior to tower erection. 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. To create a continuous conductor the ends of conductor reels will be spliced together by use of implosive sleeves.

### 2.5.5 Demobilization and cleanup

The final step in construction is the demobilization of a 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 marshalling yard, and any borrow sources or 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 of according to provincial and municipal regulations. Rehabilitation of any disturbed sites will be undertaken as required.

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.

As soon as possible after completion of construction, the sites will be cleaned up. Disposal of waste materials will rely on the use of locally available services and will also be determined by conditions of *The Environment Act* Licence. Waste disposal will be undertaken in accordance with provincial and municipal regulations, and by-laws. All cleanup and rehabilitation activity will be subject to the requirements of the Environmental Protection Program, described in Section 9. All non-toxic materials will be disposed of using existing, appropriately licensed local facilities. Material supply and waste handling will be subject to conventional Manitoba Hydro codes of practice and relevant provincial and federal legislation.

## 2.6 Project operation and maintenance

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

## 2.6.1 Inspection patrols

Manitoba Hydro conducts annual inspections of all its transmission lines and ROWs that are 230 kV and greater. 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. Following the patrol, all pertinent information and findings are entered into a transmission line management database program. From this central database, annual maintenance activities are identified and tracked.

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 particular 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.

## 2.6.2 Vegetation management

Vegetation management within the ROW is required for public and employee safety, as well as the reliable operation of the line. It should be noted that most of the land along the Final Preferred Route (more than 60%) is used for agriculture, with the majority of this consisting of cropland; areas of natural vegetation are largely limited to treed areas along windbreaks and the abandoned rail bed. The ROW 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 ROWs 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 ROW.

Manitoba Hydro is subject to North American Electric Reliability Corporation (NERC) reliability standard requirements, which have been adopted in Manitoba under Manitoba Regulation 25/2012. In addition, the Agricultural Biosecurity Policy and Standard Operating Procedures (2017) will be applied. The policy is designed to prevent the introduction and spread of disease, pests and invasive plant species in agricultural land and livestock operations.

The method and timing of vegetation maintenance depends on a number of 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 ROW 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 in order 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 a number of 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 Water Stewardship'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. Herbicide application rates at Manitoba Hydro are established by their Chief Forester in accordance with product label instructions. Only herbicides that have been listed in the Pesticide Use Permit are used by Manitoba Hydro. 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 ROWs 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 ROW include mowing and herbicide spraying, which is the most effective method to control weed growth. 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 land owner will be notified and permission requested for access across land to get to ROW. Manitoba Hydro's Chief Forester is responsible for obtaining the necessary Pesticide Use Permits and submitting Post Seasonal Control Reports as per Manitoba Regulation 94-88R under *The Environment Act*.

## 2.7 Project decommissioning

The Project has been designed to remain in service for several decades and with regular maintenance could be operated indefinitely. Should the transmission line be decommissioned at some future date, Manitoba Hydro will apply acceptable means for environmentally restoring Project sites and ROWs.

Current methods of transmission line decommissioning entail the dismantling of the structures and salvage or disposal of all steel structure components, as well as removal and salvage of insulators, conductors and ground wires. Decommissioning of ROWs currently involves clean up and remediation to a standard commensurate with local environmental conditions, including the applicable land use and policy in effect at the time of decommissioning.

## Poplar Bluff Transmission Project

### Project Infrastructure

- Roquette Portage Pea Project
- Preferred Route
- Alternate Route Segment
- Regional Study Area

### Existing Infrastructure

- Trans Canada Highway
- Provincial Highway
- Provincial Road
- Municipal Road
- Railway
- Existing Transmission Line
- Trans Canada Pipeline

### Landbase

- Treaty Land Entitlement
- First Nation Land
- Crown Land
- Water Body
- Watercourse

Coordinate System: UTM Zone 14N NAD83  
Data Source: MBHydro, ProvMB, NRCAN  
Date: June 28, 2017

0 1 2 Kilometres  
0 0.5 1 Mile

1:60,000



## Preferred and Alternate Routes

Draft: For Discussion Purposes Only

Map 2-1

