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February 12, 2021

Client File No. 5719.00

Licence No. 3207

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

Dear Ms. Kohler:

RE: Notice of Alteration for the St. Vital Transmission Complex Project

Manitoba Hydro received an *Environment Act* Licence (No. 3207) for the above noted project on January 30, 2017. This letter serves to request an alteration to the project.

Manitoba Hydro is proposing to alter the Project by changing from the originally proposed tubular towers to lattice towers, allowing Manitoba Hydro to increase span length and reduce the total number of towers required. This would increase the width of the right-of-way from the proposed 40 meters to 60 meters. However, we would be able to reduce the overall tower numbers by 40% (~85 towers) from what was proposed in the original environmental assessment.

Manitoba Hydro is proposing two alterations to the next phase of the project as follows:

1. Changing the tower type
2. Adjusting the route further from a steel oil pipeline
3. Adjusting the route to avoid some old growth trees along Joubert Creek

The attached report details the proposed changes and describes how the proposed changes were reviewed against the valued components used for the environmental assessment to determine if any of the conclusions of the original environmental assessment would change.

In closing, should you require more information or have any questions, please contact me at 204-360-3119.

Regards,

Original signed by James Matthewson

James Matthewson
A/Manager
Licensing and Environmental Assessment Department
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Attachments: NoA Detailed Report & NoA Form

St. Vital Transmission Project

Notice of Alteration



Prepared by:

Manitoba Hydro

Licensing & Environmental Assessment

February 2021

Prepared for:

Environmental Approvals Branch

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1.0 Introduction

Manitoba Hydro received an *Environment Act* Licence (No. 3207) for the St. Vital Transmission Project on January 30, 2017. The first phase of the project (St. Vital Station to the new De Salaberry East station [License No. 3254]) is complete and in service. Construction on the second phase of the project (De Salaberry East Station to Letellier Station; Map 1) is planned for summer/fall 2021.

1.1 Proposed alterations

Manitoba Hydro is proposing three alterations to the next phase of the project (De Salaberry East Station to Letellier Station; Map 1) as follows:

1. Changing tower type
2. Route adjustment #1
3. Route adjustment #2

Each of these are described below.

1.1.1 Changing tower type

The original proposal was to use tubular steel H-Frame towers, 19-27 m high and 6-9 m wide at the base (Figure 1). The span between the towers would be approximately 250 m. Specialized heavy-angle and dead-end structures would also be tubular steel, H-Frame towers. Easements would generally be 40 m along $\frac{1}{4}$ section lines or across fields (Figure 2) and 23.75 m along road right-of-way (Figure 3).

Manitoba Hydro is proposing to change the tower type to steel lattice towers, 29-44 m high and 6-8 m at the base (Figure 1). The taller towers allow the span between towers to increase to 400 m. Easements will increase to 60 m wide along $\frac{1}{4}$ section lines (Figure 4) and 42 m wide along road right-of-way (Figure 5).

Overall, there will be a reduction in the number of towers, from approximately 236 to 145 and an increase in right-of-way width from 40m to 60m. These changes have the potential to alter the effects to the environment described in the environmental assessment report.

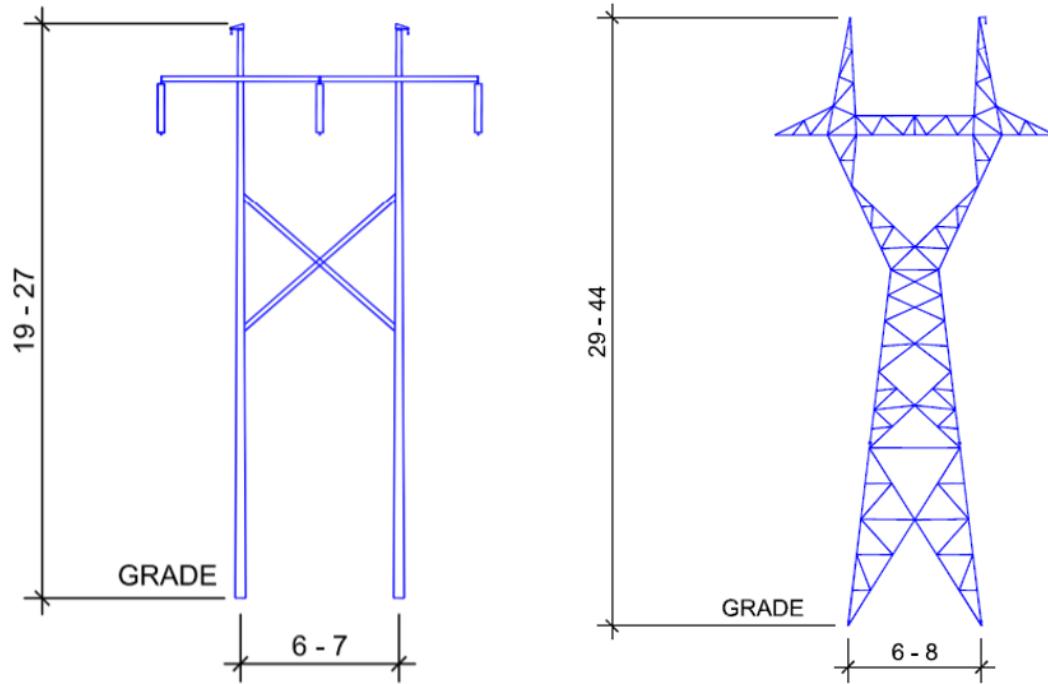


Figure 1: Original (left) and proposed new towers (right) (dimensions are in meters).

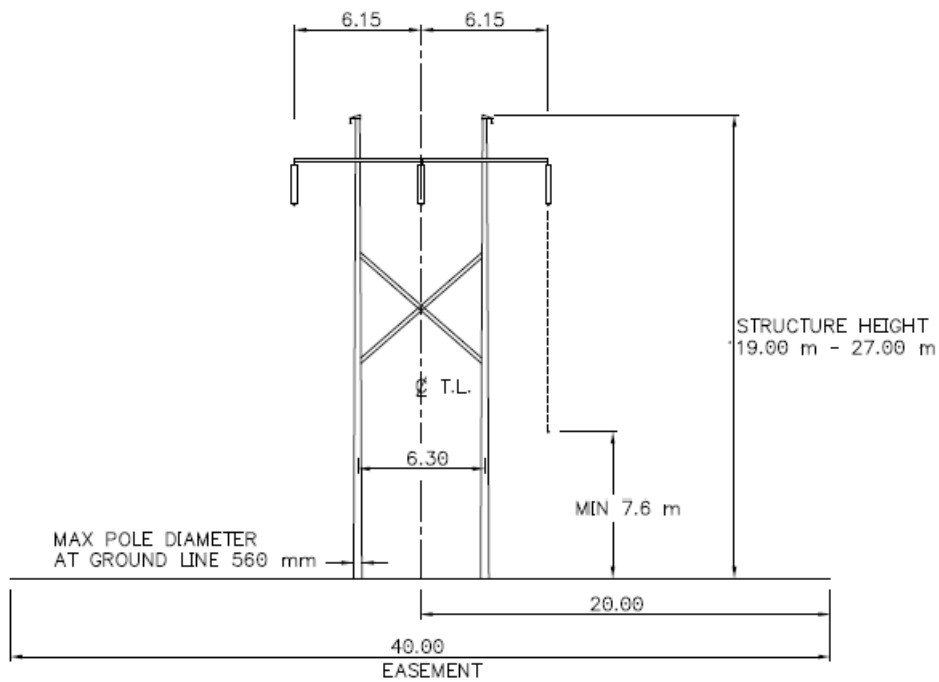


Figure 2: Original cross section along quarter-section line

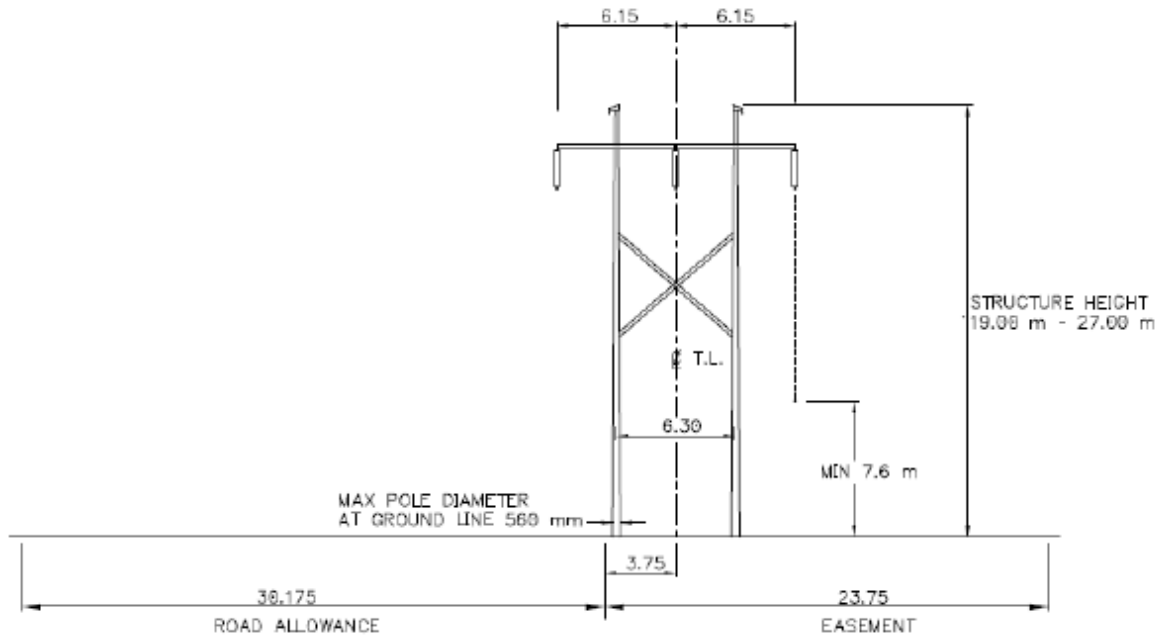


Figure 3: Original cross section along road allowance

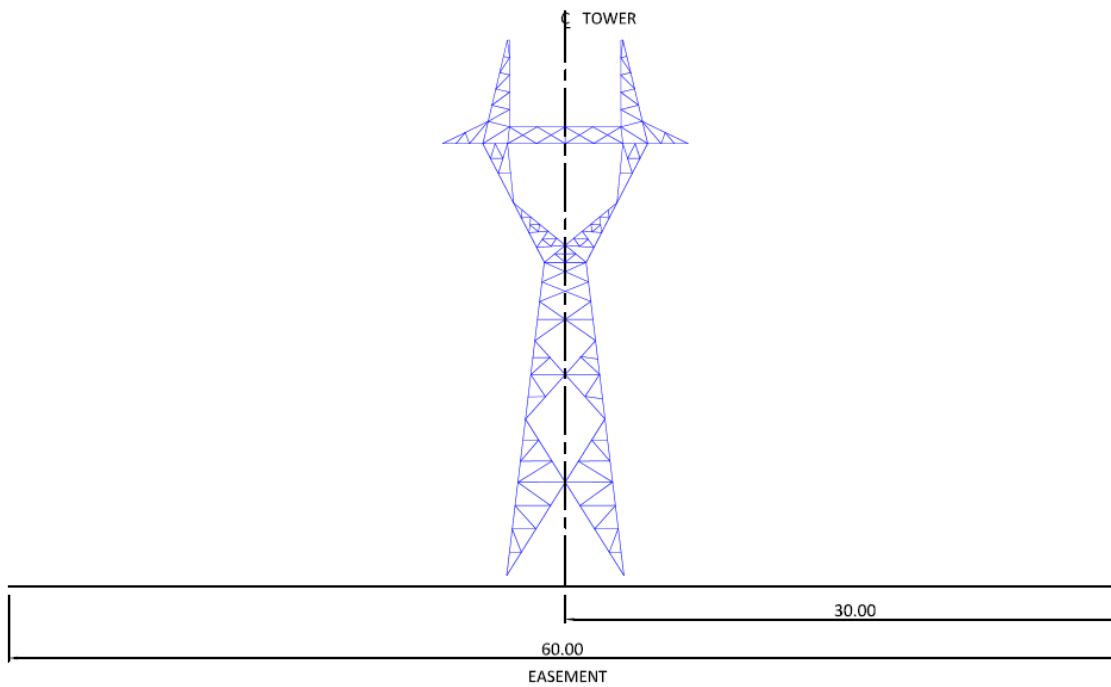


Figure 4: Proposed cross section along $\frac{1}{4}$ section lines (dimensions in meters)

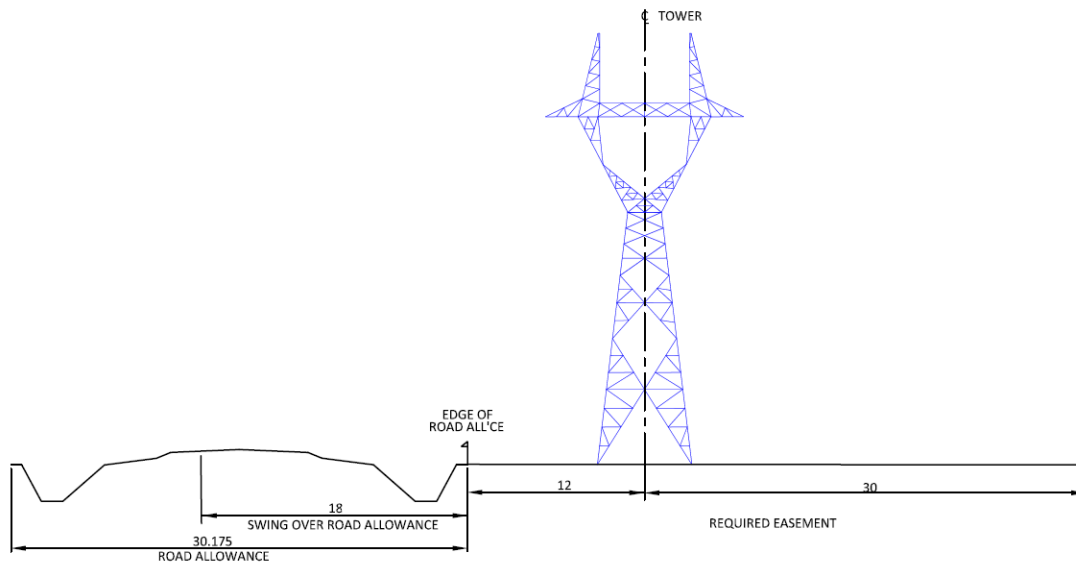


Figure 5: Proposed cross section along road allowance (dimensions in meters)

1.1.2 Route adjustment #1

Manitoba Hydro is proposing to re-route a portion of the line in order to avoid paralleling a steel oil pipeline (Map 2). On previous projects, paralleling a steel pipeline resulted in expensive mitigation measures to address safety issues as a result of electrical induction potential causing corrosion. Based on feedback from the pipeline company, 300 meters is the minimum required distance to avoid the need for mitigation. The proposed re-route moves the line greater than 300 m from the pipeline, except at the perpendicular crossing. The re-route introduces three new landowners and removes 5 existing landowners that are directly affected by the project. The new landowners have been contacted and have verbally agreed to the line on their property. The location of the route was designed with input from the new landowners (moved in field to allow better equipment movement around the towers).

1.1.3 Route adjustment #2

Manitoba Hydro is proposing to re-route a portion of the line in order to avoid some large trees along Joubert Creek. A request was made by the landowners in the area stating they had concerns that the removal of the old growth trees would potentially cause erosion issues. Four towers will be moved 30 m north to avoid these trees (Map 3).

2.0 Environmental assessment review

The proposed changes were reviewed against the valued components used for the environmental assessment to determine if any of the conclusions would change. The valued components used in the environmental assessment included:

- Atmospheric environment (EA Section 9.1.5; pages 9-4 to 9-5)
- Groundwater resources (EA Section 9.2.5; page 9-14)
- Aquatic resources (EA Section 9.3.5; pages 9-25 to 9-28)
- Natural vegetation (EA Section 9.4.5, pages 9-40 to 9-47)
- Wildlife
 - Birds (EA Section 9.6.5, pages 9-64 to 9-74)
 - Mammals (EA Section 9.7.5, pages 9-90 to 9-97)
 - Species of conservation concern (EA Section 9.8.5, pages 9-109 to 9-115)
- Traditional land and resource use (EA Section 9.9.5, pages 9-134 to 9-135)
- Infrastructure and services (EA Section 9.10.5, pages 9-147 to 9-156)
- Employment and economy (EA Section 9.11.5, page 9-167)
- Property and residential development (EA Section 9.12.5, page 9-177-188)
- Agricultural land use (EA Section 9.13.5, page 9-206 to 9-221)
- Non-agricultural land use (EA Section 9.14.5, page 9-234 to 9-242)
- Communities (EA Section 9.15.5, page 9-249 to 9-259)
- Heritage resources (EA Section 9.16.5, page 9-266 to 9-267)

The potential effects for each VC (EA Section and page numbers listed above) were reviewed and then a determination was made as to whether the proposed changes to the project would alter the potential effects. If a change was expected, then the residual effects were reviewed to determine if there are any changes to the conclusions made in the environmental assessment. The review for each VC is outlined in the sections below.

2.1 Atmospheric environment

Potential for effects on the atmospheric environment are predicted by assessing the potential for changes to air quality. Potential changes in air quality can result from vehicle use (i.e., engine exhaust and hydrocarbon vapours), from burning of cleared material (products of complete and incomplete combustion), and from construction

and clearing efforts (dust emissions) with potential to affect local air quality and visibility.

The environmental effects of the Project on the atmospheric environment will be greatest during the construction phase and will consist of short-term, local increases in vehicle and equipment emissions, dust, particulates and smoke generated from the burning of cleared material.

There is no expected increase in workforce, equipment use or construction duration due to the proposed alteration. There will be an increase in the amount of forest clearing required (see Section 2.4 natural vegetation for details).

With adherence to proper mitigation procedures, potential effects on local air quality resulting from the construction, operations and maintenance activities will likely remain below Manitoba ambient air quality guidelines.

There is no change to the conclusions of the assessment.

2.2 Groundwater resources

The assessment of groundwater resources focused on near surface groundwater resources. Project interactions with groundwater resources have the potential to effect shallow groundwater quantity and quality.

Potential effects pertain to drilling for tower foundations, especially in flowing artesian well areas. Normal pile foundation construction procedures could intersect an aquifer but are not expected to negatively affect groundwater resources in terms of either flow or quality.

The new tower foundations will not be significantly larger (deeper or wider) than the original and there are fewer towers overall, therefore the proposed change to the project is not expected to have a higher risk to groundwater.

There is no change to the conclusions of the assessment.

2.3 Aquatic resources

Project construction and maintenance (such as riparian vegetation clearing, tower installation or vegetation maintenance at watercourse crossings) have the potential to alter surface-water quality (increased sedimentation, dissolved oxygen [DO], pH and

total suspended sediments [TSS] concentrations) and fish habitat (e.g., spawning grounds; nursery, rearing and food supply areas; migration corridors).

Potential effects include:

- Changes in surface-water quality through riparian vegetation loss/alteration leading to soil erosion, sedimentation, increased water yield, and loss of overhead cover at stream crossing locations (including temporary crossings for access trails/roads)
- Changes in fish habitat stemming from changes in surface-water quality affecting aquatic food sources (e.g., primary producers, invertebrates and other lower trophic aquatic organisms) and feeding activities (e.g., suffocation from clogged/abraded fish gills, inability to locate prey due to reduced visibility, etc.)
- Changes in the quality or quantity of fish habitat at stream crossings from direct physical alteration of riparian habitats, streambanks and streambed substrata and those stemming from changes in water-quality causing sediment deposition on spawning grounds

The proposed route has 13 stream crossings (no change from the original). Five of them are of drains that do not have any riparian clearing requirements (grass / hay to the waters edge). The crossing of the Rat River (Figure 6) and Marais River (Figure 7) are in areas where there are no riparian trees, so no clearing will be required. Six crossings; Joubert Creek (Figure 8), Coulee Des Nault (Figure 9, Figure 10, Figure 11), Roseau River (Figure 12), and Red River (Figure 13); will require additional riparian clearing due to the wider right-of-way.

The new right-of-way and proposed reroutes will require an additional 2 hectares (approximate) of riparian clearing.

General mitigation measures including sediment and erosion control and establishment of appropriate setback buffers from existing waterbodies and streams will reduce potential adverse environmental effects.

Adherence to Fisheries and Oceans Canada's Fisheries Protection Policy Statement (Fisheries and Oceans Canada 2019a) through the use of measures to protect fish habitat (Fisheries and Oceans Canada 2019b) during the construction and maintenance and operation phases of the Project are anticipated to minimize the effects to surface-water quality and avoid causing harmful alteration, disruption or destruction of fish habitat.

The environmental assessment concluded that construction of the Project will result in minimal effects on surface water quality, fish species of conservation concern and fish habitat during the construction period. During operation, little or no effect on surface water quality, fish SOCC and fish habitat is anticipated. Due to the small amount of additional clearing due to the wider right-of-way and the effectiveness of mitigation, the proposed alterations will not alter the conclusions of the assessment.

There is no change to the conclusions of the assessment.



Figure 6: Crossing of Rat River



Figure 7: Crossing of Marais River

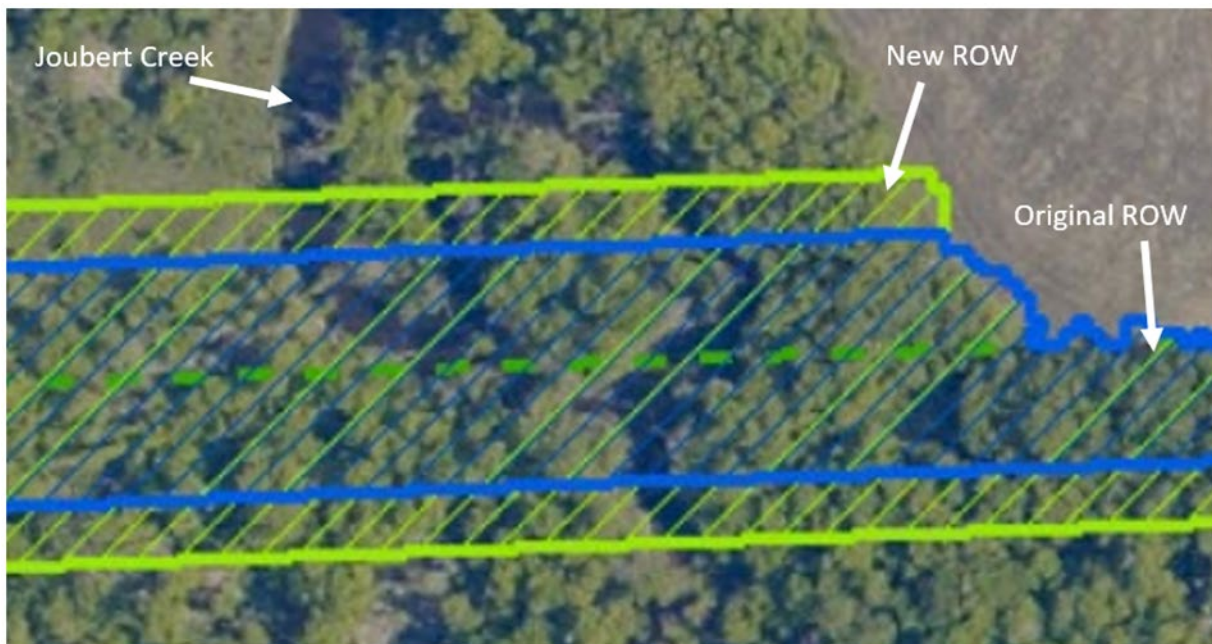


Figure 8: Joubert Creek crossing

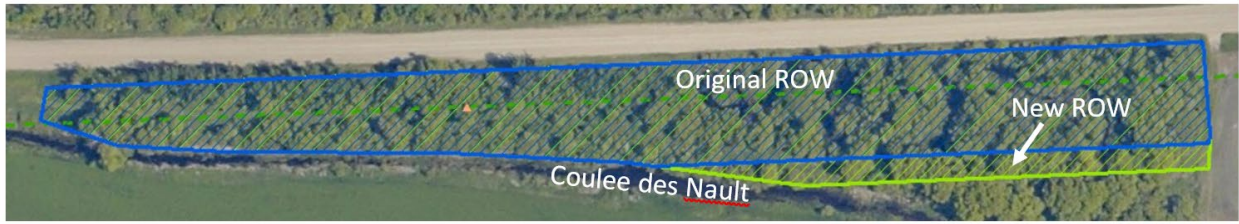


Figure 9: Coulee des Nault (1) crossing



Figure 10: Coulee des Nault (2) crossing



Figure 11: Coulee des Nault (3) crossing

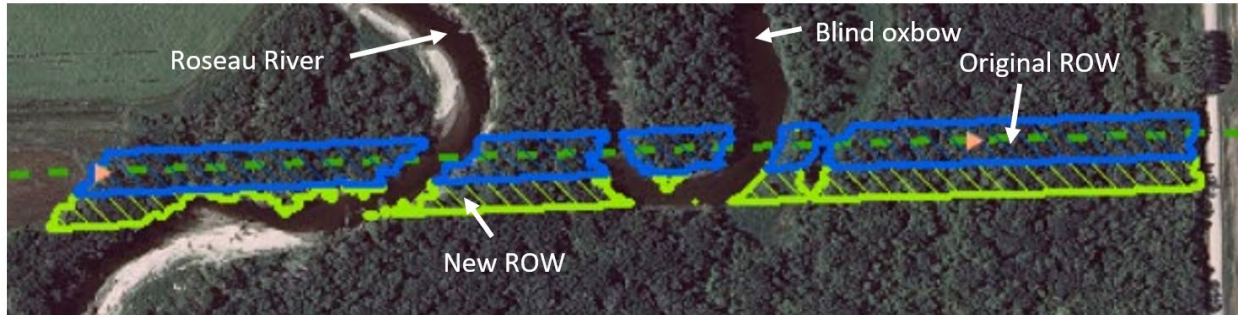


Figure 12: Roseau River crossing

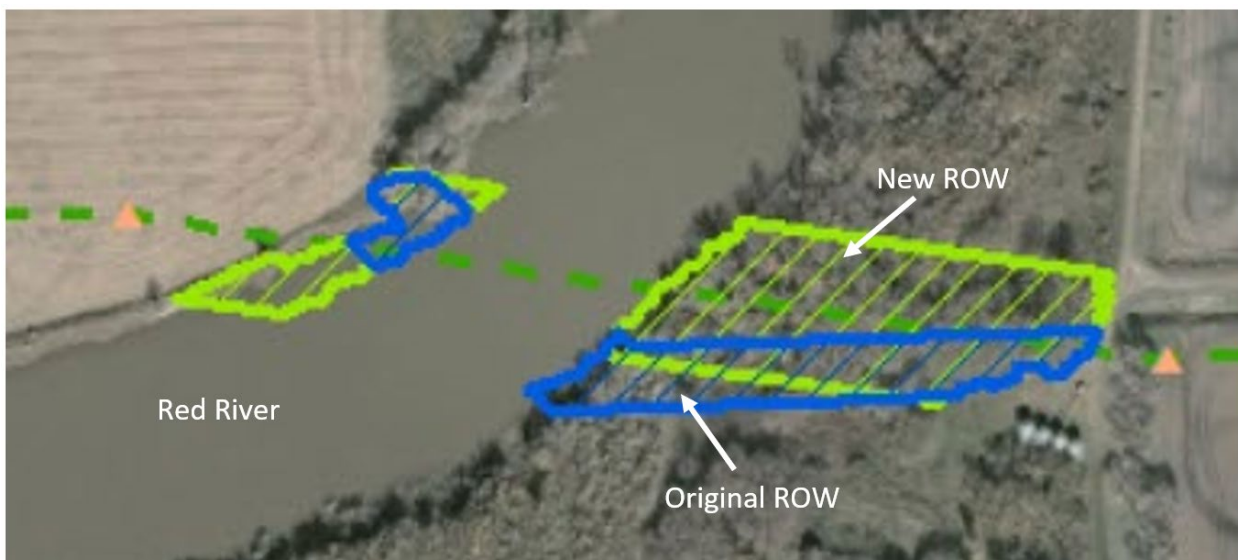


Figure 13: Red River crossing¹

2.4 Natural vegetation

The environmental assessment focused on the potential to impact natural vegetation through disturbance of plants leading to degradation in habitat quality. Reduction in habitat quality may involve non-native and invasive species outcompeting native species, which in turn may change the distribution and abundance of natural vegetation. The potential changes may also alter the habitat of animal species that use areas of natural vegetation or wetland / riparian areas as habitat.

¹ The original ROW shown is prior to the realignment approved May 10, 2018

Clearing within the right-of-way will remove all treed vegetation, contributing to direct loss of natural forests. Clearing also creates 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. Clearing near stream/river crossings may also cause loss of wetland vegetation.

Table 1 outlines the amount of each vegetation type altered due to the original right-of-way and the amount lost due to the wider right-of-way and proposed reroutes.

Habitat Type	Original ROW (ha)	New ROW (ha)	Additional loss (ha)
Forest	13	21	8
Range and Grassland ¹	10	16	6
Wetland - Marsh	0.1	0.2	0.1
Total	23	38	14

¹Grassland/Rangeland - Mixed native and/or tame prairie grasses and herbs.

Direct effects on the grassland will be limited as there is no requirement for clearing. Soil disturbance may cause invasive colonization. The grasslands visited during the general reconnaissance field surveys for the environmental assessment were of marginal quality (i.e., not native prairie; EA Section 9.4.4.2.2, page 9-38).

There will be an additional 8 hectares of forested area cleared due to the proposed alterations and a small increase in wetlands within the right-of-way. No additional wetlands will be lost due to tower footprints.

The conclusions of the environmental assessment conducted on natural vegetation stated that the potential effects are not expected to reduce the likelihood of long-term survival of populations within the RAA and were assessed as being not significant. The potential effects of the spread of invasive and non-native plants are not expected to cause changes in abundance and distribution of a plant species such that its population would no longer be secure in the RAA and therefore was also assessed as being not significant.

The additional clearing will not change the conclusions of the assessment.

2.4.1 Species of conservation concern (SOCC)

The environmental assessment of SOCC focussed on the potential effects of clearing contributing to potential direct mortality for plant SOCC that occur in the area. Clearing also creates soil disturbance, which can lead to colonization by invasive/non-native weedy species that can outcompete SOCC plant species and cause changes in vegetation distribution.

The conclusions of the assessment stated that the residual effects are not expected to reduce the likelihood of long-term survival of populations within the RAA and the Project effects on SOCC and their habitat is assessed as being not significant.

Most of the plants of conservation concern are those that occur in native prairie or open thickets adjacent to forested areas (EA Section 6.3.3.1, page 6-19). As most grasslands in the area are not native and will have only minor effects from construction activities, there will be minimal loss/alteration and minimal risk to SOCC.

A request was sent in January 2021 to the Manitoba Conservation Data Center to determine if there are any at risk or rare species along the proposed right-of-way. There were no plant species of concern identified.

The additional clearing will not change the conclusions of the assessment.

2.5 Wildlife

Three valued components were selected to assess effects of the Project on wildlife:

- Birds
- Mammals
- Species of conservation concern

Due to the number of species encompassed by the wildlife valued component, key indicators were selected to focus the assessment on birds, mammals and species of conservation concern. Due to the potential for project interactions, Canada goose (*Branta canadensis*) and sharp-tailed grouse (*Tympanuchus phasianellus*) were selected for birds, white-tailed deer (*Odocoileus virginianus*) for mammals, and northern leopard frog (*Lithobates pipiens*), short-eared owl (*Asio flammeus*) and American badger (*Taxidea taxus*) for species of conservation concern.

Each of these are described in the following sections.

2.5.1 Birds

The environmental assessment of birds focused on the following environmental effects:

- Change in habitat availability
 - areal extent (ha) and quality of breeding, overwintering, or unique habitats
- Change in mortality risk
 - transmission line or tower/bird collisions / vehicle/ bird collisions / mortality/nest loss due to Project construction and/or maintenance
- Changes in distribution of birds (sensory disturbance)
 - changes in the distribution of birds (density of birds/ha)

Two bird species were selected as key indicators to represent the effects of the Project on birds, Canada goose and sharp-tailed grouse. Each of these is discussed in the following sections.

2.5.1.1 Canada goose

Potential effects to Canada goose include;

- Change in habitat availability
 - loss or alteration of nesting habitat through riparian clearing
 - loss of foraging habitat (cropland)
- Change in mortality risk
 - increase vehicle collisions
 - increase in bird/wire collisions
- Change in bird distribution (sensory disturbance)

Riparian habitats, utilized by Canada goose for nesting purposes, are limited within the Project assessment areas. The wider right-of-way will require additional clearing of riparian vegetation (2 hectares). However, clearing buffers around waterbodies and wetlands will limit the effect on breeding bird habitat in these areas.

Potential loss of agricultural cropland, which is potential foraging habitat for Canada goose during migration, is negligible due to the vast availability of this land cover

type throughout the RAA. The proposed alteration will not alter the potential effects to Canada goose.

There is no expected increase in workforce, equipment use or construction duration due to the proposed change to the project therefore there is no expected increase in vehicle collisions due to the alteration. The risk of bird/wire collisions does not increase due to the alteration as the Projects overall length, and number of waterbody crossings does not change.

During construction, operation and maintenance, noise will be generated. Depending on activity and disturbance level, there may be temporary displacement of birds, resulting in indirect habitat loss. Displacement of birds from noise disturbance also has the potential to cause alterations in foraging and anti-predator behavior.

Changes in distribution of Canada goose should be limited to daily effects including habitat abandonment and disruption of daily movements through avoidance of the construction site. Any indirect Canada goose habitat loss resulting from Project construction sensory disturbance is not expected to have an effect at the population level. There is no expected increase in workforce, equipment use or construction duration due to the proposed changes to the project therefore there is no expected increase in potential effects.

2.5.1.2 Sharp-tailed grouse

- Change in habitat availability
 - loss of habitat due to land clearing
 - loss and/or alteration of habitat as a result of vegetation management
- Change in mortality risk
 - increase vehicle collisions
 - increase in bird/wire collisions
 - increased perching opportunities for predators
- Change in bird distribution (sensory disturbance)

Land clearing during the construction phase will disrupt and/or fragment potential sharp-tailed grouse habitat. Grasslands and pastureland, utilized by sharp-tailed grouse for breeding, are limited within the Project assessment areas. However, direct effects on the grassland will be limited as there are no clearing requirements on

grasslands. The proposed alterations will not increase the potential effects of the Project on sharp-tailed grouse.

There is no expected increase in workforce, equipment use or duration of construction due to the proposed alterations, therefore there is no expected increase in vehicle collisions. The risk of bird/wire collisions does not increase due to the alteration as there is no change in the Projects overall length.

The presence of transmission towers in the open landscape may increase availability of perching sites for raptors hunting for prey. As a result, sharp-tailed grouse may experience a potential increase in mortality risk from raptor predation, particularly if a tower is located near a lek. However, there will be a reduction in the total number of towers, so the risk of predation due to the presence of the line is reduced.

Sharp-tailed grouse are known to avoid or abandon an established lek in response to habitat disturbances and therefore are highly susceptible to the effects of sensory disturbance resulting from Project activities. Suitable lek habitat within the Project assessment areas is limited and sensory disturbance may cause indirect habitat loss, further increasing overall habitat loss for this species as a result of the Project. Grouse lek searches in grassland and pasture habitats will be conducted if activities overlap with the grouse breeding period and if discovered, setback guidelines will be applied. There is no expected increase in workforce, equipment use or construction duration due to the proposed alterations, therefore there is no expected increase in sensory disturbance.

The additional clearing required will not change the conclusions of the assessment with respect to birds

2.5.2 Mammals

The environmental assessment of mammals focused on the change in habitat availability, primarily during clearing. This was based on changes in the extent (ha) of critical reproductive and overwintering habitats and core security habitat (i.e. thermal and concealment cover).

Assessment of residual environmental effects focused on types of habitat affected and the potential of these habitats to support various mammal groups and key indicator species (i.e., white-tailed deer).

Clearing activities will result in direct loss and/or fragmentation of mammal habitat. Annual cropland and developed areas provide marginal mammal habitat while treed, grassland and wetland land cover types provide more productive mammal habitat for a diversity of species. Provincial Land Cover Classification Data was used to determine the amount of each habitat type within each of the project footprints.

Table 1 outlines the amount of each habitat altered due to the initial right-of-way and the amount of habitat lost due to the proposed alterations.

Direct effects on grassland will be limited as there is no requirement for clearing, so the change in habitat is minimal.

There will be an additional 8 hectares of forested area cleared due to proposed alterations and a small increase in wetlands within the right-of-way. Most of the forested area removed (> 75%) is along a road right-of-way (Map 4; Figure 14). This will minimize the potential effects as it will not increase fragmentation of habitat.

The conclusions of the environmental assessment conducted on mammals stated that the widespread alteration of the natural habitat throughout the Prairie and Boreal Plains Ecozones has resulted in diminished populations and ranges of many mammals. As a result, mammals like white-tailed deer that inhabit the area are well-adapted to altered landscapes.

Important wildlife habitat in the area consists of riparian areas, a few scattered woodlots and wetlands. General mitigation measures outlined will serve to minimize project effects.

Construction of the Project will result in minimal effects on mammals during the construction period. During Project operations, little or no effect on mammals is anticipated.

The additional clearing will not change the conclusions of the assessment.

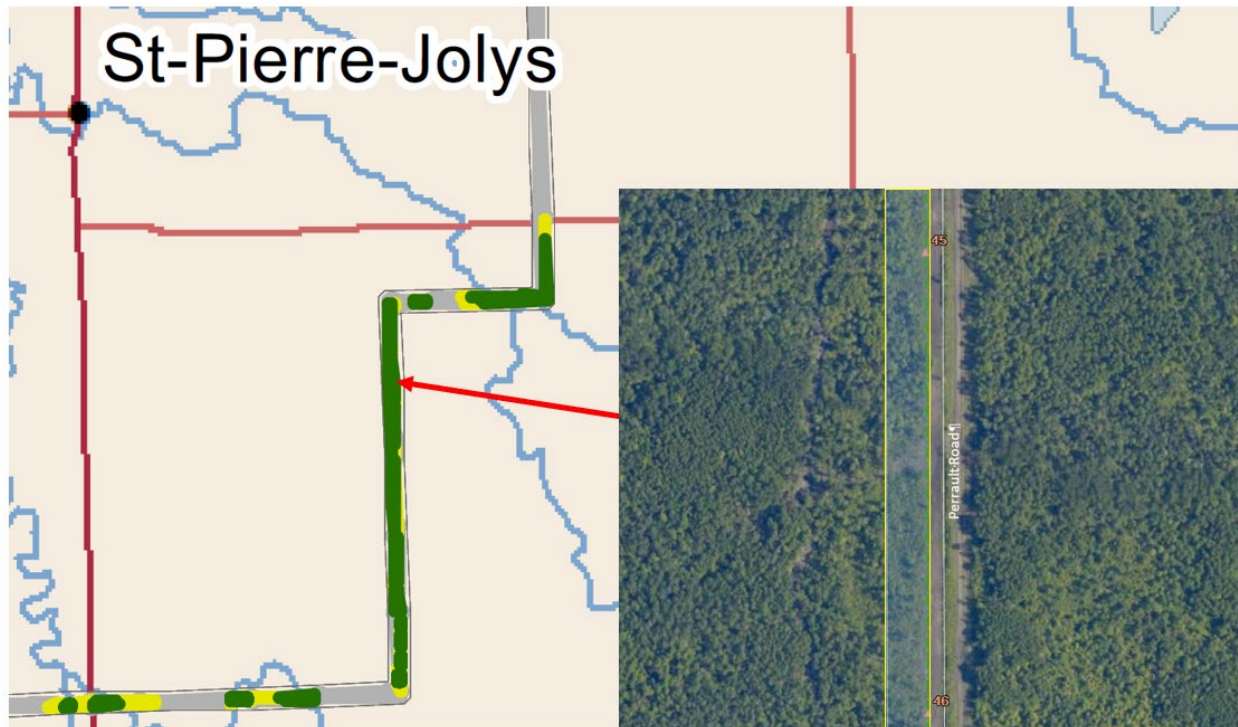


Figure 14: Additional clearing on the west side of Perrault Road

2.5.3 Species of conservation concern

The wildlife species assessed included short-eared owl as an indicator of project-related effects to grassland birds (e.g., bobolink); American badger because of its preference for habitats that support coherent soils conducive to burrowing; and northern leopard frog for wetland-dependant species and not-at-risk amphibians.

2.5.3.1 Short-eared owl

The short-eared owl is a ground-nesting species characteristic of open habitats such as marshes, grasslands, pastures and occasionally fields planted with row-crops (COSEWIC 2008). Potential factors contributing to species decline include habitat loss (especially grasslands), habitat fragmentation (resulting in increased nest depredation), reduction in prey abundance and collisions with vehicles, utility lines and barbed wire fences (COSEWIC 2008). Short-eared owl habitat within the Project Area potentially occur within areas designated as grassland / pastureland cover.

The conclusions of the environmental assessment stated that some short-eared owl habitat will be lost temporarily during the construction period, returning during the Project operation phase as vegetation and small mammal communities re-establish

on non-cultivated portions of the right-of-way. For these reasons, the Project is not anticipated to contribute to the fragmentation of short-eared owl habitat.

Other potential effects include direct mortality during construction (e.g. vehicle collisions) and changes to seasonal and daily movements due to increased noise / traffic. There is no expected increase in equipment use / noise / traffic due to the proposed alteration.

The proposed alterations will not increase habitat loss (grasslands) or fragmentation as there is no expected change to grasslands. There is no expected increase in workforce, equipment use or construction duration therefore the conclusions of the environmental assessment will not change.

2.5.3.2 American badger

The habitat of the American badger is fragmented by roads and development and largely dependent on soil texture. Agricultural practices that keep soil tilled or create compaction further limit habitat availability. As a result, American badgers are largely limited to roadside ditches, pastureland, or undisturbed grassland or forest edges.

Heavy construction equipment could alter potential burrow habitat (e.g., grasslands, shrublands, forest edges, roadsides) for both badger and their prey species (e.g., ground squirrels) by compacting soils.

Construction of marshalling yards and installation of towers could result in mortality due to increased road traffic resulting in vehicle-related mortality, and the potential for collapse of burrows. Both activities will permanently remove a small portion of habitat from use.

The proposed alterations will not increase habitat loss (grasslands / pastureland) or fragmentation and there is no expected increase in equipment use, traffic or noise therefore the conclusions of the environmental assessment will not change.

2.5.3.3 Northern leopard frog

Northern leopard frogs breed and overwinter in ponds. The adults spend the entire summer and early fall foraging period in grassy meadows, open shrub areas, or damp woods, often far from any water.

The loss / alteration of habitat for the northern leopard frog was considered negligible as the effects to the wetland are only at the foundation and do not extend

to the entire right-of-way. As the number of towers is decreasing, the potential effect to northern leopard frogs are potentially less.

Additional effects include direct mortality during construction (e.g. vehicle collisions) and/or changes to seasonal and daily movements due to increased noise / traffic.

There is no expected increase in equipment use / noise / traffic due to the proposed alteration.

The proposed alterations will not increase habitat loss (wetlands / grasslands) or fragmentation and there is no expected increase in equipment use, traffic or noise.

The conclusions of the environmental assessment will not change with respect to wildlife species of conservation concern.

2.6 Traditional land and resource use

The assessment of potential effects to traditional land and resource use focused on the amount of Crown Land available that would provide opportunity to for traditional land and resource use.

There is no Crown land available along the right-of-way for traditional land and resource use.

The proposed changes will not alter the conclusions of the assessment.

2.7 Infrastructure and services

The assessment of potential effects to infrastructure and services focused on provincial, municipal and privately operated infrastructure and services near the Project. This included transportation, community services, emergency services, and health services and facilities.

Potential effects included increased demands on infrastructure and services due to the presence of the workforce, use of heavy equipment etc. and potential interference with radio and communications.

There is no expected increase in workforce, equipment use, or infrastructure crossings (road /rail etc.) due to the proposed change to the project.

There is no change to the conclusions of the assessment.

2.8 Employment and economy

It is anticipated that the Project will have minor beneficial effects by creating some opportunities for new employment and increased demands for goods and services. The Project, once in operation, will also benefit the southern part of the province by transmitting reliable and affordable electricity.

The proposed changes to the project will not alter the opportunities discussed above.

There is no change to the conclusions of the assessment.

2.9 Property and residential development

The assessment of potential effects to property and residential development focused on changes to property values, nuisance effects (noise, vibration, dust and aesthetics) and areas of residential development.

The route for the proposed transmission line generally avoids rural communities and areas of rural residential development, including areas designated for future urban and rural residential development. It was selected to avoid displacing or passing close to dwellings (i.e., within 75 m). The proposed alterations do not increase the number of residences within 100 m of the right-of-way or between 100 and 500 m from the edge of the right-of-way (Table 2).

Table 2: Change in residences potentially effected by the proposed alterations

Category	Original ROW	New ROW
Occupied Houses within 100 m of the edge of the right-of-way	9	9
Occupied Houses between 100 and 500 m of the edge of the right-of-way	17	17

The effect on or change to property through the taking of an easement for the 230 kV transmission lines will be compensated under Manitoba Hydro's existing landowner compensation policy (Manitoba Hydro, date unknown). A new easement will be obtained for the additional right-of-way requirements.

Construction has the potential to cause nuisance effects on properties and rural residences. Such effects include noise disturbance, vibration, dust, damage to property, and aesthetics.

There is no expected increase in workforce, equipment use, or construction duration due to the proposed change to the project.

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.

The presence of a transmission line can influence the visual landscape in urban and rural settings, as well as other sensitive settings. Aesthetics do, to a certain extent, differ according to a person's values and perspectives. An individual's response to visual changes in the landscape and the level of the concern or sensitivity related to a viewscape is a function of the type of views involved, as well as the distance, perspective and duration of the view.

The Regional assessment area consists predominantly of flat, agricultural terrain that is common and like adjacent areas and includes other linear infrastructure developments that have altered the original landscape.

The 230-kV line will have an aesthetic impact on several residences located at varying distances from the line once operational. Without considering dwelling orientation, shelterbelt screening and other location factors, it is generally acknowledged that the closer one is to a line, the more visible it would be.

The combined residual environmental effects on communities with respect to aesthetics were anticipated to be adverse and not significant.

The proposed changes do not increase the number of homes in proximity to the line. There will be fewer but taller towers.

The proposed changes may alter the overall aesthetics but will not change the conclusions of the assessment.

2.10 Agricultural land use

The environmental assessment of agricultural land use is focused on the change in agricultural land use. The Project will result in the loss and alteration of agricultural

land (tower installation); could interfere with agricultural operations (e.g. aerial spraying, field operations [e.g., tillage, spraying, sowing], GPS usage), and may result in degradation of soils (e.g., compaction), resulting in reduced crop performance and yield.

Right-of-way clearing, presence of the workforce, heavy equipment and marshalling yards required for construction, can result in temporary loss of land for crop production during the construction phase of the Project.

Construction activities (clearing, tower installation and stringing of conductors) within the right-of-way have the potential to affect land productivity due to the occurrence of soil-degrading processes such as compaction, rutting, admixing and erosion. Physical land degradation in affected areas of the right-of-way may result in reduced crop productivity and/or increased costs associated with additional field work activities (e.g., additional tillage, leveling, etc.) to return land productivity.

Effects on production values is crop type and crop dependent. Generally, row crops have higher production value than oilseeds and cereals, and oilseeds and cereals have higher production values than haylands and pastures.

The timing of construction will also influence the extent of effects to agricultural land cleared for the right-of-way. Construction in the winter when soils are frozen, during the summer if soils are dry, or late fall after harvest if soils are dry, will reduce the effects from rutting, compaction and admixing.

Soil transport is an important mechanism for the spread of pests from one field or region to another. There is potential for soil to be transferred from field to field, or from another region to the Project area, during the construction phase of the Project, via construction equipment, other vehicles and people moving between fields. The introduction of pests can have lasting adverse production value (reductions in yield) and production cost (increased input and management costs) effects.

Effects associated with operations and maintenance are related to Project presence and include land removed from production, nuisance, inconvenience and increased production costs associated with farming around structures (e.g., overlapping seed, fertilizer and pesticide application), farm management unit splits, interference with aerial spraying of crops, effects on the use of GPS, and biosecurity concerns.

Effects related to the removal of agricultural land from production relate to the surface area taken up by the structures themselves. Land under structure footprints will be permanently removed from production.

There is an additional 4 hectares of agricultural forage fields and 119 hectares of cropland within the new right-of-way (Table 3).

Table 3: Change in right-of-way footprint on agricultural farmland

Class	Original ROW (ha)	New ROW (ha)	Additional loss (ha)
Forage Field	5	9	4
Agricultural Field	148	267	119

The tubular steel H-frame structures originally proposed were to be 6-9 m wide. The new lattice towers will have a footprint of 6-8 meters.

Review of the estimated areas of production losses and extrapolation to structures with widths of approximately 6-9 m, it is reasonable to assume similar land area would be affected by the H-frames as by the steel-lattice structures. Therefore, the following analysis assumes that the land loss per tower (tubular H frame and steel lattice) is the same.

Using the number of towers that intersect cropland for each scenario (original proposal with steel H-frame and 250 m spans and the proposed steel lattice with 400 m spans) there will be a reduction of 40% in the total tower footprint on agricultural cropland, due to the fewer number of towers.

Farmers will also face challenges related to nuisance, inconvenience and increased production costs associated with navigating around the tower structures (e.g., in between the Project and other boundaries, including property boundaries) with farm equipment during various agricultural field operations.

The increased costs of structures for farmers are the result of the non-productive area (under and around the tower), lost time and increased input costs from double coverage and crop damage.

Land compensation and 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
- Additional application of seed, fertilizer and weed control in the area of overlap around each tower structure.

Compensation will be provided to landowners in consideration of the residual effects. Additional easement will be obtained for the wider right-of-way. This will mitigate the potential increase in effects. In addition, the number of towers is being reduced. This will lessen the nuisance effects of the towers (farming around the towers, weed control under the towers etc.) and reduce the overall amount of farmland taken out of production.

The proposed alterations will not change the conclusions of the assessment.

2.11 Non-agricultural land use

Non-agricultural land uses include those lands and activities identified for recreational purposes (campgrounds, wayside parks, picnic areas, trail areas, lodges), lands set aside for protection or used for commercial and domestic purposes (provincial parks, forests, wildlife management areas, outfitter areas), and lands designated as Crown land (community pasture) or Federal land (i.e., First Nation Reserve, treaty land entitlement parcels). Some lands are protected by provincial legislation (e.g., Wildlife Management Areas [WMA], Provincial Parks, Provincial Forests) for their ecological and cultural importance or designated under federal (First Nation's Land) legislation.

Transmission lines have the potential for both negative and positive implications for non-agricultural land use. Land and resource use activities may be affected by development projects both directly and indirectly. Direct effects occur where established activities are disturbed, or otherwise interfered with, by Project-related components or activities during the construction or operation phase (e.g., reduced access to recreation areas). Indirect effects can occur when a project adversely affects the resource user's quality of experience.

The proposed alteration will widen the right-of-way but should not increase the nuisance effects of the project; decrease accessibility to resource use areas or further decrease user's quality of experience, because there is no expected increase in workforce or heavy equipment use.

Potential environmental effects of all Project-related activities on non-agricultural land use were considered low.

The proposed alteration will not change the overall effects and therefore the conclusions of the assessment do not change.

2.12 Communities

The environmental assessment of the project on communities focused on aesthetics, public safety and human health and well-being. The potential effects on aesthetics is covered in Section 2.9.

During construction, accidents and / or incidents may occur including collisions, spills and leaks of hazardous materials, fire, noise, vibration and dust generation.

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 Project 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).

There is also potential for fires, increased noise and other disturbances (i.e., vibration and dust), including the use of implosives to splice conductors.

Several Project components, including the transmission lines and existing stations will produce electromagnetic fields (EMF). Potential effects related to EMF are the perceived health effects due to EMFs. EMF associated with Manitoba Hydro high voltage transmission lines are well within human safety limits as a result of implementing proper design² (EA Section 9.15.5.3.1, pages 9-256 to 9-257; ICNIRP 2010).

² Exposure guidelines for human health and magnetic fields are set by international agencies as set by the International Commission on Non-Ionizing Radiation Protection. The recommended limit is 2,000 mG. In response to community concerns, EMFs were predicted for operation of the 230-kV transmission line through Sage Creek. Predicted peak magnetic field levels for a 230-kV transmission line (1 m above ground) would be 220 mG within the right-of-way. In comparison, peak magnetic field levels would be 60 mG for a 230-kV transmission line (1 m above ground) at a fence line

Manitoba Hydro remains sensitive to public concerns regarding potential health effects and EMFs and will continue to undertake the following actions regarding the issue:

- Monitoring of worldwide research programs on electric and magnetic fields
- Participation in, and support of, on-going health and safety research on the local, national and international levels
- Maintenance of active communications and provision of technical information to interested parties, including the public and agencies responsible for public and occupational health and the environment

Manitoba Hydro will continue to have discussions with area residents and provide information to the public on request as the Project progresses. The proposed alteration will not alter the potential effects of EMF.

There is potential for adverse effects to public health and safety from construction and operation. These can be managed and mitigated to acceptable levels using general mitigation. There is no expected increase in workforce, equipment use or construction duration due to the proposed alteration, so there is no increase in the risk to human health and safety.

There is no change to the conclusions of the assessment.

2.13 Heritage resources

The assessment of heritage potential is based upon a consideration of the locations of documented archaeological sites, historic land use information, and landscape characteristics that either positively or negatively influence archaeological site distribution.

Heritage resource potential was based on proximity to previously recorded archaeological sites; proximity to fresh water sources; terrain and current land use. For this study, heritage resource potential is defined as the capability of the landscape to have supported the kinds of past activities that would have resulted in the formation and preservation of archaeological remains.

Lands were categorized as having "High," "Moderate," or "Low" heritage resource potential. These classes affect the scope and level of effort recommended for future archaeological studies, mitigation, and residual and cumulative effects.

Potential project effects could occur if a portion of an intact archaeological site was exposed during the construction phase and continued to be impacted through erosion and/or unsanctioned artefact collection.

Based on knowledge of the heritage resources within the area and the interactions generated by clearing, construction, operation and maintenance activities related to this project, the interactions of the Project with heritage resources were rated low. The use of standard mitigation procedures will reduce any effects to acceptable levels. A heritage resources protection plan will be implemented for the project.

The proposed alterations will not increase the potential effects to heritage resources. Mitigation will be applied to the whole development area including the wider right-of-way. Additional archaeological studies and mitigation will be applied as required based on the resource potential. The project archaeologist has reviewed the proposed route and has recommended further study that will be conducted spring / summer 2021.

There is no change to the conclusions of the assessment.

3.0 Summary

The proposed alterations were reviewed against the valued components used for the environmental assessment to determine if there would be a significant increase in potential effects.

Overall, the proposed alteration will increase the right-of-way width leading to increased forest clearing requirements and an increased footprint on agricultural land. There will be a change to the amount of wildlife habitat and natural vegetation. There will be additional right-of-way required on agricultural land but a decrease in nuisance effects and farmland loss due to the decrease in total number of towers. The proposed alterations will not change the conclusions in the St. Vital Transmission Complex Project Environmental Assessment Report. A summary is provided in Table 4.

Table 4: Summary of potential changes to valued components

Valued Component	Potential change in effects	Environmental assessment conclusions
Atmospheric Environment	No change	No change
Groundwater Resources	No change	No change
Aquatic resources	Increase in riparian clearing	No change
Natural vegetation	Increase in forest clearing and therefor alteration of natural vegetation	No change
Wildlife	Increase in forest clearing, and therefor alteration of wildlife habitat	No change
Traditional land and resource use	No change	No change

Infrastructure and services	No change	No change
Employment and economy	No change	No change
Property and residential development	No change	No change
Agricultural land use	Increase in the project footprint on forage and agricultural cropland; neutral to decrease in nuisance effects and land taken out of production due to the decrease in number of towers	No change
Non-agricultural land use	No change	No change
Communities	No change	No change
Heritage resources	No change	No change

4.0 References

COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl *Asio flammeus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Fisheries and Oceans Canada. 2019a. Fish and Fish Habitat Protection Policy Statement. Published by, Fisheries and Oceans Canada. 36pp.

Fisheries and Oceans Canada. 2019b. Measures to protect fish and fish habitat. <https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>

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Manitoba Hydro. Date unknown. Manitoba-Minnesota Transmission Project Landowner Compensation Information. https://www.hydro.mb.ca/docs/regulatory_affairs/projects/mmtp/mmtp_landowner_compensation_brochure.pdf

International Commission on Non-Ionizing Radiation Protection (ICNIRP). 2010. ICNIRP Statement - Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 KHz). Health Physics 99: 818-836.

St. Vital Transmission Complex

Project Infrastructure

- E Electrical Station
- Final Preferred Route (G79L)
- Proposed Reroute (G79L)

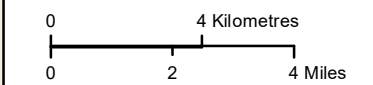
Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Landbase

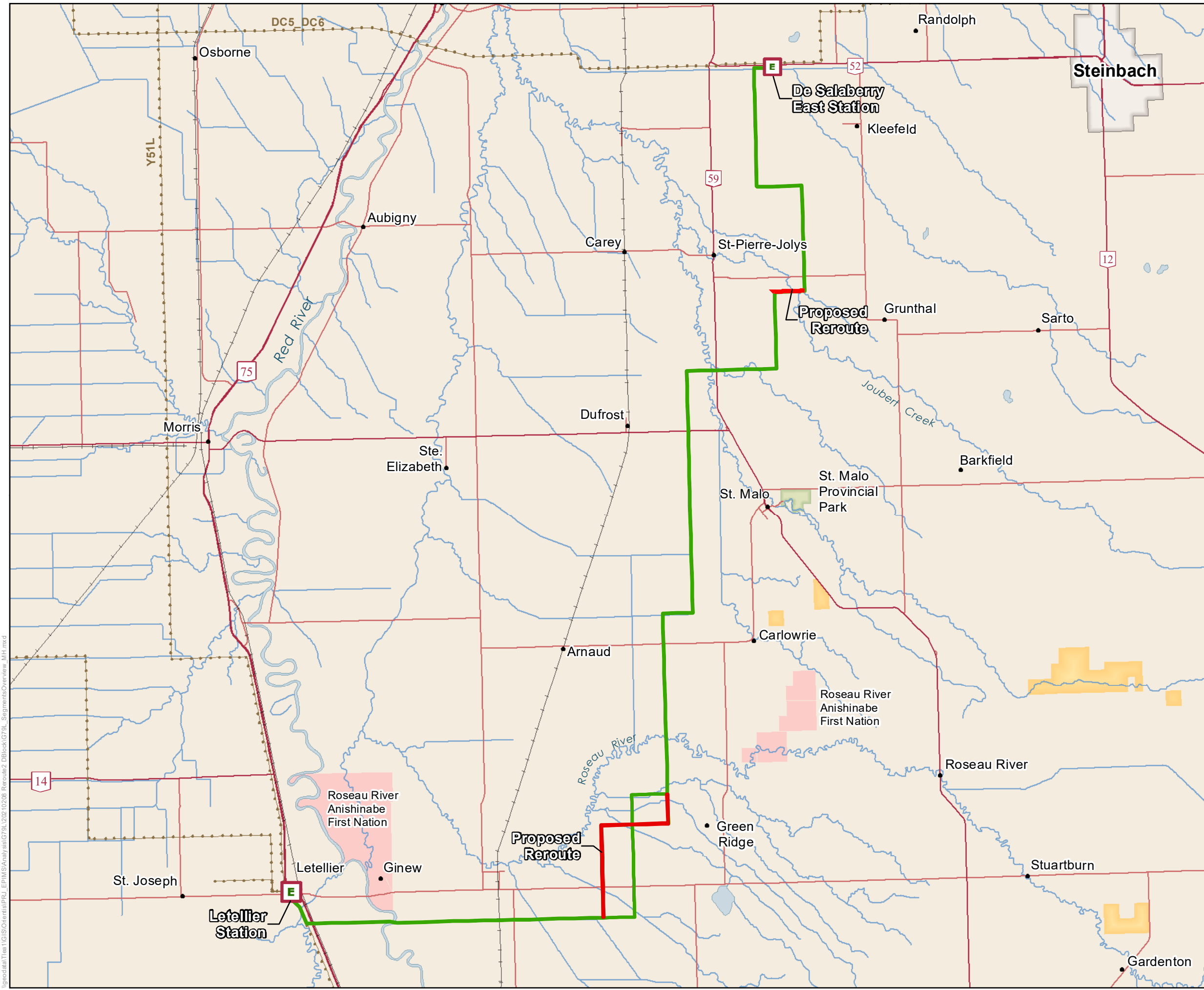
- Community
- +— Railway
- +— Trans Canada
- +— Provincial Highway
- +— Provincial Road
- City
- First Nation Lands
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: February 09, 2021



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Map 1: De Salaberry to Letellier (G79L) Overview



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St. Vital Transmission Complex

Project Infrastructure

- Proposed Reroute Corridor
- Current Corridor

Existing Infrastructure

- Trans Canada Pipeline
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Landbase

- Community
- Railway
- Provincial Highway
- Provincial Road
- First Nation Lands
- Wildlife Management Area
- Provincial Boundary

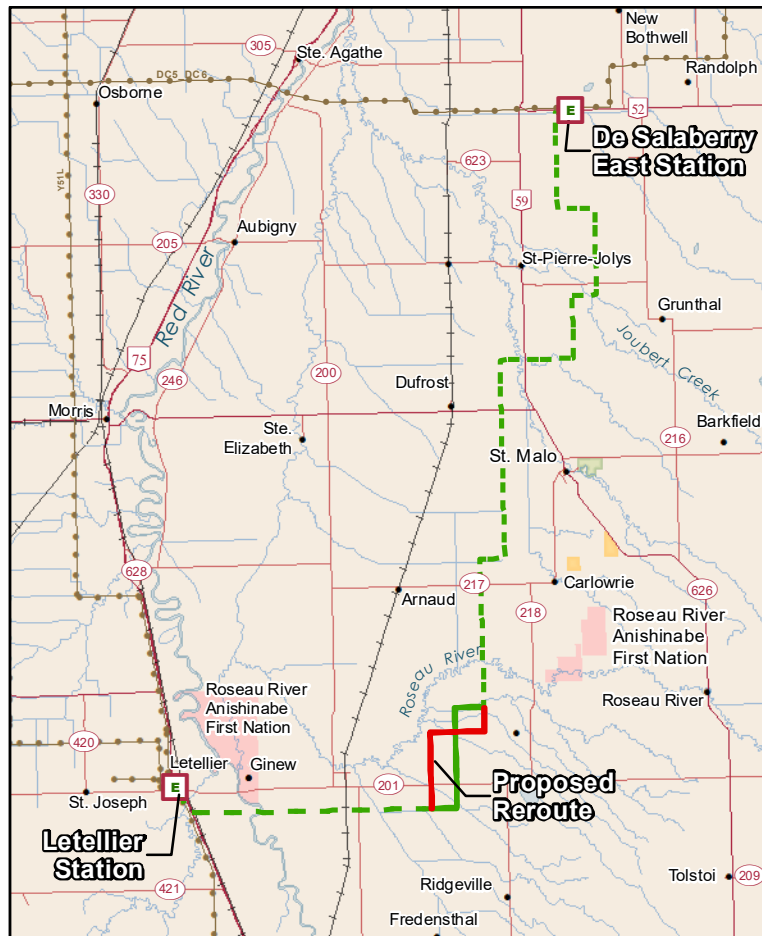
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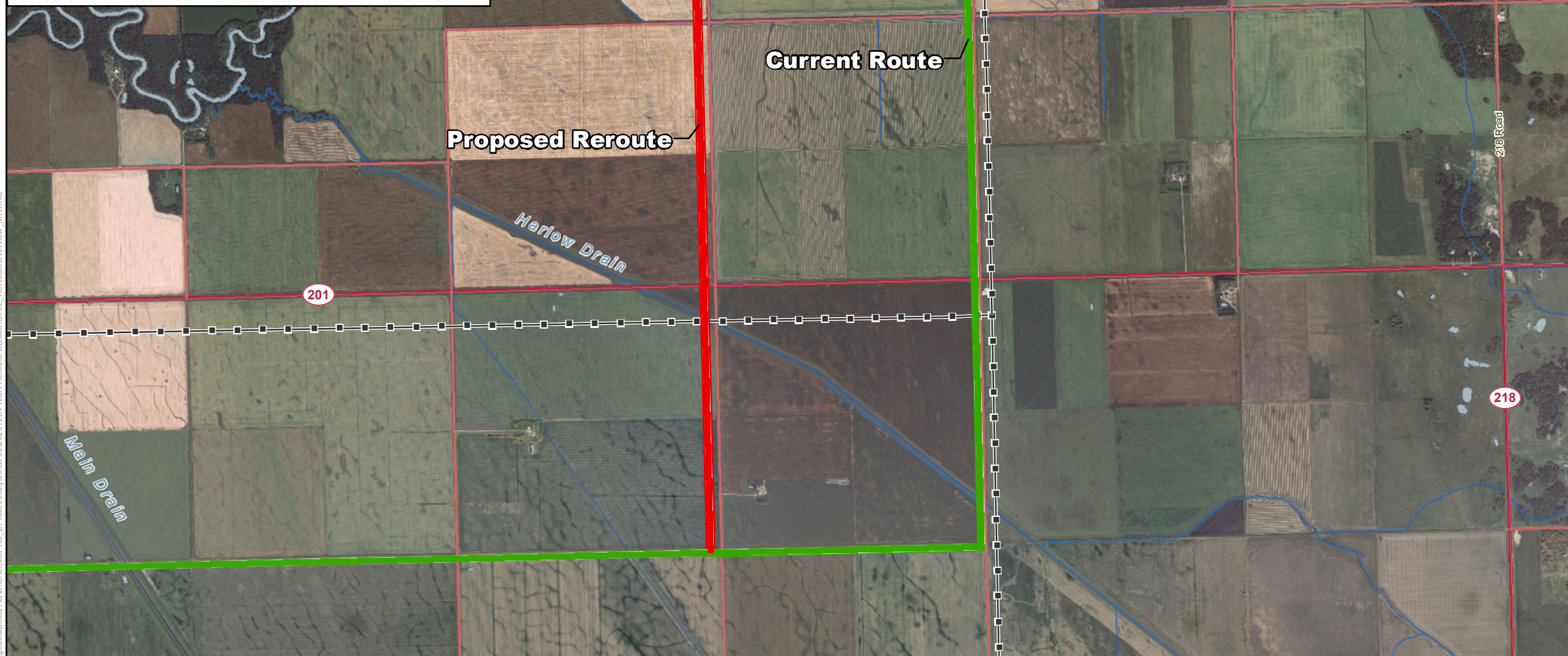
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Map 2: Proposed Reroute #1



G79L Proposed Reroute



St. Vital Transmission Complex

Project Infrastructure

- Proposed Reroute
- Current Route

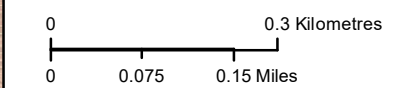
Existing Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Landbase

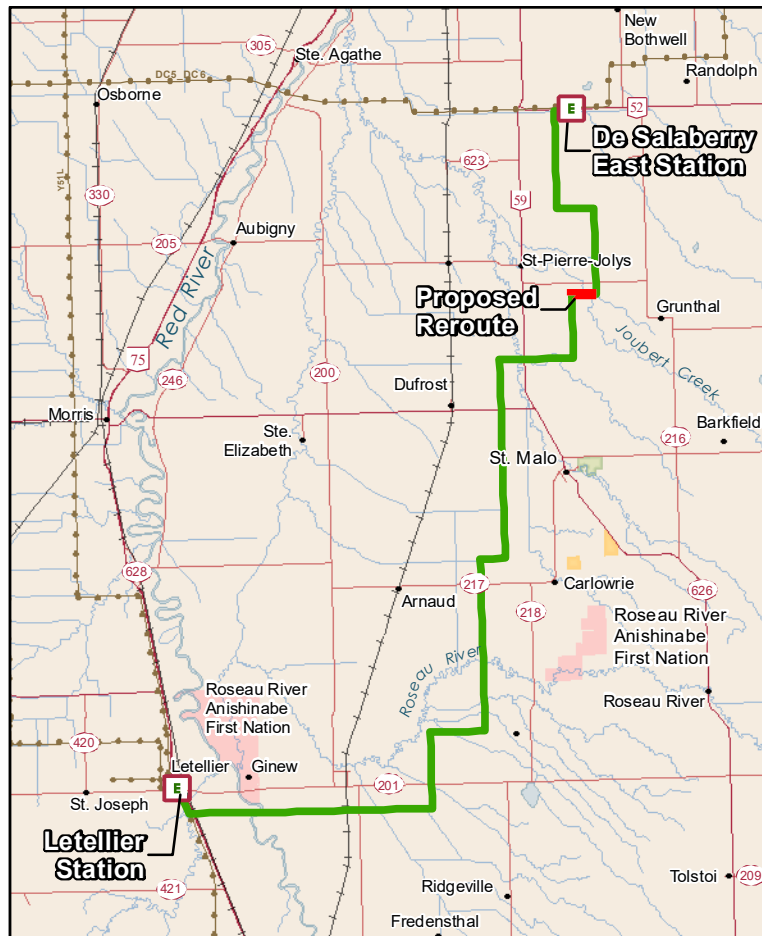
- Community
- Railway
- Provincial Highway
- Provincial Road
- First Nation Lands
- Wildlife Management Area
- Provincial Boundary

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: February 09, 2021

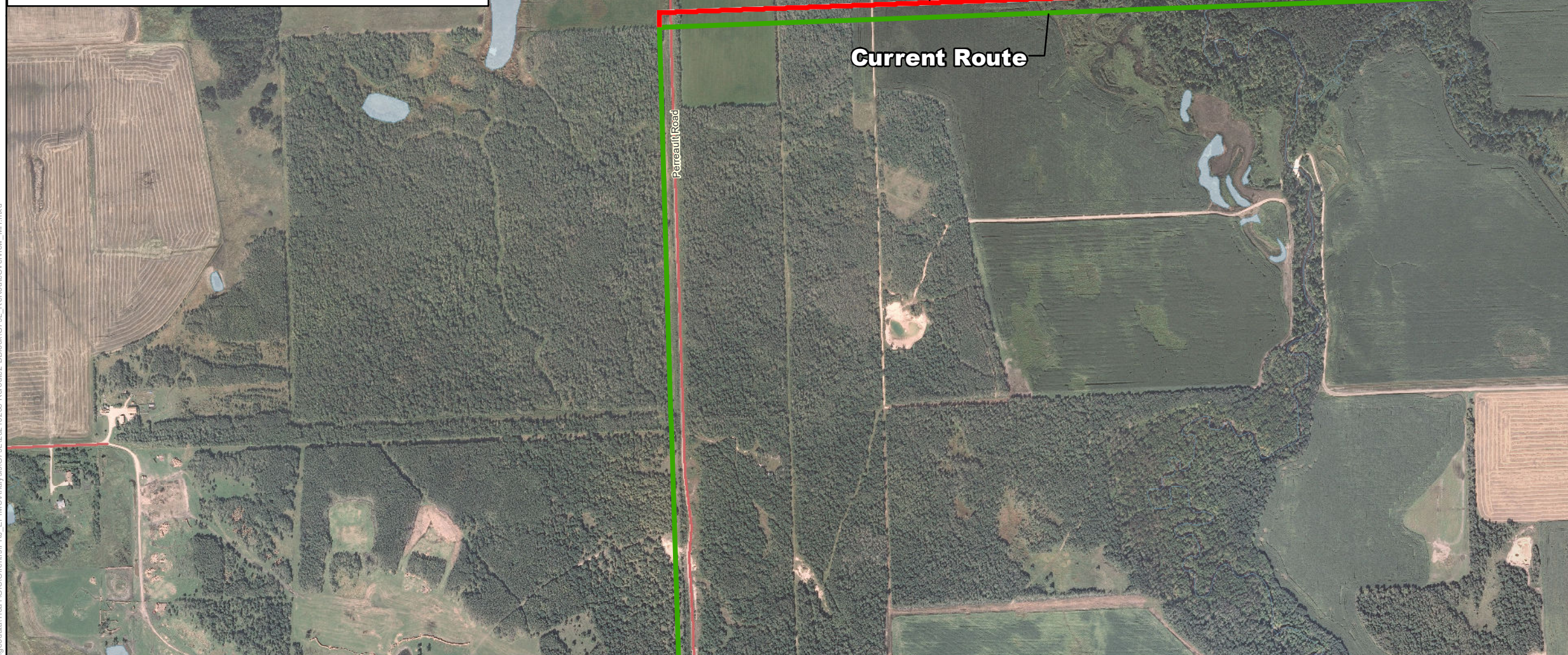


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Map 3: Proposed Reroute #2



G79L Proposed Reroute



St. Vital Transmission Complex

Project Infrastructure

- Electrical Station
- Proposed Reroute Area (G79L)
- Current Route Area (G79L)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

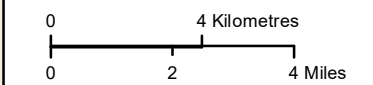
Land Cover

- Forest
- Wetland - Marsh
- Range and Grassland
- Other

Landbase

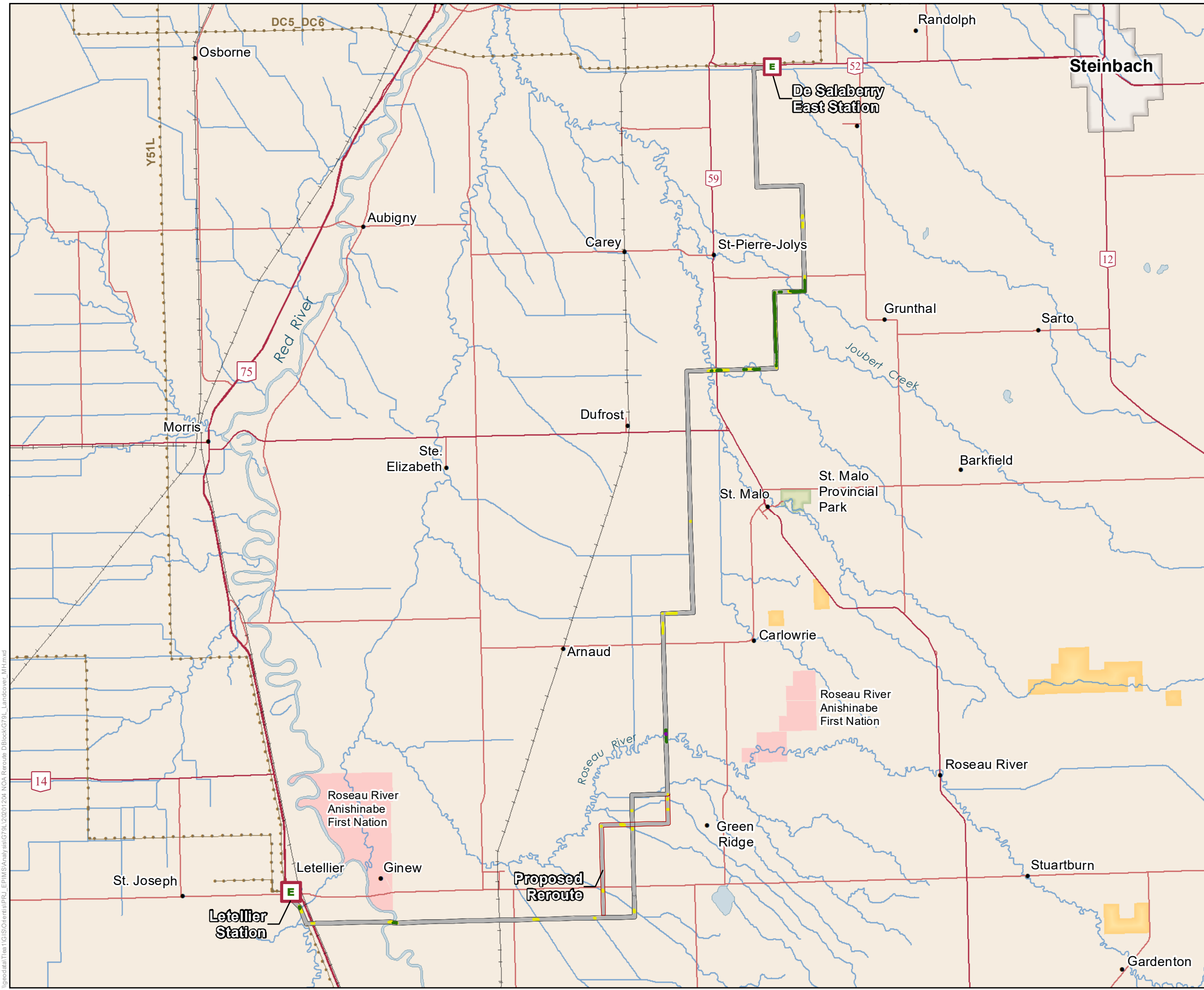
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: December 09, 2020



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Map 4: Land Cover



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