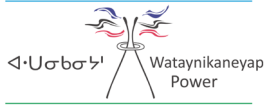


11.0 CUMULATIVE EFFECTS ASSESSMENT SUMMARY

This section summarizes the results of the Cumulative Effects Assessment presented in Sections 5.0 to 8.0. The predicted net effects of the corridors in combination with other past, present, planned, and reasonably foreseeable developments (RFDs) are presented in Tables 11.0-1, 11.0-2, and 11.0-3. Project-environment interactions assessed as having no net effects and negligible net effects on criteria were not carried forward to the Cumulative Effects Assessment, as identified in the environmental assessment method in Section 4.0.



ENVIRONMENTAL ASSESSMENT REPORT FOR THE PHASE 1 NEW TRANSMISSION LINE TO PICKLE LAKE PROJECT SECTION 11.0 CUMULATIVE EFFECTS ASSESSMENT SUMMARY

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11.1 Preliminary Proposed Corridor

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Physical Environment									
Surface water (Section 5.1)	The magnitude of the net effects was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Groundwater (Section 5.2)	Groundwater quantity.	Changes to groundwater quantity from the use of explosives and blasting to create level areas for transmission structures, roads and for foundation excavations	Negative	Low	LSA	Permanent	Continuous	Probable	Not significant
Air quality (Section 5.3)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Greenhouse gases (Section 5.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Noise (Section 5.5)	Predicted noise levels	Noise emissions from construction activities could increase existing noise levels at potential PORs	According to Section 4.6, the net effects assessment of the noise construction stage was carried forward to include the potential cumulative effects. Based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment. Accordingly, the consideration of these cumulative developments is not expected to alter the findings of the noise assessment.						
Biological Environment									
Upland ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Upland ecosystem availability would be reduced by 5,037 ha (1.5%) in the RSA relative to the Base Case. Loss of 2 ha (19.3% of Base Case) to the uncommon Forest regenerating depletion land cover class and loss of 2 ha (1.3% of Base Case) to the uncommon Bedrock land cover class in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of upland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would be some loss and fragmentation of upland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Riparian ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Predicted loss of 66 ha (1.1% in the LSA; 0.3% in the RSA)	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	Patches of riparian ecosystems remain connected in areas surrounding the footprint	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness	Local	Permanent/ Long-term	Continuous	Possible	Not significant
Wetlands (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Availability of wetlands in RSA is predicted to decrease by 816 ha (3.8% of Base Case) relative to the Base Case. Loss of 6 ha (1.4% of Base Case) to the uncommon Fen-open land cover class in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of wetland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would some predicted loss and fragmentation of wetland ecosystems throughout the RSA. Magnitude will depend on influences from climate change	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	Not significant
<ul style="list-style-type: none"> ■ Brook Trout (<i>Salvelinus fontinalis</i>) ■ Lake Trout (<i>Salvelinus namaycush</i>) ■ Walleye (<i>Sander vitreus</i>) ■ Lake Sturgeon (<i>Acipenser fulvescens</i>) (Section 6.2)	The magnitude of the net effects are predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,048 ha nursery areas (incl. 355 ha that overlap with winter use areas). ■ 461 ha winter use areas (incl. 355 ha that overlap with nursery areas). ■ All regionally important nursery areas in the range potentially affected by forest harvest. ■ 24,577 ha Category 2 habitat. ■ 630 ha Category 3 habitat. ■ Total habitat loss of 33,360 ha (all habitat categories combined). ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,630 ha nursery areas (incl. 483 ha that overlap with winter use areas) ■ 656 ha winter use areas (incl. 483 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,602 ha Category 2 habitat ■ 44 ha Category 3 habitat ■ Total habitat loss of 18,448 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 313 ha nursery areas (incl. 61 ha that overlap with winter use areas) ■ 84 ha winter use areas (incl. 61 ha that overlap with nursery areas) ■ 9,676 ha Category 2 habitat ■ 5,746 ha Category 3 habitat ■ Total habitat loss of 15,757 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement patterns within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 32,731 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years ■ Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 18,404 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years. ■ Potential loss of habitat in all known regionally important nursery areas <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 10,012 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution.	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,048 ha nursery areas (incl. 355 ha that overlap with winter use areas). ■ 461 ha winter use areas (incl. 355 ha that overlap with nursery areas). ■ All regionally important nursery areas in the range potentially affected by forest harvest. ■ 24,577 ha Category 2 habitat. ■ 630 ha Category 3 habitat. ■ Total habitat loss of 33,360 ha (all habitat categories combined). ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,630 ha nursery areas (incl. 483 ha that overlap with winter use areas) ■ 656 ha winter use areas (incl. 483 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,602 ha Category 2 habitat ■ 44 ha Category 3 habitat ■ Total habitat loss of 18,448 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 313 ha nursery areas (incl. 61 ha that overlap with winter use areas) ■ 84 ha winter use areas (incl. 61 ha that overlap with nursery areas) ■ ha Category 2 habitat ■ ha Category 3 habitat ■ Total habitat loss of 15,757 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement patterns within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 32,731 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years ■ Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 18,404 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years. ■ Potential loss of habitat in all known regionally important nursery areas <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 10,012 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction	Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose.	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,731 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,404 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years. Potential loss of habitat in all known regionally important nursery areas <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 10,012 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,113 ha (2.5%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,113 ha (2.5%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
Moose (Section 6.3)	Survival and reproduction	Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose	Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> ■ Direct loss of 14,458 ha (22.0%) of the LSA Base Case. ■ Direct loss of 1.6% of the RSA Base Case. ■ Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. ■ Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) ■ Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> ■ Small reduction in movements among habitat patches due to RFDs. ■ Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Probable (direct loss and sensory disturbance) ■ Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> ■ Reduced spring snow cover. ■ Higher summer temperatures. ■ Small reduction in predicted abundance (two female home ranges or 80% of a male home range). 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	<ul style="list-style-type: none"> ■ Habitat availability ■ Habitat distribution 	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> ■ Direct loss of 14,458 ha (22.0%) of the LSA Base Case. ■ Direct loss of 1.6% of the RSA Base Case. ■ Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. ■ Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) ■ Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> ■ Small reduction in movements among habitat patches due to RFDs. ■ Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Probable (direct loss and sensory disturbance) ■ Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> ■ Reduced spring snow cover ■ Higher summer temperatures ■ Small reduction in predicted abundance (two female home ranges or 80% of a male home range) 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance	
Biological Environment (cont'd)										
Little brown myotis (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 167 ha (2.5%) in LSA and 468 ha (1.5%) in RSA of potential maternity roosting habitat, relative to Base Case. Direct loss of 0.5 ha (4.9%) in LSA and 0.7 ha (1.1%) in RSA of potential hibernacula habitat, relative to Base Case. No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (direct loss and avoidance of hibernacula habitat). Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant (significant at baseline characterization)	
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shift in maternity roost locations to due removal of habitat. No change to hibernacula habitat distribution after impact management measures. Possible range expansion due to climate change. 	Regional	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Unlikely (hibernacula habitat) Possible (maternity habitat) 	Significant (significant at baseline characterization)	
	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	n/a	Possible	Significant (significant at baseline characterization)
	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 167 ha (2.5%) in LSA and 468 ha (1.5%) in RSA of potential maternity roosting habitat, relative to Base Case. Direct loss of 0.5 ha (4.9%) in LSA and 0.7 ha (1.1%) in RSA of potential hibernacula habitat, relative to Base Case. No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (direct loss and avoidance of hibernacula habitat). Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant (significant at baseline characterization)	

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Little brown myotis (Section 6.3)	Habitat distribution	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Slight shift in maternity roost locations to due removal of habitat. No change to hibernacula habitat distribution after impact management measures. Possible range expansion due to climate change. 	Regional	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Unlikely (hibernacula habitat) Possible (maternity habitat) 	Significant (significant at baseline characterization)
	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	Possible	Significant (significant at baseline characterization)
Bald eagle (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 371 ha (0.6% of RSA Baseline Characterization). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by one individual compared to Baseline Characterization. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines)^(e) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 371 ha (0.6% of RSA Base Case). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by one individual compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant
	Survival and reproduction	Collisions with the transmission line causing injury or mortality to bat and birds criteria	Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by one individual compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Canada warbler (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,414 ha (3.6%) of the LSA Base Case. Direct loss of 3,190 ha (2.0%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 26 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Canada warbler (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,414 ha (3.6%) of the LSA Base Case. Direct loss of 3,190 ha (2.0%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 26 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant
	<ul style="list-style-type: none"> Habitat availability Habitat distribution Survival and reproduction 	Vegetation clearing will result in an increase in edge habitat, which could increase nest predation or parasitism risk for forest breeding birds	Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 26 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Eastern whip-poor-will (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,384 ha (6.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 3,852 ha (4.2%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. No reduction in predicted abundance relative to Base Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Eastern whip-poor-will (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,384 ha (6.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 3,852 ha (4.2%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance No reduction in predicted abundance relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Common nighthawk (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,384 ha (6.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 3,855 ha (4.2%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	Local	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by three individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Common nighthawk (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,384 ha (6.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 3,855 ha (4.2%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	Local	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by three individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 573 ha (1.8%) habitat present in the LSA at Base Case. Direct loss of 1,642 ha (1.1%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 17 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 573 ha (1.8%) habitat present in the LSA at Base Case. Direct loss of 1,642 ha (1.1%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 17 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Socio-economic Environment									
Archaeological resources (Section 7.1)	No net effects were identified for archaeological resources as a result of the Project. Consequently, the archaeological resources criterion is not carried forward for assessment of cumulative effects.								
Built Heritage and Cultural Heritage Landscapes (Section 7.2)	The magnitude of the net effects were predicted to be no to negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Labour Market (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Regional Economy (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Government Finances (Section 7.3)	The negative net effects were predicted to be of negligible magnitude and were therefore not carried forward to the cumulative effects assessment. The predicted positive net effects were also not carried forward to the cumulative effects assessment.								
Housing and Temporary Accommodation (Section 7.3)	<ul style="list-style-type: none"> ■ Population change ■ Housing demand ■ Housing supply 	Project direct construction workforce and supplier requirements could increase demand for rental housing and/or temporary accommodation, and potentially affect rental housing and/or temporary accommodation supply in certain LSA communities	Negative	Low to Moderate	Local	Reversible	Short-term	Probable	Not significant
Services and Infrastructure (Section 7.3). Includes:	The magnitude of the net effects were predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
	<ul style="list-style-type: none"> ■ emergency and health services ■ water, waste, energy infrastructure ■ transportation 								
Community Wellbeing (Section 7.3)	Nuisance	Project construction activities could affect ambient noise levels along the ROW; potential for nuisance effects	As no RFD projects coincide with cumulative effects temporal and spatial boundaries for the Project noise assessment, no cumulative effects assessment of nuisance noise on community wellbeing is undertaken.						

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Parks and protected areas (Section 7.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Commercial Industry Land and Resource Use (e.g., mining and aggregate, forestry, agriculture) (Section 7.4)	Resource availability	Changes in the availability of resources for the forest industry	Negative	Moderate	Regional	Long-term	Continuous	Certain	Not significant
Outdoor Tourism and Recreational Land and Resource Use (Section 7.4) assessed through consumptive and non-consumptive: <ul style="list-style-type: none"> ■ hunting, Trapping, fishing and Guide Outfitting ■ Other Outdoor Tourism and Recreation 	Land Use Quantity (access)	Net changes in the quantity of land available for outdoor tourism and recreational use (i.e., access)	<ul style="list-style-type: none"> ■ Positive (for hunters, trappers, and non-consuming recreational land users). ■ Negative (for guided outfitters and tourist operators). 	Moderate	Regional	Long-term	Continuous	Certain	Not significant

Table 11.0-1: Summary of Cumulative Effects for the Preliminary Proposed Corridor

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Human health (Section 7.6)	<ul style="list-style-type: none"> The magnitude of the net effect on human health from changes to ambient concentrations due to CAC and fugitive dust emissions was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed as per Section 4.6. The magnitude of the net effect on human health from changes to noise emissions during construction stage activities was predicted to be low. However, based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment and therefore, the human health assessment. As a result, no further human health effects from noise are anticipated; therefore, no cumulative effects assessment of noise on human health was undertaken. 								
Visual quality (Section 7.5)	Visibility of the Project from key viewpoints	Visibility of built structures and maintenance of vegetation disturbances related to the operation of the Project can adversely affect visual quality.	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
	Compatibility of Project with existing landscape	Vegetation clearing, grading, and the assembly of built structures will introduce visible disturbances to the existing landscape that can adversely affect visual quality	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
Aboriginal and Treaty Rights and Interests (as identified through engagement, Treaties, and other methods) (Section 8.0)	Quantity and quality of identified cultural use locations and access routes where use of or access to those locations is changed.	Site preparation, construction, operation and maintenance of the Project footprint could affect the quantity and location of access routes (i.e., increased access)	Positive and negative (traditional land and resource users)	Moderate	Local	Long-term	Continuous	Certain	Not significant

n/a = not applicable.

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11.2 Corridor Alternative Around Mishkeegogamang

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Physical Environment									
Surface water (Section 5.1)	The magnitude of the net effects was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Groundwater (Section 5.2)	Groundwater quantity.	Changes to groundwater quantity from the use of explosives and blasting to create level areas for transmission structures, roads and for foundation excavations	Negative	Low	LSA	Permanent	Continuous	Probable	Not significant
Air quality (Section 5.3)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Greenhouse gases (Section 5.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Noise (Section 5.5)	Predicted noise levels	Noise emissions from construction activities could increase existing noise levels at potential PORs	According to Section 4.6, the net effects assessment of the noise construction stage was carried forward to include the potential cumulative effects. Based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment. Accordingly, the consideration of these cumulative developments are not expected to alter the findings of the noise assessment.						
Biological Environment									
Upland ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Upland ecosystem availability would be reduced by 10,793 ha (3.8%) in the RSA relative to the Base Case. Loss of 2 ha (1.3% of Base Case) to the uncommon Forest regenerating depletion land cover class and loss of <1 ha (0.3% of Base Case) to the uncommon Bedrock land cover class in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of upland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would be some loss and fragmentation of upland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Riparian ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Availability of riparian habitat in the RSA is predicted to decrease by 754 ha (3.7% of Base Case) relative to the Base Case in the RSA. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	There would some loss and fragmentation of riparian habitat throughout the RSA relative to the Base Case, but riparian ecosystems remain well connected. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Possible	Not significant
Wetlands (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Availability of wetlands in RSA is predicted to decrease by 823 ha (4.7% of Base Case) relative to the Base Case. Loss of 19 ha (2.6% of Base Case) to the uncommon Fen-open land cover class in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of wetland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would some predicted loss and fragmentation of wetland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
<ul style="list-style-type: none"> ■ Brook Trout (<i>Salvelinus fontinalis</i>) ■ Lake Trout (<i>Salvelinus namaycush</i>) ■ Walleye (<i>Sander vitreus</i>) ■ Lake Sturgeon (<i>Acipenser fulvescens</i>) (Section 6.2)	The magnitude of the net effects is predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,210 ha nursery areas (incl. 355 ha that overlap with winter use areas) ■ 357 ha winter use areas (incl. 355 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 24,668 ha Category 2 habitat ■ 93 ha Category 3 habitat ■ Total habitat loss of 32,974 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,638 ha nursery areas (incl. 490 ha that overlap with winter use areas) ■ 675 ha winter use areas (incl. 490 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,694 ha Category 2 habitat ■ 383 ha Category 3 habitat ■ Total habitat loss of 18,900 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 172 ha nursery areas ■ 0 ha winter use areas ■ 9,632 ha Category 2 habitat ■ 5,702 ha Category 3 habitat ■ Total habitat loss of 15,506 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry and transmission line. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,881 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,516 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,804 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Brightsand Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,210 ha nursery areas (incl. 355 ha that overlap with winter use areas) ■ 357 ha winter use areas (incl. 355 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 24,668 ha Category 2 habitat ■ 93 ha Category 3 habitat ■ Total habitat loss of 32,974 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,638 ha nursery areas (incl. 490 ha that overlap with winter use areas) ■ 675 ha winter use areas (incl. 490 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,694 ha Category 2 habitat ■ 383 ha Category 3 habitat ■ Total habitat loss of 18,900 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 172 ha nursery areas ■ 0 ha winter use areas ■ 9,632 ha Category 2 habitat ■ 5,702 ha Category 3 habitat ■ Total habitat loss of 15,506 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry and transmission line. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,881 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,516 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,804 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Brightsand Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction	Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,881 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,516 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,804 ha suitable habitat (i.e., Category 1 and 2).</p>	Beyond regional	Permanent	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Brightsand Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Moose (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,897 ha (4.1%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Moose (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,897 ha (4.1%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose	Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 9,217 ha (18.2%) of the LSA Base Case. Direct loss of 1.5% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs. Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Probable (direct loss and sensory disturbance) Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduced spring snow cover Higher summer temperatures Small reduction in predicted abundance (two female home ranges or 70% of a male home range) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	<ul style="list-style-type: none"> ■ Habitat availability ■ Habitat distribution 	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> ■ Direct loss of approximately 9,217 ha (18.2%) of the LSA Base Case. ■ Direct loss of 1.5% of the RSA Base Case. ■ Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. ■ Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) ■ Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> ■ Small reduction in movements among habitat patches due to RFDs. ■ Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Probable (direct loss and sensory disturbance) ■ Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> ■ Reduced spring snow cover ■ Higher summer temperatures ■ Small reduction in predicted abundance (two female home ranges or 70% of a male home range) 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Little brown myotis (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> ■ Direct loss of 250 ha (3.3%) in LSA and 1,188 ha (3.5%) in RSA of potential maternity roosting habitat, relative to Base Case. ■ Direct loss of 0.4 ha (1.8% in LSA and 0.8% in RSA) of potential hibernacula habitat, relative to Base Case. ■ No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. ■ Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change.	<ul style="list-style-type: none"> ■ Regional (direct loss) ■ Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Unlikely (direct loss and avoidance of hibernacula habitat). ■ Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant (significant at baseline characterization)
	Habitat distribution		Negative	<ul style="list-style-type: none"> ■ Slight shift in maternity roost locations to due removal of habitat. ■ No change to hibernacula habitat distribution after impact management measures. ■ Possible range expansion due to climate change. 	Regional	<ul style="list-style-type: none"> ■ Regional (direct loss) ■ Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Unlikely (hibernacula habitat) ■ Possible (maternity habitat) 	Significant (significant at baseline characterization)
	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	n/a	possible

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Little brown myotis (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 250 ha (3.3%) in LSA and 1,188 ha (3.5%) in RSA of potential maternity roosting habitat, relative to Base Case. Direct loss of 0.4 ha (1.8% in LSA and 0.8% in RSA) of potential hibernacula habitat, relative to Base Case. No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (direct loss and avoidance of hibernacula habitat). Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant (significant at baseline characterization)
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shift in maternity roost locations to due removal of habitat. No change to hibernacula habitat distribution after impact management measures. Possible range expansion due to climate change. 	Regional	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Unlikely (hibernacula habitat) Possible (maternity habitat) 	Significant (significant at baseline characterization)
	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	n/a	Possible

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 855 ha (2.0% of RSA Baseline Characterization)). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals in compared to Baseline Characterization. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 855 ha (2.0% of RSA Baseline Characterization). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals in compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant
	Survival and reproduction	Collisions with the transmission line causing injury or mortality to bat and birds criteria	Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals in compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Canada warbler (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,928 ha (5.4%) of the LSA Base Case. Direct loss of 5,489 (3.8%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism)^(c) Medium-term, Long-term, or Permanent (sensory disturbance)^(d) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Canada warbler (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,928 ha (5.4%) of the LSA Base Case. Direct loss of 5,489 (3.8%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism)^(c) Medium-term, Long-term, or Permanent (sensory disturbance)^(d) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant
	<ul style="list-style-type: none"> Habitat availability Habitat distribution Survival and reproduction 	Vegetation clearing will result in an increase in edge habitat, which could increase nest predation or parasitism risk for forest breeding birds	Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism)^(c) Medium-term, Long-term, or Permanent (sensory disturbance)^(d) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Eastern whip-poor-will (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,388 ha (7.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,469 ha (5.3%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to high mobility. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance No reduction in predicted abundance relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,388 ha (7.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,469 ha (5.3%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to high mobility. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance No reduction in predicted abundance relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Common nighthawk (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,388 ha (7.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,473 ha (5.3%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by three individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,388 ha (7.3%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,473 ha (5.3%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by three individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 1,805 ha (5.4%) habitat present in the LSA at Base Case. Direct loss of 7,121 ha (5.1%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 64 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 1,805 ha (5.4%) habitat present in the LSA at Base Case. Direct loss of 7,121 ha (5.1%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 64 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
Socio-economic Environment									
Archaeological resources (Section 7.1)	No net effects were identified for archaeological resources as a result of the Project. Consequently, the archaeological resources criterion is not carried forward for assessment of cumulative effects.								
Built Heritage and Cultural Heritage Landscapes (Section 7.2)	The magnitude of the net effects was predicted to be no to negligible effect; therefore, a cumulative effects assessment with future projects was not completed.								
Labour Market (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Regional Economy (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Government Finances (Section 7.3)	The negative net effects were predicted to be of negligible magnitude and were therefore not carried forward to the cumulative effects assessment. The predicted positive net effects were also not carried forward to the cumulative effects assessment.								
Housing and Temporary Accommodation (Section 7.3)	<ul style="list-style-type: none"> Population change Housing demand Housing supply 	Project direct construction workforce and supplier requirements could increase demand for rental housing and/or temporary accommodation, and potentially affect rental housing and/or temporary accommodation supply in certain LSA communities	Negative	Low to Moderate	Local	Reversible	Short-term	Probable	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Services and Infrastructure (Section 7.3). Includes: <ul style="list-style-type: none"> ■ emergency and health services ■ water, waste, energy infrastructure ■ transportation 	The negative net effects were predicted to be of negligible magnitude and were therefore not carried forward to the cumulative effects assessment.								
Community Wellbeing (Section 7.3)	Nuisance	Project construction activities could affect air quality along the ROW; potential for nuisance effects	As no RFD projects coincide with cumulative effects temporal and spatial boundaries for the Project noise assessment, no cumulative effects assessment of nuisance noise on community wellbeing is undertaken.						
Parks and protected areas (Section 7.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Commercial Industry Land and Resource Use (e.g., mining and aggregate, forestry, agriculture) (Section 7.4)	Resource availability	Changes in the availability of resources for the forest industry	Negative	Moderate	Regional	Long-term	Continuous	Certain	Not significant
Outdoor Tourism and Recreational Land and Resource Use (Section 7.4) assessed through consumptive and non-consumptive: <ul style="list-style-type: none"> ■ hunting, Trapping, fishing and Guide Outfitting ■ Other Outdoor Tourism and Recreation 	Land Use Quantity (access)	Net changes in the quantity of land available for outdoor tourism and recreational use (i.e., access)	<ul style="list-style-type: none"> ■ Positive (for hunters, trappers, and non-consuming recreational land users). ■ Negative (for guided outfitters and tourist operators). 	Moderate	Regional	Long-term	Continuous	Certain	Not significant

Table 11.0-2: Summary of Cumulative Effects for the for the Corridor Alternative Around Mishkeegogamang

Criteria	Indicators	Cumulative Effect	Direction	Magnitude	Geographic Extent	Duration/reversibility	Frequency/timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Human health (Section 7.6)	<ul style="list-style-type: none"> The magnitude of the net effect on human health from changes to ambient concentrations due to CAC and fugitive dust emissions was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed as per Section 4.6. The magnitude of the net effect on human health from changes to noise emissions during construction stage activities was predicted to be low. However, based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment and therefore, the human health assessment. As a result, no further human health effects from noise are anticipated; therefore, no cumulative effects assessment of noise on human health was undertaken. 								
Visual quality (Section 7.5)	Visibility of the Project from key viewpoints	Visibility of built structures and maintenance of vegetation disturbances related to the operation of the Project can adversely affect visual quality.	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
	Compatibility of Project with existing landscape	Vegetation clearing, grading, and the assembly of built structures will introduce visible disturbances to the existing landscape that can adversely affect visual quality	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
Aboriginal and Treaty Rights and Interests (as identified through engagement, Treaties, and other methods) (Section 8.0)	Quantity and quality of identified cultural use locations and access routes where use of or access to those locations is changed.	Site preparation, construction, operation and maintenance of the Project footprint could affect the quantity and location of access routes (i.e., increased access)	n/a	n/a	n/a	n/a	n/a	n/a	n/a

n/a = not applicable.

11.3 Corridor Alternative Through Mishkeegogamang

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Physical Environment									
Surface water (Section 5.1)	The magnitude of the net effects was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Groundwater (Section 5.2)	Groundwater quantity.	Changes to groundwater quantity from the use of explosives and blasting to create level areas for transmission structures, roads and for foundation excavations	Negative	Low	LSA	Permanent	Continuous	Probable	Not significant
Air quality (Section 5.3)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Greenhouse gases (Section 5.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Noise (Section 5.5)	Predicted noise levels	Noise emissions from construction activities could increase existing noise levels at potential PORs	According to Section 4.6, the net effects assessment of the noise construction stage was carried forward to include the potential cumulative effects. Based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment. Accordingly, the consideration of these cumulative developments is not expected to alter the findings of the noise assessment.						
Biological Environment									
Upland ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Upland ecosystem availability would be reduced by 10,767 ha (3.9%) in the RSA relative to the Base Case. Loss of 2 ha change (1.3% of Base Case) to the uncommon land cover class (i.e., Forest regenerating depletion) in the RSA. No loss to the uncommon bedrock land cover class. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of upland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would be some loss and fragmentation of upland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Riparian ecosystems (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Availability of riparian habitat in the RSA is predicted to decrease by 751 ha (3.8% of Base Case) relative to the Base Case in the RSA. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	There would some loss and fragmentation of riparian habitat throughout the RSA relative to the Base Case, but riparian ecosystems remain well connected. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness. Magnitude will depend on influences from climate change.	Local	Permanent/ Long-term	Continuous	Possible	Not significant
Wetlands (Section 6.1)	Ecosystem availability	Site preparation, construction and operation activities can result in the loss or alteration of upland, wetland and riparian ecosystems	Negative	Availability of wetlands in RSA is predicted to decrease by 821 ha (5.5% of Base Case) relative to the Base Case. Loss of 19 ha (3.0% of Base Case) to the uncommon Fen-open land cover class in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem distribution		Negative	The distribution of wetland ecosystems in the LSA and RSA in the RFD Case would be similar to the distribution in the Base Case. There would some predicted loss and fragmentation of wetland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Certain	Not significant
	Ecosystem composition		Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness	Beyond regional (due to climate change)	Permanent/Long-term	Continuous	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
<ul style="list-style-type: none"> ■ Brook Trout (<i>Salvelinus fontinalis</i>) ■ Lake Trout (<i>Salvelinus namaycush</i>) ■ Walleye (<i>Sander vitreus</i>) ■ Lake Sturgeon (<i>Acipenser fulvescens</i>) (Section 6.2)	The magnitude of the net effects is predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,171 ha nursery areas (incl. 355 ha that overlap with winter use areas) ■ 357 ha winter use areas (incl. 355 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 24,668 ha Category 2 habitat ■ 78 ha Category 3 habitat ■ Total habitat loss of 32,920 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,685 ha nursery areas (incl. 490 ha that overlap with winter use areas) ■ 675 ha winter use areas (incl. 490 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,694 ha Category 2 habitat ■ 383 ha Category 3 habitat ■ Total habitat loss of 18,948 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 157 ha nursery areas ■ 0 ha winter use areas ■ 9,648 ha Category 2 habitat ■ 5,699 ha Category 3 habitat ■ Total habitat loss of 15,503 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry and transmission line. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,842 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,564 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,805 ha suitable habitat (i.e., Category 1 and 2).</p>	Permanent	<ul style="list-style-type: none"> Permanent (direct loss and linear corridors) Medium-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Brightsand Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ 8,171 ha nursery areas (incl. 355 ha that overlap with winter use areas) ■ 357 ha winter use areas (incl. 355 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 24,668 ha Category 2 habitat ■ 78 ha Category 3 habitat ■ Total habitat loss of 32,920 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ 10,685 ha nursery areas (incl. 490 ha that overlap with winter use areas) ■ 675 ha winter use areas (incl. 490 ha that overlap with nursery areas) ■ All regionally important nursery areas in the range potentially affected by forest harvest ■ 7,694 ha Category 2 habitat ■ 383 ha Category 3 habitat ■ Total habitat loss of 18,948 ha (all habitat categories combined) ■ Increase in proportion of range disturbed over the medium-term, magnitude dependent on extent of forest harvesting. <p>Kinloch Range</p> <ul style="list-style-type: none"> ■ 157 ha nursery areas ■ 0 ha winter use areas ■ 9,648 ha Category 2 habitat ■ 5,699 ha Category 3 habitat ■ Total habitat loss of 15,503 ha (all habitat categories combined) ■ Incremental increase in proportion of range disturbed. 	Regional (direct and indirect)	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) 	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Habitat distribution		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the northwest portion of the range associated with mining and forest harvest. Could affect movement within the range and reduce connectivity with the Kinloch and Berens ranges. ■ Movement constraints in the northeast (currently low disturbance density) from forestry and transmission line. Could affect movement within the range and reduce connectivity with the Kinloch and Brightsand ranges. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Movement constraints in the west-central portion of the range from forestry, mining and transmission line. Could affect local movement patterns and reduce connectivity with the Churchill Range. ■ Movement constraints in the northwestern portion of the range from forestry. Could affect local movement patterns and movement with Churchill Range. ■ Movement constraints in the southern portion of the range. Could affect movement patterns in this portion of the range and reduce connectivity with the Nipigon range. <p>Kinloch Range</p> <p>Movement constraints around the Town of Pickle Lake associated with mining and transmission lines. Could affect local movement patterns.</p>	Beyond regional	<ul style="list-style-type: none"> ■ Permanent (direct loss) ■ Long-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction		Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 32,842 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years ■ Potential loss of habitat in all known regionally important nursery areas. <p>Brightsand Range</p> <ul style="list-style-type: none"> ■ Increase in predation risk associated with removal of 18,564 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry ■ More important effects expected as a result of forest harvest over the next 40 years ■ Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,805 ha suitable habitat (i.e., Category 1 and 2).</p>	Permanent	<ul style="list-style-type: none"> ■ Permanent (direct loss and linear corridors) ■ Medium-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> ■ Churchill Range: Significant (significant at baseline characterization) ■ Brightsand Range: Significant (significant at baseline characterization) ■ Kinloch Range: Not Significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Forest-dwelling woodland caribou (Section 6.3)	Survival and reproduction	Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose	Negative	<p>Churchill Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 32,842 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Brightsand Range</p> <ul style="list-style-type: none"> Increase in predation risk associated with removal of 18,564 ha suitable habitat (i.e., Category 1 and 2) – excluding forestry More important effects expected as a result of forest harvest over the next 40 years Potential loss of habitat in all known regionally important nursery areas. <p>Kinloch Range</p> <p>Incremental increase in predation risk associated with removal of 9,805 ha suitable habitat (i.e., Category 1 and 2).</p>	Permanent	<ul style="list-style-type: none"> Permanent (direct loss and linear corridors) Medium-term (sensory disturbance) 	Continuous	Probable	<ul style="list-style-type: none"> Churchill Range: Significant (significant at baseline characterization) Brightsand Range: Significant (significant at baseline characterization) Kinloch Range: Not Significant
Moose (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,885 ha (4.2%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Moose (Section 6.3)	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small increase in mortality after implementation of impact management measures Reduced wetland and mature forest cover Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, linear corridors, and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (linear corridors and sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 2,885 ha (4.2%) of the LSA Base Case. Direct loss of 1.0% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs Contracted distribution due to climate change 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Moose (Section 6.3)	Survival and reproduction		Negative	<ul style="list-style-type: none"> ■ Small increase in mortality after implementation of impact management measures ■ Reduced wetland and mature forest cover ■ Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss, linear corridors, and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (linear corridors and sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction	Use of linear corridors and converted habitat (i.e., younger, more productive forest) by prey and predators leading to decreases in survival and reproduction of caribou and moose	Negative	<ul style="list-style-type: none"> ■ Small increase in mortality after implementation of impact management measures ■ Reduced wetland and mature forest cover ■ Greater overlap between moose and white-tailed deer (predation and meningeal brain worm) 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss, linear corridors, and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (linear corridors and sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 5,958 ha (13.7%) of the LSA Base Case. Direct loss of 1.4% of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance) Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to RFDs. Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Probable (direct loss and sensory disturbance) Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduced spring snow cover Higher summer temperatures Small reduction in predicted abundance (two female home ranges or 70% of a male home range) 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Wolverine (Section 6.3)	<ul style="list-style-type: none"> ■ Habitat availability ■ Habitat distribution 	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> ■ Direct loss of approximately 5,958 ha (13.7%) of the LSA Base Case. ■ Direct loss of 1.4% of the RSA Base Case. ■ Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance during construction and reclamation activities. ■ Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Certain (direct loss) ■ Probable (sensory disturbance) ■ Possible (natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> ■ Small reduction in movements among habitat patches due to RFDs. ■ Contracted distribution due to climate change. 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors). ■ Medium-term, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance). ■ Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> ■ Probable (direct loss and sensory disturbance) ■ Possible (natural factors) 	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> ■ Reduced spring snow cover ■ Higher summer temperatures ■ Small reduction in predicted abundance (two female home ranges or 70% of a male home range) 	Regional	<ul style="list-style-type: none"> ■ Long-term to Permanent (direct loss and natural factors) ■ Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> ■ Continuous (sensory disturbance) ■ Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Little brown myotis (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 239 ha (3.2%) in LSA and 1,177 ha (3.8%) in RSA of potential maternity roosting habitat, relative to Base Case. Direct loss of 0.2 ha (1.2%) in LSA and 0.4 ha (1.0%) in RSA of potential hibernacula habitat, relative to Base Case. No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (direct loss and avoidance of hibernacula habitat). Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant (significant at baseline characterization)
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shift in maternity roost locations to due removal of habitat. No change to hibernacula habitat distribution after impact management measures. Possible range expansion due to climate change. 	Regional	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Unlikely (hibernacula habitat) Possible (maternity habitat) 	Significant (significant at baseline characterization)

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Little brown myotis (Section 6.3)	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	Possible	Significant (significant at baseline characterization)
	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 239 ha (3.2%) in LSA and 1,177 ha (3.8%) in RSA of potential maternity roosting habitat, relative to Base Case. Direct loss of 0.2 ha (1.2%) in LSA and 0.4 ha (1.0%) in RSA of potential hibernacula habitat, relative to Base Case. No avoidance of hibernacula habitat due to sensory disturbance by adhering to setbacks. Avoidance of maternity roosting habitat due to sensory disturbance in the LSA. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors). Medium, Long-term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (direct loss and avoidance of hibernacula habitat). Probable (direct loss and avoidance of summer maternity habitat, and natural factors). 	Significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shift in maternity roost locations to due removal of habitat. No change to hibernacula habitat distribution after impact management measures. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long term to Permanent (direct loss and natural factors). Medium, Long term, or Permanent (sensory disturbance). 	<ul style="list-style-type: none"> Continuous (sensory disturbance). Frequent to Continuous (direct loss and natural factors). 	<ul style="list-style-type: none"> Unlikely (hibernacula habitat) Possible (maternity habitat) 	Significant
	Survival and reproduction		Neutral	n/a	n/a	n/a	n/a	n/a	Possible

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 840 ha (2.3% of RSA Baseline Characterization). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines)^(e) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 840 ha (2.3% of RSA Baseline Characterization). Reduced quality of nesting and roosting habitat and possible avoidance in the RSA from sensory disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance from RFDs but populations remain well connected. Possible range expansion due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals compared to Base Case. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines)^(e) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Bald eagle (Section 6.3)	Survival and reproduction	Collisions with the transmission line causing injury or mortality to bat and birds criteria	Negative	<ul style="list-style-type: none"> Reduction in predicted abundance by two individuals compared to Baseline Characterization. Possible reduction in productivity of home ranges overlapping the RSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> Regional (direct loss) Local to Regional (sensory disturbance) Beyond Regional (increased mortality from collision with transmission lines)^(e) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Permanent (collisions with electrical lines) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance and collisions with electrical lines) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Probable (collisions with electrical lines) Possible (direct loss, sensory disturbance, and natural factors) 	Not significant
Canada warbler (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,916 ha (5.4%) of the Corridor LSA Base Case. Direct loss of 5,476 ha (3.9%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Canada warbler (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of approximately 1,916 ha (5.4%) of the Corridor LSA Base Case. Direct loss of 5,476 ha (3.9%) of the RSA Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude will depend on the influences from climate change. 	Regional	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible	Not significant
	<ul style="list-style-type: none"> Habitat availability Habitat distribution Survival and reproduction 		Vegetation clearing will result in an increase in edge habitat, which could increase nest predation or parasitism risk for forest breeding birds	Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by 55 individuals, relative to Base Case. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Regional (direct loss and nest parasitism) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss, natural factors, and nest parasitism) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss, natural factors, and nest parasitism) 	Possible

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Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Eastern whip-poor-will (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by approximately 1,395 ha (7.5%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,475 (5.5%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to high mobility. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance No reduction in predicted abundance relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Eastern whip-poor-will (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by approximately 1,395 ha (7.5%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,475 (5.5%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Small reduction in movements among habitat patches due to high mobility. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance No reduction in predicted abundance relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Common nighthawk (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,398 ha (7.5%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,482 ha (5.5%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by two individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Common nighthawk (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Suitable habitat is predicted to decrease by 1,398 ha (7.5%) in the LSA, relative to Base Case. Suitable habitat will decrease by 4,482 ha (5.5%) in the RSA from Base Case to RFD Case. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Probable	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance Predicted abundance reduced by two individuals, relative to Base Case Magnitude depends on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term, or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Site preparation, construction, operation and maintenance activities can result in the loss or alteration of vegetation and topography that may change habitat availability, use, and connectivity and influence wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 1,789 ha (5.6%) habitat present in the LSA at Base Case. Direct loss of 7,114 ha (5.4%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 64 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Biological Environment (cont'd)									
Olive-sided flycatcher (Section 6.3)	Habitat availability	Sensory disturbance (lights, smells, noise, dust, human activity, corona-related noise, viewscape) can change wildlife habitat availability, use and connectivity (movement and behaviour), which can lead to changes in wildlife abundance and distribution	Negative	<ul style="list-style-type: none"> Direct loss of 1,789 ha (5.6%) habitat present in the LSA at Base Case. Direct loss of 7,114 ha (5.4%) of suitable habitat present in the RSA at Base Case. Reduced quality of habitat and possible avoidance in the RSA from sensory disturbance. Magnitude will depend on the influences from climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	<ul style="list-style-type: none"> Certain (direct loss) Probable (sensory disturbance and natural factors) 	Not significant
	Habitat distribution		Negative	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Contracted distribution due to climate change. 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (direct loss and sensory disturbance) Frequent to Continuous (natural factors) 	Possible	Not significant
	Survival and reproduction		Negative	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance Predicted abundance reduced by 64 individuals, relative to Base Case 	<ul style="list-style-type: none"> Regional (direct loss and natural factors) Local to Regional (sensory disturbance) 	<ul style="list-style-type: none"> Long-term to Permanent (direct loss and natural factors) Medium-term, Long-term or Permanent (sensory disturbance) 	<ul style="list-style-type: none"> Continuous (sensory disturbance) Frequent to Continuous (direct loss and natural factors) 	Possible	Not significant
Socio-economic Environment									
Archaeological resources (Section 7.1)	No net effects were identified for archaeological resources as a result of the Project. Consequently, the archaeological resources criterion is not carried forward for assessment of cumulative effects.								
Built Heritage and Cultural Heritage Landscapes (Section 7.2)	The magnitude of the net effects was predicted to be no to negligible effect; therefore, a cumulative effects assessment with future projects was not completed.								
Labour Market (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Regional Economy (Section 7.3)	The predicted net effects were positive in direction and were therefore not carried forward to the cumulative effects assessment.								
Government Finances (Section 7.3)	The negative net effects were predicted to be of negligible magnitude and were therefore not carried forward to the cumulative effects assessment. The predicted positive net effects were also not carried forward to the cumulative effects assessment.								

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Housing and Temporary Accommodation (Section 7.3)	<ul style="list-style-type: none"> ■ Population change ■ Housing demand ■ Housing supply 	Project direct construction workforce and supplier requirements could increase demand for rental housing and/or temporary accommodation, and potentially affect rental housing and/or temporary accommodation supply in certain LSA communities	Negative	Low to Moderate	Local	Reversible	Short-term	Probable	Not significant
Services and Infrastructure (Section 7.3). Includes:	The negative net effects were predicted to be of negligible magnitude and were therefore not carried forward to the cumulative effects assessment.								
<ul style="list-style-type: none"> ■ emergency and health services ■ water, waste, energy infrastructure ■ transportation 									
Community Wellbeing (Section 7.3)	Nuisance	Project construction activities could affect ambient noise levels along the ROW; potential for nuisance effects	As no RFD projects coincide with cumulative effects temporal and spatial boundaries for the Project noise assessment, no cumulative effects assessment of nuisance noise on community wellbeing is undertaken.						
Parks and protected areas (Section 7.4)	The magnitude of the net effect was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed.								
Commercial Industry Land and Resource Use (e.g., mining and aggregate, forestry, agriculture) (Section 7.4)	Resource availability	Changes in the availability of resources for the forest industry	Negative	Moderate	Regional	Long-term	Continuous	Certain	Not significant
Outdoor Tourism and Recreational Land and Resource Use (Section 7.4) assessed through consumptive and non-consumptive:	Land Use Quantity (access)	Net changes in the quantity of land available for outdoor tourism and recreational use (i.e., access)	<ul style="list-style-type: none"> ■ Positive (for hunters, trappers, and non-consuming recreational land users). ■ Negative (for guided outfitters and tourist operators). 	Moderate	Regional	Long-term	Continuous	Certain	Not significant
<ul style="list-style-type: none"> ■ hunting, Trapping, fishing and Guide Outfitting ■ Other Outdoor Tourism and Recreation 									

Table 11.0-3: Summary of Cumulative Effects for the for the Corridor Alternative Through Mishkeegogamang

Criteria	Indicators	Cumulative Pathway	Direction	Magnitude	Geographic Extent	Duration/ reversibility	Frequency/ timing	Probability of Occurrence	Significance
Socio-economic Environment (cont'd)									
Human health (Section 7.6)	The magnitude of the net effect on human health from changes to ambient concentrations due to CAC and fugitive dust emissions was predicted to be negligible; therefore, a cumulative effects assessment with future Projects was not completed as per Section 4.6. The magnitude of the net effect on human health from changes to noise emissions during construction stage activities was predicted to be low. However, based on the list of cumulative developments described in Section 4.6, it is not expected that these projects will coincide with temporal and spatial boundaries of the Project noise assessment and therefore, the human health assessment. As a result, no further human health effects from noise are anticipated; therefore, no cumulative effects assessment of noise on human health was undertaken.								
Visual quality (Section 7.5)	Visibility of the Project from key viewpoints	Visibility of built structures and maintenance of vegetation disturbances related to the operation of the Project can adversely affect visual quality.	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
	Compatibility of Project with existing landscape	Vegetation clearing, grading, and the assembly of built structures will introduce visible disturbances to the existing landscape that can adversely affect visual quality	Negative	Low to Moderate	Local	Permanent/Long-term	Continuous	Possible	Not significant
Aboriginal and Treaty Rights and Interests (as identified through engagement, Treaties, and other methods) (Section 8.0)	Quantity and quality of identified cultural use locations and access routes where use of or access to those locations is changed.	Site preparation, construction, operation and maintenance of the Project footprint could affect the quantity and location of access routes (i.e., increased access)	Positive and negative (traditional land and resource users)	Moderate	Local	Long-term	Continuous	Certain	Not significant

n/a = not applicable.