BIRTLE TRANSMISSION PROJECT

Construction Environmental Protection Mapbook

Version: Final 1.0

Date: June 08, 2020

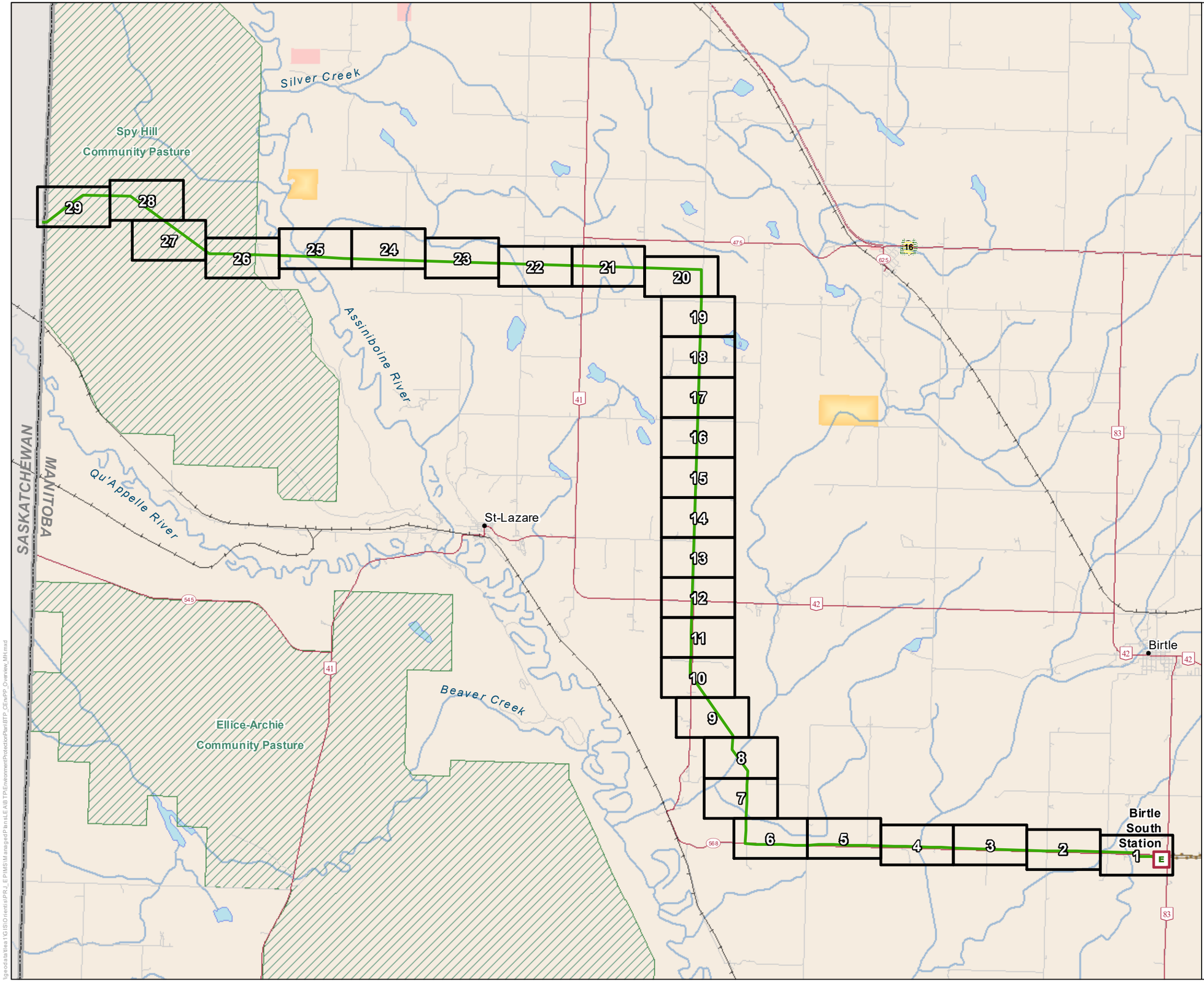
NOTICE: Access routes are approximate. Please refer to Access Management Plan for latest approved access routes.

Manitoba Hydro

Document Owner:
Licensing and Environmental Assessment Department
Transmission Planning and Design Division
Transmission Business Unit
Manitoba Hydro

Version Final 1.0
List of Revisions - BTP Construction Environmental Protection Plan Mapbook

Number	Nature of Revision	Map/Table #	Revised By	Date
Final 1.0	Updated ESS points, lines, polygons and mitigation.	Maps 1-29	Manitoba Hydro	20200608



Manitoba Hydro

Birtle Transmission Project

Project Infrastructure

- Birtle South Station
- Final Preferred Route

Infrastructure

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

Map Tile Index - 1:5,000

- Map Series Tile

Landbase

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

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
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Index of Map Series
Environmental Protection Plan

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Manitoba Hydro

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Metres
1:5,000

Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
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- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Heritage
- Archaeological

Wildlife
- Birds and Habitat

Water
- Wetland

Wildlife
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 1

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-100	Bird diverter installation area	L1 to L2	E-353440 N-5582185	E-353097 N-5582195	343

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-300	Western tiger salamander site	5 to 6	E-354047 N-5582166	E-353984 N-5582168	62

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 831):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-301	Northern leopard frog site	7 to 8	E-353421 N-5582186	E-353398 N-5582186	23
Wild-302	Northern leopard frog site	9 to 10	E-353268 N-5582190	E-353200 N-5582192	68

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 832):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-300	Wetland	1 to 2	E-354617 N-5582066	E-354533 N-5582068	83
Aqua-301	Wetland	3 to 4	E-354433 N-5582072	E-354350 N-5582074	83

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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- Archaeological

Water
- Water Crossing

Wildlife
- Birds and Habitat

Water
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Wildlife
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- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 2

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-100	Area of Heritage Potential	E-353233 - N-5582191

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-100	Bird diverter installation area	L1 to L2	E-353440 N-5582185	E-353097 N-5582195	343

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Birds and Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-109	Sharp-tailed grouse lek	11 to 12	E-352608 N-5582209	E-350610 N-5582266	1999

Potential Effects:
Potential disruption of mating success for sharp-tailed grouse

Specific Mitigation (ID# 830):

- Do not plan to carry out construction activities within this area between March 15 to June 1st
- If construction activity is required within this area between March 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-302	Northern leopard frog site	9 to 10	E-353200 N-5582192	E-353268 N-5582190	68
Wild-303	Northern leopard frog site	13 to 14	E-352452 N-5582230	E-352352 N-5582235	101

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 832):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-100	Unnamed Tributary of Birdtail Creek	E-353217 N-5582191	N/A	N/A

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-302	Wetland	15 to 16	E-351759 N-5582233	E-351749 N-5582233	10

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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- Archaeological

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Water
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Wildlife
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- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 3

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-101	Area of Heritage Potential	E-350733 - N-5582262
Hert-102	Area of Heritage Potential	E-349955 - N-5582287

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-109	Sharp-tailed grouse lek	11 to 12	E-352608 N-5582209	E-350610 N-5582266	1999

Potential Effects:
Potential disruption of mating success for sharp-tailed grouse

Specific Mitigation (ID# 830):

- Do not plan to carry out construction activities within this area between March 15 to June 1st
- If construction activity is required within this area between March 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-304	Northern leopard frog site	17 to 18	E-351019 N-5582254	E-350727 N-5582262	292

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 832):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-101	Unnamed Tributary of Birdtail Creek (Ephemeral)	E-351210 N-5582248	N/A	N/A
Aqua-102	Unnamed Tributary of Birdtail Creek	E-349962 N-5582284	N/A	N/A

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-303	Wetland	19 to 20	E-350643 N-5582284	E-350596 N-5582286	47
Aqua-304	Wetland	21 to 22	E-349620 N-5582294	E-349536 N-5582296	83
Aqua-305	Wetland	23 to 24	E-349444 N-5582299	E-349369 N-5582301	75

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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ESS Features

Heritage
- Archaeological

Water
- Water Crossing
- Groundwater

Wildlife
- Birds and Habitat

Soils and Terrain
- Erosion

Wildlife
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 4

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-103	Area of Heritage Potential	E-348312 - N-5582332
Hert-103b	Area of Heritage Potential	E-348293 - N-5582332
Hert-114	Area of Heritage Potential	E-348857 - N-5582319

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-101	Bird diverter installation area	L3 to L4	E-348901 N-5582314	E-347626 N-5582351	1275

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Erosion

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Soils-300a	Steep terrain	25 to 26	E-348876 N-5582315	E-348720 N-5582320	155
Soils-300b	Steep terrain	27 to 28	E-348398 N-5582329	E-347940 N-5582342	458

Potential Effects:
Potential impact to soil structure and increased soil erosion on disturbed surfaces due to steep terrain

Specific Mitigation (ID# 606):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Maintain shrub and herbaceous vegetation to the extent possible
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion and Sediment Control Management Plan
- Stabilize sites immediately after construction and re-vegetate disturbed areas in accordance with the Rehabilitation and Invasive Species Management Plan

ESS Group: Groundwater

**Features represented as points*

ESS ID	ESS Name	Location
Aqua-200	Aqueduct Vent	E-349063 - N-5582288
Aqua-201	Aqueduct Vent	E-348410 - N-5582308
Aqua-202	Aqueduct Vent	E-347720 - N-5582332

Potential Effects:
Potential contamination from a contingency event (e.g., spill)

Specific Mitigation (ID# 834):

- Identify point location
- No fueling or servicing of vehicles within 100m of Infrastructure
- No fuel or hazardous materials storage within 100m of Infrastructure

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-305	Northern leopard frog site	29 to 30	E-348310 N-5582332	E-348294 N-5582332	16

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 831):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-103	Birdtail Creek	E-348304 N-5582332	13.72	11.89

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

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ESS Features

Water
- Groundwater

Resource Use
- Trail

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 5

ESS Group: Groundwater

**Features represented as points*

ESS ID	ESS Name	Location
Aqua-203	Groundwater Well	E-346448 - N-5582376

Potential Effects:
Potential damage to wellhead or potential groundwater contamination from a contingency even (e.g., spill)

Specific Mitigation (ID# 720):

- Locate and flag a 10m buffer around wellhead
- No fueling or servicing of vehicles within 100m of wellhead
- No fuel or hazardous materials storage within 100m of wellhead

ESS Group: Groundwater

**Features represented as points*

ESS ID	ESS Name	Location
Aqua-204	Aqueduct Vent	E-346050 - N-5582376

Potential Effects:
Potential contamination from a contingency event (e.g., spill)

Specific Mitigation (ID# 834):

- Identify point location
- No fueling or servicing of vehicles within 100m of Infrastructure
- No fuel or hazardous materials storage within 100m of Infrastructure

ESS Group: Trail

**Features represented as lines*

ESS ID	ESS Name	Site	Location
RUse-100	Tundra Oil and Gas Trail	C1	E-346023 N-5582388

Potential Effects:
Potential interference with Tundra Oil accessing their oil wells

Specific Mitigation (ID# 206):

- No surface damage to, or obstruction of access route

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ESS Features

Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Birtle Transmission Project
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Environmentally Sensitive Site Locations

Map 6

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-102	Bird diverter installation area	L5 to L6	E-343559 N-5582769	E-343595 N-5584015	1246

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-100	Grassland habitat	31 to 32	E-343545 N-5582457	E-343574 N-5583284	826

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 217):

- Marshalling yards, borrow sites and worker accommodations will not be developed within the grassland habitat areas
- MH to conduct site investigation with vegetation specialist prior to construction to verify the existence of natural grassland habitat

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

0 62.5 125 250
Metres
1:5,000

Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Water
- Water Crossing

Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Heritage
- Archaeological

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 7

ESS Group: Archaeological

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Hert-115	Area of heritage potential	33 to 34	E-343575 N-5583306	E-343577 N-5583378	72

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 321):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by Project Archaeologist within the area
- Project Archaeologist or designate will be present to monitor excavation/subsurface excavations (including geo-technical drilling) for heritage resources
- Cultural and Heritage Resources Protection Plan will be followed when a suspected cultural or heritage resource is discovered
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe construction matting to be used to protect the area from disturbance

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-102	Bird diverter installation area	L5 to L6	E-343559 N-5582769	E-343595 N-5584015	1246

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-100	Grassland habitat	31 to 32	E-343545 N-5582457	E-343574 N-5583284	826
Eco-101	Grassland habitat	35 to 36	E-343577 N-5583373	E-343423 N-5584658	1342

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 217):

- Marshalling yards, borrow sites and worker accommodations will not be developed within the grassland habitat areas
- MH to conduct site investigation with vegetation specialist prior to construction to verify the existence of natural grassland habitat

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-104	Unnamed Tributary of Snake Creek	E-343576 N-5583296	N/A	N/A

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

0 62.5 125 250
Metres
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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Heritage
- Archaeological

Water
- Water Crossing

Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Soils and Terrain
- Erosion

Wildlife
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 8

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-104	Area of Heritage Potential	E-343419 - N-5584671
Hert-116	Area of Heritage Potential	E-343212 - N-5584959

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-103	Bird diverter installation area	L7 to L8	E-343440 N-5584633	E-343193 N-5584986	430

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Erosion

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Soils-300	Steep terrain	37 to 38	E-343430 N-5584649	E-343213 N-5584958	377

Potential Effects:
Potential impact to soil structure and increased soil erosion on disturbed surfaces due to steep terrain

Specific Mitigation (ID# 606):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Maintain shrub and herbaceous vegetation to the extent possible
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion and Sediment Control Management Plan
- Stabilize sites immediately after construction and re-vegetate disturbed areas in accordance with the Rehabilitation and Invasive Species Management Plan

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-101	Grassland habitat	35 to 36	E-343577 N-5583373	E-343423 N-5584658	1342
Eco-102	Grassland habitat	41 to 42	E-343212 N-5584959	E-343186 N-5585386	439

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 217):

- Marshalling yards, borrow sites and worker accommodations will not be developed within the grassland habitat areas
- MH to conduct site investigation with vegetation specialist prior to construction to verify the existence of natural grassland habitat

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-306	Northern leopard frog site	39 to 40	E-343319 N-5584806	E-343287 N-5584853	56

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 832):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-105	Snake Creek	E-343301 N-5584836	8	3.5

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

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Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Ecosystem
- Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 9

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-102	Grassland habitat	41 to 42	E-343212 N-5584959	E-343186 N-5585386	439

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 217):

- Marshalling yards, borrow sites and worker accommodations will not be developed within the grassland habitat areas
- MH to conduct site investigation with vegetation specialist prior to construction to verify the existence of natural grassland habitat

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

0 62.5 125 250
Metres

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 10

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-306	Wetland	43 to 44	E-342399 N-5586520	E-342386 N-5586538	22

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

0 62.5 125 250
Metres
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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 11

No specific mitigation measures for this map, page intentionally left blank

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

0 62.5 125 250
Metres

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Wildlife
- Birds and Habitat

Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 12

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-104	Bird diverter installation area	L9 to L10	E-342113 N-5589511	E-342150 N-5590760	1249

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-307	Wetland	45 to 46	E-342107 N-5589289	E-342107 N-5589307	18

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres
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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Wildlife
- Birds and Habitat

Rec Use
- Trail

Wildlife
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 13

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-104	Bird diverter installation area	L9 to L10	E-342150 N-5590760	E-342113 N-5589511	1249

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-307	Northern leopard frog site	47 to 48	E-342125 N-5589931	E-342131 N-5590123	191

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 831):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres

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Land Base
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- Local Road
- Railway (Operational)
- Railway (Discontinued)
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- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
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Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
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- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Rec Use
- Trail

Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 14

ESS Group: Intersection

**Features represented as lines*

ESS ID	ESS Name	Site	Location
RecUse-101	Snowmobile Trail	C2	E-342172 N-5591522

Potential Effects:
Potential interference with snowmobilers; safety issues

Specific Mitigation (ID# 833):

- Identify and flag prior to start of work
- Avoid surface damage to and obstruction of access route
- Post warning markers and signs at snowmobile trail location
- MH to notify snowmobile club/users and local authorities regarding construction activities and schedule, and address concerns prior to construction

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-308	Wetland	55 to 56	E-342132 N-5590817	E-342132 N-5590840	22

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 205):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible

Manitoba Hydro

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Version: Final 1.0

0 62.5 125 250
Metres
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Land Base
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Project Infrastructure
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Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Water
- Water Crossing

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 15

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-106	Unnamed Tributary of Snake Creek (Ephemeral)	E-342183 N-5591915	N/A	N/A

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

Manitoba Hydro

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Metres
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Land Base
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Project Infrastructure
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Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
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- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 16

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Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
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Version: Final 1.0

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Metres

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Land Base
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- Local Road
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- Railway (Discontinued)
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- Rural Municipality

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Project Infrastructure
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Sensitive Sites
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- Linear Features
- Area Features

Points of Access
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- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 17

No specific mitigation measures for this map, page intentionally left blank

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
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Metres
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Land Base
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- Community Pasture
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- Rural Municipality

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Project Infrastructure
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Sensitive Sites
- Point Features
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- Area Features

Points of Access
- Existing Gravel Road
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- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Wildlife
- Birds and Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 18

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-105	Bird diverter installation area	L11 to L12	E-342294 N-5595776	E-342334 N-5597135	1359

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
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0 62.5 125 250
Metres
1:5,000

Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Wildlife
- Birds and Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 19

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-105	Bird diverter installation area	L11 to L12	E-342294 N-5595776	E-342334 N-5597135	1359

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Heritage
- Archaeological

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 20

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-105	Area of Heritage Potential	E-342341 - N-5597396
Hert-106	Area of Heritage Potential	E-342355 - N-5597895
Hert-107	Area of Heritage Potential	E-341810 - N-5598117
Hert-108	Area of Heritage Potential	E-341167 - N-5598136

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

Manitoba Hydro

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Metres
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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

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Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
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- Existing Gravel/Dirt Road
- Field Access
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- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Heritage
- Archaeological

Water
- Water Crossing

Wildlife
- Birds and Habitat

Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 21

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-109	Area of Heritage Potential	E-340508 - N-5598155

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as points*

ESS ID	ESS Name	Location
Wild-108	Stick nest	E-340751 - N-5598147

Potential Effects:
Habitat loss if nest removed or disturbed

Specific Mitigation (ID# 824):

- Nest tree will be located by Environmental Inspector, georeferenced and marked with flagging tape
- A 200 m setback will be applied during the breeding season (April 30 to July 31) to minimize sensory disturbance during the breeding season
- If nest removal is required, Manitoba Hydro will consult with Sustainable Development Manitoba to develop mitigation measures for the relocation of the nest

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-107	Armstrong Creek (Ephemeral)	E-340515 N-5598155	N/A	N/A

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-309	Wetland	49 to 50	E-339573 N-5598181	E-339500 N-5598183	72

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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Version: Final 1.0

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

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Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Heritage
- Archaeological

Wildlife
- Birds and Habitat

Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 22

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-110	Area of Heritage Potential	E-337311 - N-5598255

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-106	Bird diverter installation area	L13 to L14	E-337668 N-5598240	E-337181 N-5598255	486

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-310	Wetland	51 to 52	E-337771 N-5598237	E-337699 N-5598239	72
Aqua-311	Wetland	53 to 54	E-337318 N-5598251	E-337237 N-5598253	81

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

Manitoba Hydro

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Version: Final 1.0

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Heritage
- Archaeological

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 23

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-111	Area of Heritage Potential	E-336165 - N-5598289
Hert-112	Area of Heritage Potential	E-335848 - N-5598299

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

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Metres
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Land Base
- Transmission Line
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- Major Road
- Local Road
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- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

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- Angle Tower Location
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Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Water
- Wetland

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 24

ESS Group: Wetland

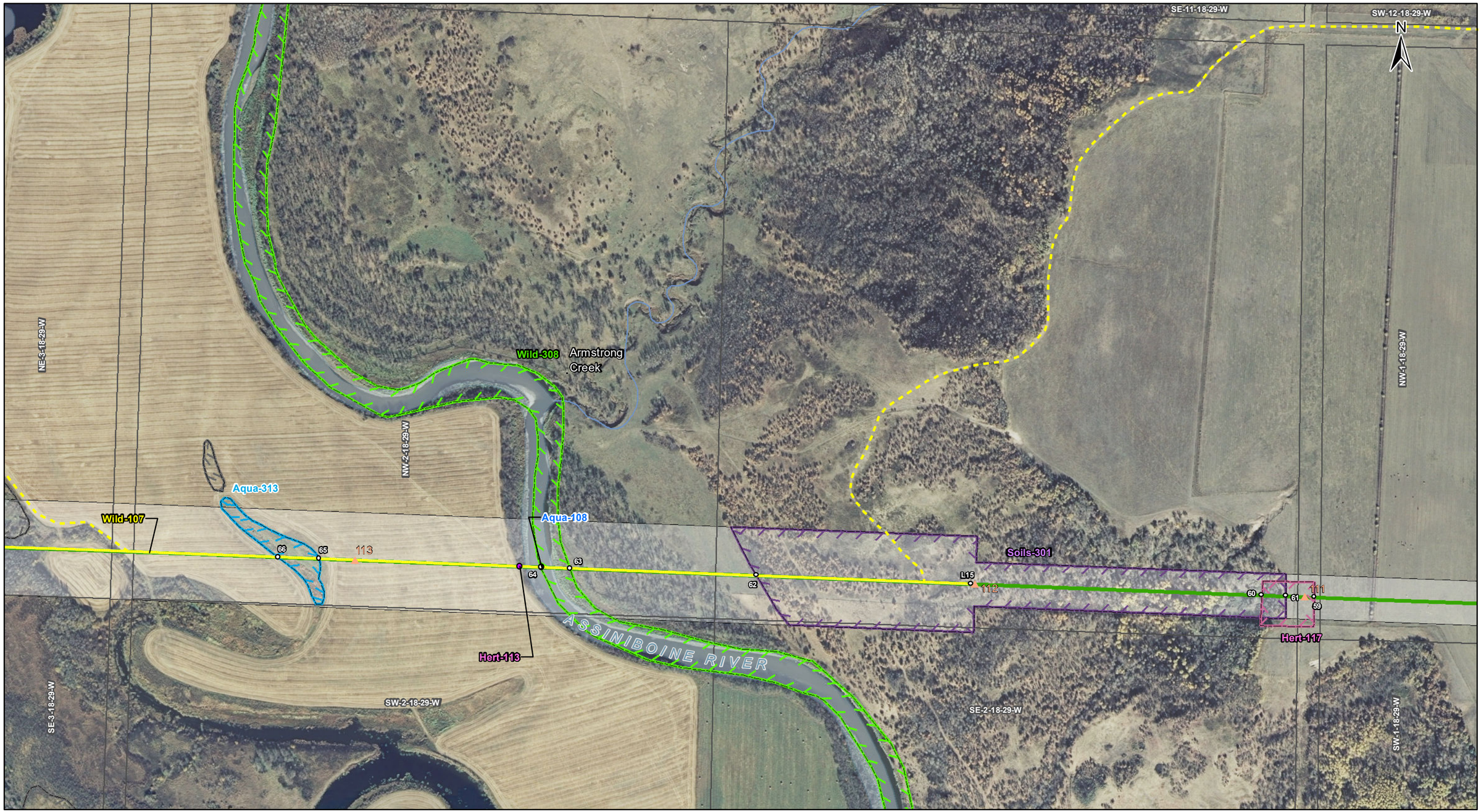
**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-312	Wetland	57 to 58	E-333899 N-5598360	E-333849 N-5598362	49

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 205):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible



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Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres

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Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
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- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Heritage
- Archaeological

Water
- Water Crossing

Wildlife
- Birds and Habitat

Heritage
- Archaeological

Soils and Terrain
- Erosion

Water
- Wetland

Wildlife
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 25

ESS Group: Archaeological

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Hert-117	Area of heritage potential	59 to 60	E-332585 N-5598409	E-332513 N-5598412	71

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 321):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by Project Archaeologist within the area
- Project Archaeologist or designate will be present to monitor excavation/subsurface excavations (including geo-technical drilling) for heritage resources
- Cultural and Heritage Resources Protection Plan will be followed when a suspected cultural or heritage resource is discovered
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe construction matting to be used to protect the area from disturbance

ESS Group: Archaeological

**Features represented as points*

ESS ID	ESS Name	Location
Hert-113	Area of Heritage Potential	E-331505 - N-5598451

Potential Effects:
Impact to a potential heritage resource

Specific Mitigation (ID# 322):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Confine traffic to established trail
- Hand-clearing or other low disturbance clearing approved by the Project Archaeologist within the area
- Identify and flag a 30m buffer around site, if not within designated riparian buffer
- In the event of a discovery stop work in area and contact the Project Archaeologist immediately. Refer to Cultural and Heritage Resources Protection Plan for further guidance
- Should heritage resources be discovered during a pre-construction survey the project Archaeologist may prescribe additional mitigation measures

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-107	Bird diverter installation area	L15 to L16	E-332118 N-5598427	E-330461 N-5598488	1658

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Erosion

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Soils-301	Steep terrain	61 to 62	E-332546 N-5598410	E-331826 N-5598438	720

Potential Effects:
Potential impact to soil structure and increased soil erosion on disturbed surfaces due to steep terrain

Specific Mitigation (ID# 606):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Maintain shrub and herbaceous vegetation to the extent possible
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion and Sediment Control Management Plan
- Stabilize sites immediately after construction and re-vegetate disturbed areas in accordance with the Rehabilitation and Invasive Species Management Plan

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-308	Northern leopard frog site	63 to 64	E-331573 N-5598448	E-331534 N-5598449	39

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 831):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-108	Assiniboine River	E-331535 N-5598449	41.15	21.95

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Wetland

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-313	Wetland	65 to 66	E-331232 N-5598461	E-331176 N-5598463	56

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation

Specific Mitigation (ID# 218):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag buffer by following the edge of agricultural crop
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited within buffer

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Manitoba Hydro

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Land Base
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- Rural Municipality

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Project Infrastructure
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Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Wildlife
- Birds and Habitat

Ecosystem
- Habitat
- Species of Concern

Land Use
- Conservation

Soils and Terrain
- Erosion

Wildlife
- Birds and Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 26

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-107	Bird diverter installation area	L15 to L16	E-332118 N-5598427	E-330461 N-5598488	1658
Wild-111	Bird diverter installation area	L17 to L18	E-329618 N-5598514	E-327419 N-5599603	2544

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Birds and Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-110	Sharp-tailed grouse lek	73 to 74	E-329818 N-5598508	E-326169 N-5600110	4152

Potential Effects:
Potential disruption of mating success for sharp-tailed grouse

Specific Mitigation (ID# 830):

- Do not plan to carry out construction activities within this area between March 15 to June 1st
- If construction activity is required within this area between March 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options

ESS Group: Conservation

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
LUse-100	Spy Hill-Ellice Community Pasture	71 to 72	E-330144 N-5598497	E-324439 N-5599395	6453

Potential Effects:
Potential loss of habitat for plants of conservation concern and grassland species/communities

Specific Mitigation (ID# 215):

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing access roads and trails to the extent possible
- Remove trees by low ground disturbance methods that protect shrubs and understory
- Confine vehicle traffic to established trails to the extent possible
- In the event of ground disturbance refer to Rehabilitation and Invasive Species Management Plan and for mitigation measures
- Marshalling yards and/or worker accommodations will not be developed within in Spy Hill-Ellice Community Pasture

ESS Group: Erosion

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Soils-302	Steep terrain	69 to 70	E-330639 N-5598482	E-330155 N-5598497	484

Potential Effects:
Potential impact to soil structure and increased soil erosion on disturbed surfaces due to steep terrain

Specific Mitigation (ID# 606):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Maintain shrub and herbaceous vegetation to the extent possible
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion and Sediment Control Management Plan
- Stabilize sites immediately after construction and re-vegetate disturbed areas in accordance with the Rehabilitation and Invasive Species Management Plan

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-103	Spy Hill-Ellice Community Pasture - grassland habitat	75 to 76	E-329336 N-5598523	E-328508 N-5598817	919

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 216):

- Tower foundations that limit disturbance of soil will be utilized within grassland habitat areas within the Spy Hill-Ellice Community Pasture
- Perch deterrents will be installed on transmission line infrastructure within grassland habitat areas as identified through the environmental monitoring program, and in consultation with Manitoba Sustainable Development

ESS Group: Species of Concern

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-300	Plant - species of concern	67 to 68	E-330676 N-5598481	E-330592 N-5598483	83

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 204):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing access roads and trails to the extent possible
- Remove trees by low ground disturbance methods that protect shrubs and understory
- Confine vehicle traffic to established trails to the extent possible
- In the event of ground disturbance refer to Rehabilitation and Invasive Species Management Plan and for mitigation measures

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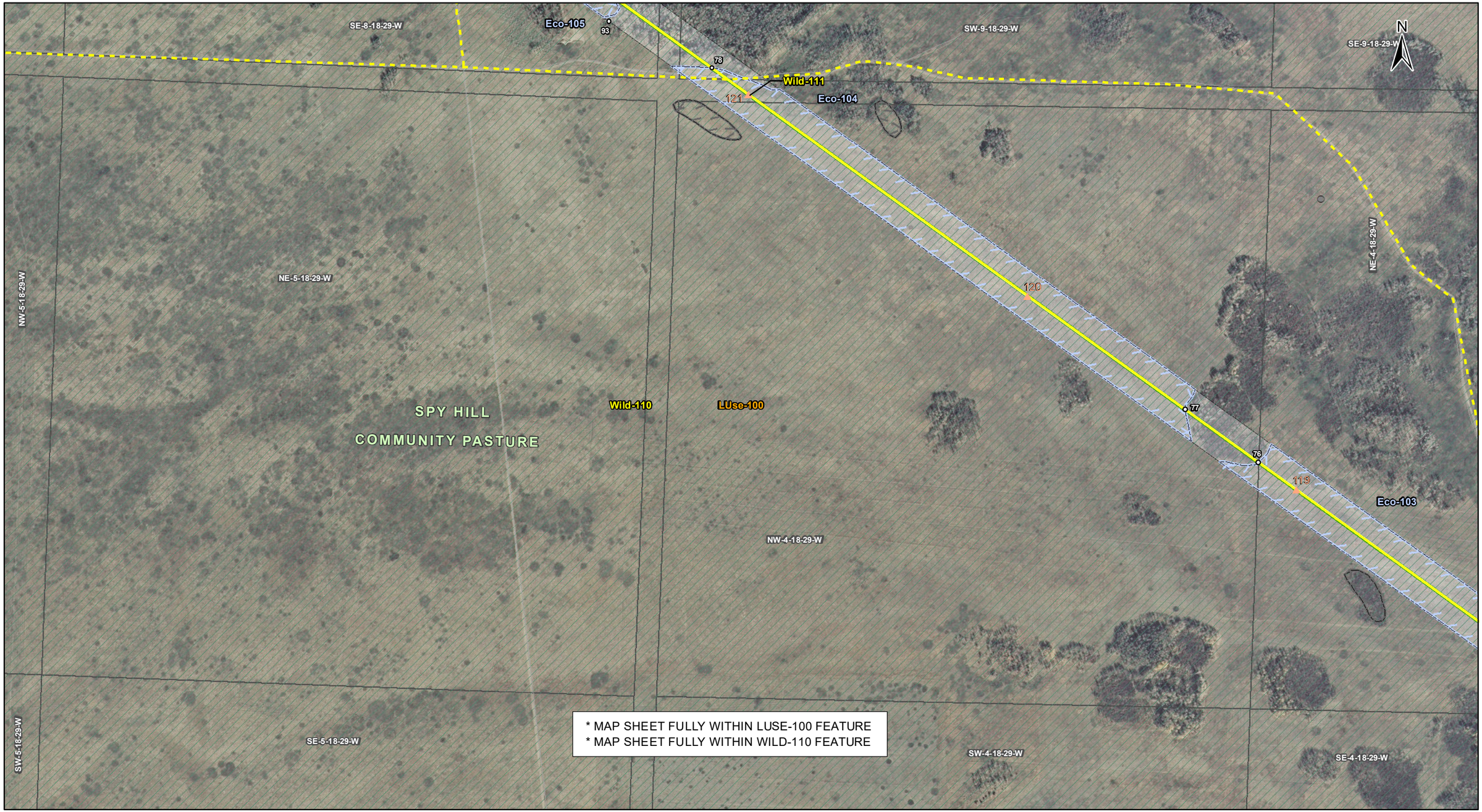

Coordinate System: UTM Zone 14N NAD83
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- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
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- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features
Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Land Use
- Conservation

Wildlife
- Birds and Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 27

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-111	Bird diverter installation area	L17 to L18	E-329618 N-5598514	E-327419 N-5599603	2544

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Birds and Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-110	Sharp-tailed grouse lek	73 to 74	E-329818 N-5598508	E-326169 N-5600110	4152

Potential Effects:
Potential disruption of mating success for sharp-tailed grouse

Specific Mitigation (ID# 830):

- Do not plan to carry out construction activities within this area between March 15 to June 1st
- If construction activity is required within this area between March 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options

ESS Group: Conservation

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
LUse-100	Spy Hill-Ellice Community Pasture	71 to 72	E-330144 N-5598497	E-324439 N-5599395	6453

Potential Effects:
Potential loss of habitat for plants of conservation concern and grassland species/communities

Specific Mitigation (ID# 215):

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing access roads and trails to the extent possible
- Remove trees by low ground disturbance methods that protect shrubs and understory
- Confine vehicle traffic to established trails to the extent possible
- In the event of ground disturbance refer to Rehabilitation and Invasive Species Management Plan and for mitigation measures
- Marshalling yards and/or worker accommodations will not be developed within in Spy Hill-Ellice Community Pasture

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-103	Spy Hill-Ellice Community Pasture - grassland habitat	75 to 76	E-329336 N-5598523	E-328508 N-5598817	919
Eco-104	Spy Hill-Ellice Community Pasture - grassland habitat	77 to 78	E-328409 N-5598889	E-327766 N-5599353	792
Eco-105	Spy Hill-Ellice Community Pasture - grassland habitat	93 to 94	E-327627 N-5599416	E-327577 N-5599452	51

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 216):

- Tower foundations that limit disturbance of soil will be utilized within grassland habitat areas within the Spy Hill-Ellice Community Pasture
- Perch deterrents will be installed on transmission line infrastructure within grassland habitat areas as identified through the environmental monitoring program, and in consultation with Manitoba Sustainable Development

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Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: June 08, 2020
Version: Final 1.0

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Metres

1:5,000

Land Base
- Transmission Line
- Highway
- Major Road
- Local Road
- Railway (Operational)
- Railway (Discontinued)
- Community Pasture
- Parcel Fabric
- Rural Municipality

*Tower locations subject to final design

Project Infrastructure
- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way
- Birtle South Station

Sensitive Sites
- Point Features
- Linear Features
- Area Features

Points of Access
- Existing Gravel Road
- Existing Gravel/Dirt Road
- Field Access
- New Trail
- Restricted Access
- Load Restriction
- Bypass Trail

*Some road names have not been verified

ESS Features

Water
- Water Crossing

Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Land Use
- Conservation

Water
- Wetland

Wildlife
- Birds and Habitat
- Reptiles/Amphibians Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 28

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-111	Bird diverter installation area	L17 to L18	E-329618 N-5598514	E-327419 N-5599603	2544
Wild-112	Bird diverter installation area	L19 to L20	E-326738 N-5600094	E-324453 N-5599395	2529

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

- As per industry standards, bird diverters will be installed in a manner to maximize visibility by alternating between reflective and spiral diverters along the two skywires
- Install bird diverter with spacing as per Transmission Line Design specifications for these spans

ESS Group: Birds and Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-110	Sharp-tailed grouse lek	73 to 74	E-329818 N-5598508	E-326169 N-5600110	4152

Potential Effects:
Potential disruption of mating success for sharp-tailed grouse

Specific Mitigation (ID# 830):

- Do not plan to carry out construction activities within this area between March 15 to June 1st
- If construction activity is required within this area between March 15 to June 1st, contact Manitoba Hydro Environmental Officer to discuss potential mitigation options

ESS Group: Conservation

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
LUse-100	Spy Hill-Ellice Community Pasture	71 to 72	E-330144 N-5598497	E-324439 N-5599395	6453

Potential Effects:
Potential loss of habitat for plants of conservation concern and grassland species/communities

Specific Mitigation (ID# 215):

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing access roads and trails to the extent possible
- Remove trees by low ground disturbance methods that protect shrubs and understory
- Confine vehicle traffic to established trails to the extent possible
- In the event of ground disturbance refer to Rehabilitation and Invasive Species Management Plan and for mitigation measures
- Marshalling yards and/or worker accommodations will not be developed within in Spy Hill-Ellice Community Pasture

ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-106	Spy Hill-Ellice Community Pasture - grassland habitat	81 to 82	E-327577 N-5599489	E-327324 N-5599672	312
Eco-107	Spy Hill-Ellice Community Pasture - grassland habitat	83 to 84	E-326551 N-5600100	E-326248 N-5600108	303
Eco-105	Spy Hill-Ellice Community Pasture - grassland habitat	93 to 94	E-327627 N-5599416	E-327577 N-5599452	51

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 216):

- Tower foundations that limit disturbance of soil will be utilized within grassland habitat areas within the Spy Hill-Ellice Community Pasture
- Perch deterrents will be installed on transmission line infrastructure within grassland habitat areas as identified through the environmental monitoring program, and in consultation with Manitoba Sustainable Development

ESS Group: Reptiles/Amphibians Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-309	Northern leopard frog site	79 to 80	E-327607 N-5599467	E-327577 N-5599489	37

Potential Effects:
Habitat loss and contamination from structure foundations & installations; wetland contamination and loss of breeding and summering habitat from loss/deterioration of riparian vegetation

Specific Mitigation (ID# 831):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible
- If construction activity is required within this area between April 15 to June 1st all lifestages of amphibian will be captured and removed during a sweep survey
- If construction activity is required within this area between April 15 to June 1st exclusion fencing needs to be installed around the site after a sweep survey and prior to work taking place

ESS Group: Water Crossing

**Features represented as points*

ESS ID	ESS Name	Location	Channel Width (m)	Wet Width (m)
Aqua-316	Spring fed Water Crossing	E-327591 N-5599479	8	1

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 710):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers and no machine zones prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway with shrub and herbaceous understory maintained along with trees that do not violate Manitoba Hydro's vegetation clearance requirements
- 7m no machine zone will prohibit equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Wetland

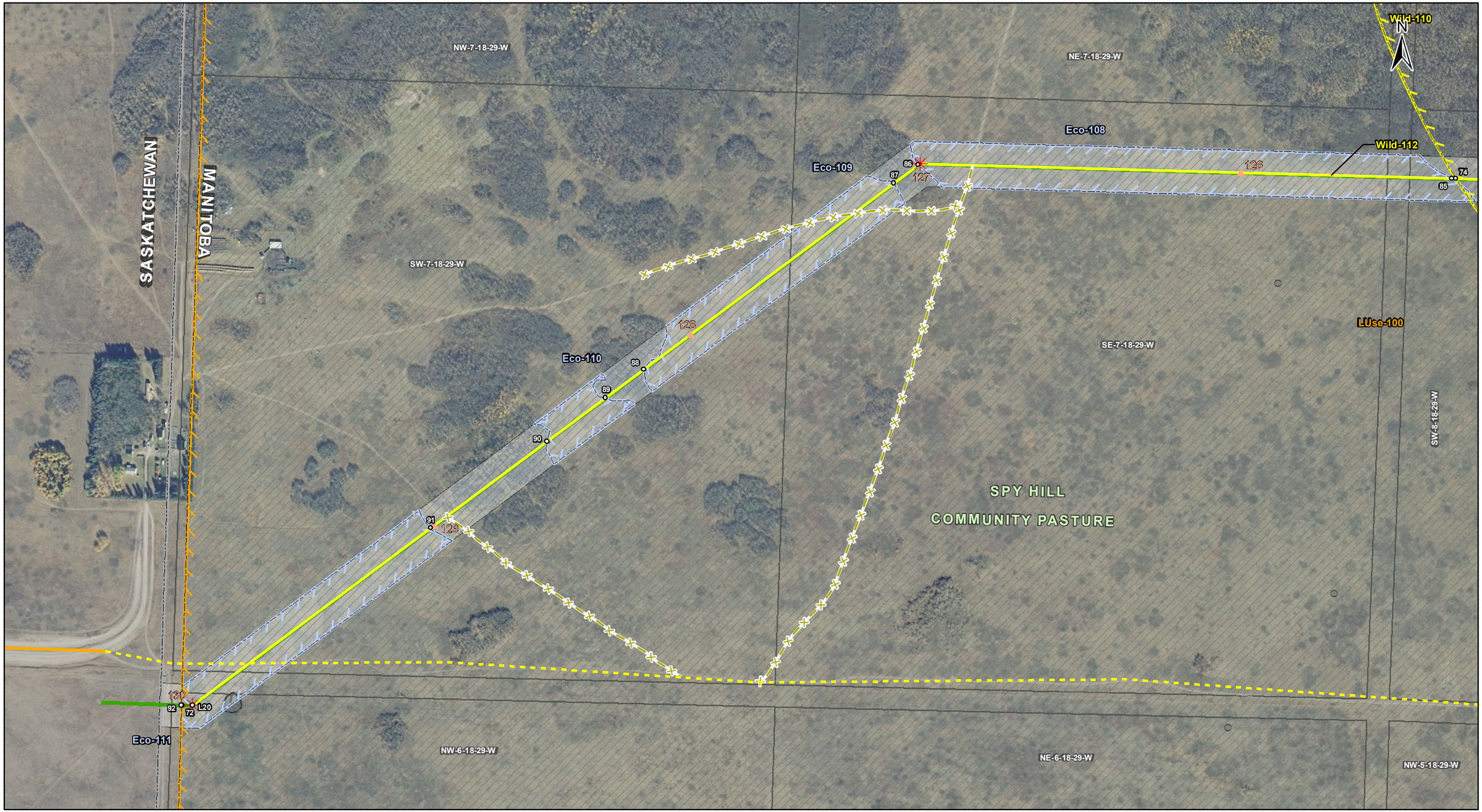
**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Aqua-314	Wetland	95 to 96	E-326952 N-5599903	E-326926 N-5599922	33

Potential Effects:
Increased erosion and sedimentation; rutting of floodplains; loss of riparian vegetation; potential impact to reptile and amphibian habitat

Specific Mitigation (ID# 205):

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion. Construction matting will be used to protect the area from rutting and exposure to mineral soil during nonfrozen ground conditions
- Identify and flag a 30 m vegetated (shrub and herbaceous) buffer around site
- Remove trees by low ground disturbance methods within buffer
- The application of herbicides is prohibited
- Maintain shrub and herbaceous vegetation to the extent possible



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ESS Features
Wildlife
- Birds and Habitat

Ecosystem
- Habitat

Land Use
- Conservation

Wildlife
- Birds and Habitat

Birtle Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations

Map 29

ESS Group: Birds and Habitat

**Features represented as lines*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Wild-112	Bird diverter installation area	L19 to L20	E-326738 N-5600094	E-324453 N-5599395	2529

Potential Effects:
Higher risk of wire collision, Risk of wire collision is localized to the right-of-way

Specific Mitigation (ID# 827):

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ESS Group: Birds and Habitat

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Potential Effects:
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ESS Group: Conservation

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
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Potential Effects:
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Specific Mitigation (ID# 215):

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ESS Group: Habitat

**Features represented as polygons*

ESS ID	ESS Name	Site	Start	Stop	Distance (m)
Eco-108	Spy Hill-Ellice Community Pasture - grassland habitat	85 to 86	E-326164 N-5600110	E-325439 N-5600129	725
Eco-109	Spy Hill-Ellice Community Pasture - grassland habitat	87 to 88	E-325406 N-5600104	E-325066 N-5599851	423
Eco-110	Spy Hill-Ellice Community Pasture - grassland habitat	89 to 90	E-325014 N-5599812	E-324935 N-5599753	98
Eco-111	Spy Hill-Ellice Community Pasture - grassland habitat	91 to 92	E-324777 N-5599636	E-324439 N-5599395	418

Potential Effects:
Potential impact and disruption to rare plant habitat

Specific Mitigation (ID# 216):

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Available in accessible formats upon request.