

13.0 FINAL CORRIDOR ANALYSIS AND CONCLUSION

Transmission reliability and expansion to Pickle Lake has been identified in Ontario's *Achieving Balance Long-Term Energy Plan* (released in November 2013) as a key priority to increase grid reliability and for the connection of Aboriginal communities in northwestern Ontario to the provincial grid (Ministry of Energy 2013). A new line to Pickle Lake will help serve new demand in the area north of Dryden and provide increased capacity to connect remote communities (Ministry of Energy 2013). Wataynikaneyap intends to construct, own, and operate the Phase 1 New Transmission Line to Pickle Lake Project (the Project). Wataynikaneyap is a licenced transmission company majority owned by 22 First Nation communities and partnered with FortisOntario Inc. The proposed construction and operation of the Project has undergone an Individual environmental assessment (EA) in accordance with the Terms of Reference (ToR) and Ontario Ministry of the Environment and Climate Change (MOECC) guidance, including the *Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario* (MOECC 2014a).

Wataynikaneyap identified three corridors for the Project (Preliminary Proposed Corridor, Corridor Alternative Around Mishkeegogamang, and Corridor Alternative Through Mishkeegogamang) based on the outcome of a preliminary corridor routing analysis and the results of engagement. Each corridor was assessed in the Final EA Report using the environmental assessment criteria described in Table 4.1-1 and cost, constructability, and technical criteria. The Final EA Report allows Aboriginal communities, stakeholders, and regulators to understand the potential negative net effects of each corridor. However, ultimately only one corridor will be approved and selected for development (i.e., the preferred undertaking). Therefore, as described in Section 8.0 of the Amended ToR (Golder 2014), Wataynikaneyap has completed a final corridor analysis to determine the preferred undertaking.

The following section presents an analysis of the three corridors and makes a recommendation for the preferred undertaking.

13.1 Final Corridor Routing Analysis

A preliminary corridor routing analysis was previously completed by Wataynikaneyap and included in the approved Amended ToR (Wataynikaneyap 2014, Appendix B Preliminary Corridor Routing Analysis). The preliminary analysis identified evaluation criteria and indicators among environmental, land use, technical, and cost and constructability categories. The list of criteria and indicators were based solely on existing data and information available at that time, and developed through engagement during the ToR stage of the EA process. The Project design and associated assumptions for the corridor options and alternatives were overlain on the existing environmental and land use data to provide the indicator metrics used in the analysis tables. The data and information used to quantify the indicators was based on the Project design and the existing data and information at the time of preparation of the report in 2014. Three corridors were identified through this analysis; a Preliminary Proposed Corridor, a Corridor Alternative Around Mishkeegogamang, and a Corridor Alternative Through Mishkeegogamang. The corridor alternatives both have significant common routings at the southern end of these options.

As a result of engagement on the preliminary corridor routing analysis during the ToR stage of the EA process, particularly comments on woodland caribou indicators, Wataynikaneyap has completed this EA on the three corridors identified in the preliminary corridor routing analysis included in the Amended ToR. Criteria and indicators

specific to the EA were identified during the EA stage through engagement with Aboriginal communities, regulatory agencies, and stakeholders. A discussion of the definition of criteria and indicators used for the EA is included below and presented in more detail in Section 4.0 Environmental Assessment Methods.

13.1.1 Methods

As identified in Section 8.0 Assessment and Evaluation of the Amended ToR, Wataynikaneyap committed to completing a comparative analysis of the environmental effects for each discipline (i.e., criteria) between the Preliminary Proposed Corridor and the corridor alternatives using the environmental assessment criteria and indicators, as well as cost and constructability and technical criteria and indicators. The environmental assessment criteria are the physical (e.g., air), biological (e.g., fish and fish habitat, wildlife), socioeconomic, non-Aboriginal land and resource use and Aboriginal Rights and Treaty criteria used for the EA. Therefore, the final corridor routing analysis approach presented here considers three broad categories for the analysis: 1) Environmental Assessment, 2) Cost and Constructability, and 3) Technical. Each of these categories are composed of individual evaluation criteria. The evaluation criteria considered in the analysis were developed based on the following:

- presence, abundance and distribution within, or relevance to, the area associated with the Project;
- potential for interaction with the Project and sensitivity to effects;
- species conservation status or concern;
- ecological and socio-economic value to Aboriginal communities, municipalities, government agencies, and the public;
- traditional, cultural and heritage importance to Aboriginal peoples;
- experience of the environmental assessment and design team in completing transmission line environmental assessments (EAs) and associated alternatives analyses;
- provincial requirements for the assessment of alternatives;
- feedback from Aboriginal communities, government agencies, and Project stakeholders; and
- feedback from regulators on the preliminary corridor routing analysis that was completed for the Project (Golder 2014) and included as part of the Amended ToR.

As described in Section 4.1, these criteria are components of the environment that are considered to have economic, social, biological, conservation, aesthetic or cultural value (Beanlands and Duinker 1983). A list of these criteria is provided in Table 13.1-1.

The EA indicators represent properties of the physical, biological and socio-economic environments that can be used to characterize changes to criteria in a meaningful way. An indicator can be described as an aspect or characteristic of a criterion that, if changed as a result of the Project, may demonstrate a physical, biological or socio-economic effect.

The cost and constructability and technical categories are based on the initial screening level corridor routing analysis included in the Amended ToR. These criteria were developed based on the experience of the environmental assessment and design team in completing transmission line projects in Ontario and are listed in Table 13.1-1.

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Table 13.1-1: Evaluation Criteria Considered in the Final Corridor Routing Analysis

Environmental	Cost and Constructability	Technical
<ul style="list-style-type: none"> ■ Air quality ■ Greenhouse gases (GHG) ■ Noise ■ Surface water ■ Groundwater ■ Brook Trout, Lake Trout, Walleye, Lake Sturgeon ■ Upland ecosystems ■ Riparian ecosystems ■ Wetlands ■ Forest-dwelling woodland caribou ■ Moose ■ Wolverine ■ Little brown myotis ■ Horned grebe ■ Other federal or provincial Species at Risk ■ Labour market ■ Regional economy ■ Government finances ■ Housing and temporary accommodation ■ Services and infrastructure ■ Community wellbeing ■ Parks and protected areas ■ Commercial industry land and resource use ■ Outdoor tourism and recreational land and resource use ■ Archaeological resources ■ Built heritage and cultural heritage landscapes ■ Landscape and visual resources ■ Human health ■ Aboriginal and Treaty Rights and Interests 	<ul style="list-style-type: none"> ■ Route length ■ Access roads ■ Large water crossings ■ Very large water crossings ■ Infrastructure crossings ■ Angle points ■ Relative cost ■ First Nation Reserve land ■ Crown land¹ ■ Private land 	<ul style="list-style-type: none"> ■ Pickle Lake short circuit level ■ Length of corridor close to E1C ■ Connection to Dryden TS ■ Potential new load customers ■ Distance of tap from Dryden TS ■ Waterpower potential within 30 km

Notes:

km = kilometres; TS = transformer station.

¹ It is noted that the First Nations entered into a treaty relationship with the Crown within the spirit and intent of Indigenous Peoples' understanding based on respect, friendship and mutuality. It is always understood that there would be sharing of lands and resources. Any references to Crown Land in the final corridor routing analysis are without prejudice to the positions of First Nations in relation to Treaty and Aboriginal rights.

13.1.1.4 Step 4 – Apply Numerical Ranking Value to Each Criteria (Criterion Score)

A criterion score was applied to each of the environmental assessment, cost and constructability, and technical criteria across the three corridors. The criterion score was based on the ranking value (from Step 3 above) and the assessment of predicted effects. For a particular criterion, the corridor with the least predicted or potential net effect or highest potential positive effect was given a score based on the criteria ranking value (from Step 3); and the remaining corridors were given a score of zero.

For the cost and constructability, and technical criteria, appreciable differences (which are quantitative) among indicators were used to help determine the corridor with the least potential effects. Appreciable difference distinctions could not be derived for the magnitude of the predicted net effects to the environmental criteria. This is because there are multiple indicators for each criterion; and the indicators among the criteria are a combination of qualitative and quantitative measures.

The indicators for the environmental assessment criteria for ecological criteria (e.g., vegetation and wildlife) cannot be identified because quantitative thresholds, critical values, or screening values that relate the changes in indicators to appreciable differences in ecological effects to vegetation and wetlands, and wildlife criteria among corridor routes are not available, and is not uncommon (Standish et al. 2014). Ecological thresholds vary by species, spatial scale, and existing and future landscape conditions (Fahrig 1997; Swift and Hannon 2010). Also, the ability of ecosystems, communities and populations to absorb and recover from disturbance is related to resilience. Resilience is a function of current landscape conditions (level of human and natural disturbance) and population status, and species demographic and life history traits (e.g., fecundity, age at reproduction, inter-birth interval, lifespan of individuals, habitat selection, and migratory behaviour) (Standish et al. 2014). Because of these sources of variation, a single appreciable difference or threshold value cannot be generally applied to all criteria, and these values are largely unknown for vegetation ecosystems and animal populations. Therefore, for a particular vegetation or wildlife criterion, the corridor with the least predicted effect was assigned a score based on the initial ranking value (from Step 3) and the criterion for the remaining corridors was assigned a score of zero.

For all environmental assessment, cost and constructability, and technical criteria, similar potential effects to indicators from the different corridors were assigned the same score, based on the ranking value (from Step 3). For example, if the magnitude of the effect from each corridor on the indicator for air quality was predicted to be negligible, then the score for air quality was 1 across corridors (based on the ranking value of 1 for this criterion).

13.1.1.5 Step 5 – Calculate Weighted Category Score Using Category Weighting and Criteria Indicator Numerical Rankings

A Preliminary Corridor Routing Analysis was provided in the Draft ToR on September 17, 2012. Notable comments on the evaluation process were received from the Ministry of Energy on January 22, 2013 and the MOECC (formerly the MOE) on January 23, 2013. Both the Ministry of Energy and the MOECC indicated that an equal weighting across all categories and criteria may not be appropriate for the evaluation as all categories and criteria may not have equal importance. In response to this comment, a category weighting was applied to each of the environmental assessment, cost and constructability, and technical categories. The rationale for each category weighting was based on the relative magnitude of each category that contributes to the feasibility and potential effects of the proposed Project, as well as input received from stakeholders and Aboriginal participants during engagement activities on the Draft ToR. Based on this rationale, the environmental assessment category is weighted 50%, cost and constructability category is weighted 30% and the technical category is weighted 20%. The rationale for the individual category ratings is provided in Table 13.1-2.

Table 13.1-2: Category Weightings and Rationale

Category	Weighting (%)	Rationale
Environmental assessment	50	This category is assigned a weighting of 50% due to the high importance of the environmental criteria (e.g., woodland caribou, little brown myotis criteria) and the potential effects of the Project on these criteria. During engagement on the ToR, Aboriginal and stakeholder participants identified concern about the potential for effects of the proposed Project on the environmental criteria.
Cost and Constructability	30	This category is assigned a weighting of 30% because cost and constructability are a high importance in the feasibility decision of the proposed Project. During engagement on the ToR, Aboriginal and stakeholder participants expressed interest for the cost and constructability criteria. Cost and constructability is also a critical consideration of other regulatory processes, including the Ontario Energy Board Leave to Construct process, where ratepayer interests are a central issue.
Technical	20	This category is assigned a weighting of 20% because the moderate importance of technical criteria as factors in the feasibility of the proposed Project with regards to the stability and logical expansion of the electricity grid. During engagement on the ToR, Aboriginal and stakeholder participants expressed interest for technical criteria.

Notes:

ToR = Terms of Reference; % = percent.

The following calculations were completed for each category:

$$\text{Category Score} = (\sum \text{Criteria Scores} \div \sum \text{Maximum Ranking Values}) \times \text{Category Weighting}$$

Where:

- \sum Criteria Scores = sum of the applied category ranking values for each criterion;
- \sum Maximum Ranking Values = maximum possible sum of the criteria ranked values for the criterion; and
- Weighting = relative weighting for each category (Table 13.1-2).

Criteria scores were based on the ranking values and the assessment of predicted effects to indicators from the Project to environmental assessment, cost and constructability, and technical criteria. Thus for each corridor, there was a total score for each of the environmental assessment, cost and constructability, and technical categories.

13.1.1.6 Step 6 – Calculate and Compare the Total Corridor Scores to Identify the Preferred Corridor

After calculating the scores for each category, a total score for each corridor was calculated as:

$$\text{Total Corridor Score} = \sum \text{Category Scores}$$

Where \sum Category Scores is the sum of the scores for environmental assessment, cost and constructability, and technical categories.

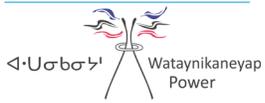
The corridor with the highest score was generally considered the preferred corridor; however, to supplement the ranking a detailed discussion has also been included to support the selection of a preferred corridor as the proposed undertaking. The selection of the preferred corridor also considers if a significant effect due to the Project has been identified for a criterion for that corridor.

13.1.2 Results

13.1.2.1 Step 1 – Magnitude Ratings from Environmental Assessment Criteria

The environmental assessment criteria and indicators were selected to address issues identified in relation to the Project. The final list of criteria and indicators used in the EA was based on engagement with Aboriginal communities, government agencies and stakeholders and the rationale for their selection are presented in Table 4.1-1.

Table 13.1-3 summarizes the magnitude ratings for each criteria's indicators of the Net Effects assessment for each corridor.



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Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Air quality	<ul style="list-style-type: none"> ■ Predicted ambient concentrations of: <ul style="list-style-type: none"> ■ SPM; ■ PM₁₀ and PM_{2.5}; ■ CO; ■ NO₂; and ■ SO₂. 	Negligible magnitude	Negligible magnitude	Negligible magnitude
Greenhouse gases (GHG)	<ul style="list-style-type: none"> ■ Predicted greenhouse gas emissions of CO₂. ■ Predicted greenhouse gas emissions of N₂O. ■ Predicted greenhouse gas emissions of CH₄. 	Negligible magnitude	Negligible magnitude	Negligible magnitude
Noise	<ul style="list-style-type: none"> ■ Project construction related daytime equivalent noise level (Leq, day). ■ Project construction related change in daytime equivalent noise level (Leq, day). ■ Project operation related one-hour equivalent noise level (Leq, 1 hour (day, night)). ■ Project operation related change in one-hour equivalent noise level (Leq, 1 hour (day, night)). 	<ul style="list-style-type: none"> ■ Negligible, low, moderate and high magnitude. ■ The magnitude at a given POR is dependent on the distance to the Project activities. Existing noise levels at given PORs can be expected to increase, on occasion, due to construction activities when occurring nearby, but construction noise will be temporary in nature and limited in duration. 	<ul style="list-style-type: none"> ■ Negligible, low, moderate and high magnitude. ■ The magnitude at a given POR is dependent on the distance to the Project activities. Existing noise levels at given PORs can be expected to increase, on occasion, due to construction activities when occurring nearby, but construction noise will be temporary in nature and limited in duration. 	<ul style="list-style-type: none"> ■ Negligible, low, moderate and high magnitude. ■ The magnitude at a given POR is dependent on the distance to the Project activities. Existing noise levels at given PORs can be expected to increase, on occasion, due to construction activities when occurring nearby, but construction noise will be temporary in nature and limited in duration.
Surface water	<ul style="list-style-type: none"> ■ Surface water quantity ■ Surface water quality 	Negligible magnitude.	Negligible magnitude.	Negligible magnitude.
Groundwater	<ul style="list-style-type: none"> ■ Groundwater quantity ■ Groundwater quality 	Negligible magnitude for all net effects, except for blasting net effect on groundwater quality and quality, which is low magnitude.	Negligible magnitude for all net effects, except for blasting net effect on groundwater quality and quality, which is low magnitude.	Negligible magnitude for all net effects, except for blasting net effect on groundwater quality and quality, which is low magnitude.
Brook Trout, Lake Trout, Walleye, Lake Sturgeon	<ul style="list-style-type: none"> ■ Habitat quantity ■ Habitat quality ■ Abundance ■ Distribution 	Negligible magnitude	Negligible magnitude	Negligible magnitude

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Upland ecosystems	Ecosystem availability	Predicted loss of 1,277 ha; loss of 2 ha to the second least common land cover class (i.e., Bedrock); no loss to the least common Forest-regenerating depletion land cover class.	Predicted loss of 1,162 ha; loss of <1 ha is expected for the second least common land cover class (i.e., Bedrock); no loss to the least common Forest-regenerating depletion land cover class.	Predicted loss of 1,135 ha; loss of 3 ha to second least common cover class (i.e., Forest – regenerating depletion; no predicted loss to uncommon land cover class (i.e., Bedrock).
	Ecosystem distribution	Predicted loss to upland ecosystems is primarily associated with the corridor ROW and new permanent access roads creating a more fragmented distribution of uplands. However, upland ecosystems remain well-connected in areas surrounding the Preliminary Proposed Corridor. Small disruption to the uncommon Bedrock land cover class.	Predicted loss to upland ecosystems is primarily associated with the corridor ROW and new permanent access roads creating a more fragmented distribution of uplands. However, upland ecosystems remain well-connected in areas surrounding the corridor alternative. Small disruption to the uncommon Bedrock land cover class.	Predicted loss to upland ecosystems is primarily associated with the corridor ROW and new permanent access roads creating a more fragmented distribution of uplands. However, upland ecosystems remain well-connected in areas surrounding the corridor alternative. No predicted loss to uncommon Bedrock land cover class.
	Ecosystem composition	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.	Edge effects and potential introduction of invasive species may alter upland species abundance and richness.
Riparian ecosystems	Ecosystem availability	Predicted loss of 66 ha.	Predicted loss of 56 ha.	Predicted loss of 53 ha.
	Ecosystem distribution	Patches of riparian ecosystems remain connected in areas surrounding the footprint.	Patches of riparian ecosystems remain connected in areas surrounding the footprint.	Patches of riparian ecosystems remain connected in areas surrounding the footprint.
	Ecosystem composition	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness.	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness.	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness.
Wetlands	Ecosystem availability	Loss of 56 ha; no loss to the least common and available land cover class in the study areas (i.e., Fen-open).	Loss of 43 ha; 2 ha loss to the least common and available land cover class (i.e., Fen-open) in the study areas.	Loss of 41 ha; 1 ha loss to the least common and available land cover class (i.e., Fen-open) in the study areas.
	Ecosystem distribution	Wetlands disrupted by corridor ROW and access roads crossings. However patches of wetlands remain connected in areas surrounding the Project footprint. No disruption to the uncommon Fen-open wetland.	Wetlands disrupted by corridor ROW and access roads crossings. However patches of wetlands remain connected in areas surrounding the Alternative footprint. A small disruption to the uncommon Fen-open wetland.	Wetlands disrupted by corridor ROW and access roads crossings. However patches of wetlands remain connected in areas surrounding the Alternative footprint. A small disruption to the uncommon Fen-open wetland.
	Ecosystem composition	Small changes in water quality and flow and potential introduction of invasive species may alter wetland species abundance and richness.	Small changes in water quality and flow and potential introduction of invasive species may alter wetland species abundance and richness.	Small changes in water quality and flow and potential introduction of invasive species may alter wetland species abundance and richness.

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Churchill Range	Habitat availability	<ul style="list-style-type: none"> 2 ha nursery areas; one nursery area affected. 106 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 450 ha nursery area and 2,664 ha winter use area. Six nursery areas and two winter use areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.3%. 	<ul style="list-style-type: none"> 165 ha nursery areas; two nursery areas affected. 2 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 4,333 ha nursery area and 55 ha winter use area. Two nursery areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.3%. 	<ul style="list-style-type: none"> 126 ha nursery areas; two nursery areas affected. 2 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 2,655 ha nursery area and 55 ha winter use area. Two nursery areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.2%.
	Habitat distribution	<ul style="list-style-type: none"> Three potential travel corridors affected, including two that are fragmented at Baseline Characterization and one that is relatively undisturbed. Incremental change in linear feature density in the range, from 0.46 km/km² to 0.47 km/km². 	<ul style="list-style-type: none"> Two potential travel corridors affected, both are bisected by Hwy 599 but few other disturbances in area. Includes undisturbed areas in north portion of range. No measurable change in linear feature density 	<ul style="list-style-type: none"> Two potential travel corridors affected, both are bisected by Hwy 599 but few other disturbances are present in area. Avoids undisturbed areas in north portion of range affected by the corridor. No measurable change in linear feature density
	Survival and reproduction	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 164 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted around Bamaji Lake/Blackstone Lake area (undisturbed); forest harvesting in other parts of the range have altered landscape conditions at Baseline Characterization. 114 caribou locations from 8 collared individuals within 500 m of the footprint; 8,633 locations from 23 collared individuals within 10 km of the footprint 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 314 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted around Lake St. Joseph and DeLesseps Lake area (regionally important calving/nursery areas, little/no forest harvest disturbance at Baseline Characterization). 91 caribou locations from 9 collared individuals within 500 m of the footprint; 3,588 locations from 24 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 275 ha suitable habitat (i.e., Category 1 and 2). Avoids undisturbed areas in north portion of range affected by the corridor. More important effects predicted around Lake St. Joseph and DeLesseps Lake area (regionally important calving/nursery areas, little/no forest harvest disturbance at Baseline Characterization). 72 caribou locations from 7 collared individuals within 500 m of the footprint; 2,533 locations from 20 collared individuals within 10 km of the footprint.

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Brightsand Range	Habitat availability	n/a	<ul style="list-style-type: none"> ■ 7 ha nursery areas (including 7 ha overlap with winter use areas); one nursery area affected. ■ 20 ha winter use areas (including 7 ha overlap with nursery areas); one winter use area affected. ■ Indirect habitat loss (within 500 m of footprint): 295 ha nursery area and 442 ha winter use area (132 ha overlap). ■ Six nursery areas and three winter use areas located within 10 km of footprint. ■ No change in proportion of range disturbed, remains at 45.4%. 	<ul style="list-style-type: none"> ■ 55 ha nursery areas (including 7 ha overlap with winter use areas); one nursery area affected. ■ 20 ha winter use areas (including 7 ha overlap with nursery areas); one winter use area affected. ■ Indirect habitat loss (within 500 m of footprint): 1,824 ha nursery area and 442 ha winter use area (132 ha overlap). ■ Six nursery areas and three winter use areas located within 10 km of footprint. ■ No change in proportion of range disturbed, remains at 45.4%.
	Habitat distribution	n/a	<ul style="list-style-type: none"> ■ Three potential travel corridors affected, including two fragmented corridors and one corridor with considerable fragmentation. ■ No measurable change in linear feature density. 	<ul style="list-style-type: none"> ■ Three potential travel corridors affected, including two fragmented corridors and one corridor with considerable fragmentation. ■ No measurable change in linear feature density.
	Survival and reproduction	n/a	<ul style="list-style-type: none"> ■ Incremental increase in predation risk associated with removal of 126 ha suitable habitat (i.e., Category 1 and 2), with limited effects due to low occupancy. ■ More important effects expected around Savant Lake (regionally important calving/nursery area). ■ 7 caribou locations from 3 collared individuals within 500 m of the footprint; 3,445 locations from 16 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> ■ Incremental increase in predation risk associated with removal of 173 ha suitable habitat (i.e., Category 1 and 2), with limited effects due to low occupancy. ■ More important effects expected around Savant Lake (regionally important calving/nursery area). ■ 8 caribou locations from 4 collared individuals within 500 m of the footprint; 3,809 locations from 19 collared individuals within 10 km of the footprint.

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Kinloch Range	Habitat availability	<ul style="list-style-type: none"> 207 ha nursery areas (incl. 61 ha overlap with winter use areas); 1 known nursery area affected. 84 ha winter use areas (incl. 61 ha overlap with nursery areas; 1 winter use area affected. Indirect habitat loss (within 500 m of footprint): 6,313 ha nursery area and 1,945 ha winter use area (with 1,388 ha overlap) Four nursery areas and one winter use area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.2%. 	<ul style="list-style-type: none"> 67 ha nursery areas; one known nursery area affected. 0 ha winter use areas; zero winter use area affected. Indirect habitat loss (within 500 m of footprint): 2,454 ha nursery area and 0 ha winter use area. One nursery area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.1%. 	<ul style="list-style-type: none"> 51 ha nursery areas; one known nursery area affected. 0 ha winter use areas; zero winter use area affected. Indirect habitat loss (within 500 m of footprint): 1,236 ha nursery area One nursery area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.0%.
	Habitat distribution	<ul style="list-style-type: none"> One potential travel corridor affected. Corridor has little fragmentation at Baseline Characterization. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km². 	<ul style="list-style-type: none"> One potential travel corridor affected. Southern extent of corridor has little fragmentation. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km². 	<ul style="list-style-type: none"> One potential travel corridor affected, route avoids effects to undisturbed portion. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km².
	Survival and reproduction	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 300 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted in areas that support both calving and nursery function. 2,179 caribou locations from 16 collared individuals within 500 m of the footprint; 32,126 locations from 33 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 93 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted around Lake St. Joseph (regionally important calving/nursery area, undisturbed). 50 caribou locations from 3 collared individuals within 500 m of the footprint; 4,352 locations from 19 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 94 ha suitable habitat (i.e., Category 1 and 2). Avoids undisturbed areas affected by the corridor. More important effects predicted around Lake St. Joseph (regionally important calving/nursery area). 0 locations within 500 m of the footprint; 3,227 locations from 13 collared individuals within 10 km of the footprint.
Moose	Habitat availability	<ul style="list-style-type: none"> Direct loss of 1,290 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 1,054 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 1,042 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance Corridor centerline is predicted to intersect 120 moose home ranges <ul style="list-style-type: none"> 147 km of the corridor centerline is within 500 m of existing disturbance (48.4% of total corridor length) 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance Corridor centerline is predicted to intersect 115 moose home ranges <ul style="list-style-type: none"> 216 km of the corridor centerline is within 500 m of existing disturbance (73.7% of total corridor length) 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance Corridor centerline is predicted to intersect 115 moose home ranges <ul style="list-style-type: none"> 257 km of the corridor centerline is within 500 m of existing disturbance (87.7% of total corridor length)
	Survival and reproduction	Small increase in predation risk after implementation of impact management measures.	Small increase in predation risk after implementation of impact management measures.	Small increase in predation risk after implementation of impact management measures.

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Wolverine	Habitat availability	<ul style="list-style-type: none"> Direct loss of 13,750 ha of high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 7,713 ha of high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 4,454 ha of high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. Slight increase in linear disturbance density from 0.42 km/km² to 0.43 km/km². 147 km of the corridor centerline is within 500 m of disturbance (48.4% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. No increase in linear disturbance density. 216 km of the corridor centerline is within 500 m of disturbance (73.7% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. No increase in linear disturbance density. 257 km of the corridor centerline is within 500 m of disturbance (87.7% of total corridor length).
	Survival and reproduction	2.2% habitat loss in each of 12 female home ranges or 1.4% habitat loss in each of seven male home ranges.	1.3% habitat loss in each of 11 female home ranges or 0.8% habitat loss in each of seven male home ranges.	0.7% habitat loss in each of 11 female home ranges or 0.4% habitat loss in each of seven male home ranges.
Little brown myotis	Habitat availability	<ul style="list-style-type: none"> Smallest amount of direct loss of potential bat maternity and hibernacula habitat, based on the field habitat assessment. Smallest amount of direct loss of potential maternity habitat based on the general habitat model. No avoidance of hibernacula by bats due to sensory disturbance by adhering to setbacks. 	<ul style="list-style-type: none"> Medium amount of direct loss of potential bat maternity and hibernacula habitat, based on the field habitat assessment. Largest amount of direct loss of potential maternity habitat based on the general habitat model. No avoidance of hibernacula by bats due to sensory disturbance by adhering to setbacks. 	<ul style="list-style-type: none"> Largest amount of direct loss of potential bat maternity and hibernacula habitat, based on the field habitat assessment. Medium amount of direct loss of potential maternity habitat based on the general habitat model. No avoidance of hibernacula by bats due to sensory disturbance by adhering to setbacks.
	Habitat distribution	<ul style="list-style-type: none"> Slight shift in the locations of maternity roosts due to removal of 3.7 km² of suitable maternity habitat that was identified within the mapped portion of the corridor during the field assessment. No change to the distribution of hibernacula. 	<ul style="list-style-type: none"> Slight shift in the locations of maternity roosts due to removal of 3.4 km² of suitable maternity habitat that was identified within the mapped portion of the corridor during the field assessment. No change to the distribution of hibernacula. 	<ul style="list-style-type: none"> Shift in the locations of maternity roosts due to removal of 9.9 km² of suitable maternity habitat that was identified within the mapped portion of the corridor during the field assessment. No change to the distribution of hibernacula.
	Survival and reproduction	n/a	n/a	n/a
Horned grebe	<ul style="list-style-type: none"> Habitat availability; Habitat distribution; and Survival and reproduction. 	Negligible magnitude	Negligible magnitude	Negligible magnitude
Bald eagle	Habitat availability	<ul style="list-style-type: none"> Direct loss of 236 ha of moderate to high suitability bald eagle habitat in the LSA and RSA. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 167 ha of moderate to high suitability bald eagle habitat in the LSA and RSA. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 152 ha of moderate to high suitability bald eagle habitat in the LSA and RSA. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 147 km of the corridor centerline is within 500 m of disturbance (48.4% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 216 km of the corridor centerline is within 500 m of disturbance (73.7% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 257 km of the corridor centerline is within 500 m of disturbance (87.7% of total corridor length).
	Survival and reproduction	<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 LSA. Reduced survival due to collisions with electrical lines. 	<ul style="list-style-type: none"> No reduction in predicted abundance compared to Baseline Characterization. Possible reduction in productivity of home ranges overlapping the LSA. Reduced survival due to collisions with electrical lines. 	<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 LSA. Reduced survival due to collisions with electrical lines.

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Canada warbler	Habitat availability	<ul style="list-style-type: none"> Direct loss of 637 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 608 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 596 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 147 km of the corridor centerline is within 500 m of existing disturbance (48.4% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 216 km of the corridor centerline is within 500 m of disturbance (73.7% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 257 km of the corridor centerline is within 500 m of disturbance (87.7% of total corridor length).
	Survival and reproduction	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by five individuals relative to Baseline Characterization. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by six individuals relative to Baseline Characterization. Small increase in nest parasitism. 	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. Predicted abundance reduced by six individuals relative to Baseline Characterization. Small increase in nest parasitism.
Eastern whip-poor-will	Habitat availability	<ul style="list-style-type: none"> Direct loss of 372 ha. Reduced quality of nesting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 244 ha. Reduced quality of nesting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 250 ha. Reduced quality of nesting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	Slight shifts in territory sizes or locations due to increased human disturbance	Slight shifts in territory sizes or locations due to increased human disturbance	Slight shifts in territory sizes or locations due to increased human disturbance
	Survival and reproduction	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. No reduction in predicted abundance relative to the Baseline Characterization. 	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. No reduction in predicted abundance relative to the Baseline Characterization. 	<ul style="list-style-type: none"> Small reduction in productivity from habitat loss and sensory disturbance. No reduction in predicted abundance relative to the Baseline Characterization.
Common nighthawk	Habitat availability	<ul style="list-style-type: none"> Direct loss of 372 ha. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 244 ha. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 253 ha. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	Slight shifts in territory sizes or locations due to increased human disturbance	Slight shifts in territory sizes or locations due to increased human disturbance	Slight shifts in territory sizes or locations due to increased human disturbance
	Survival and reproduction	<ul style="list-style-type: none"> No reduction in predicted abundance. Possible reduction in productivity of home ranges overlapping the LSA. 	<ul style="list-style-type: none"> No reduction in predicted abundance Possible reduction in productivity of home ranges overlapping the LSA 	<ul style="list-style-type: none"> No reduction in predicted abundance Possible reduction in productivity of home ranges overlapping the LSA

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Olive-sided flycatcher	Habitat availability	<ul style="list-style-type: none"> Direct loss of 461 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 545 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation. 	<ul style="list-style-type: none"> Direct loss of 523 ha of moderate to high suitability habitat. Reduced quality of habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.
	Habitat distribution	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 147 km of the corridor centerline is within 500 m of existing disturbance (48.4% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 216 km of the corridor centerline is within 500 m of disturbance (73.7% of total corridor length). 	<ul style="list-style-type: none"> Slight shifts in territory sizes or locations due to increased human disturbance. 257 km of the corridor centerline is within 500 m of disturbance (87.7% of total corridor length).
	Survival and reproduction	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance. Predicted abundance reduced by five individuals, relative to Baseline Characterization. 	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance. Predicted abundance reduced by five individuals, relative to Baseline Characterization. 	<ul style="list-style-type: none"> Small decrease in reproductive success and survival from habitat loss and sensory disturbance. Predicted abundance reduced by five individuals, relative to Baseline Characterization.
Labour market	<ul style="list-style-type: none"> Employment; and Training opportunities. 	Low positive magnitude	Low positive magnitude	Low positive magnitude
Regional economy	<ul style="list-style-type: none"> Business contracting opportunities; and Business revenues. 	Low to moderate positive magnitude	Low to moderate positive magnitude	Low to moderate positive magnitude
Government finances	<ul style="list-style-type: none"> Local/regional government expenditures; and Government taxation revenues. 	Low positive magnitude	Low positive magnitude	Low positive magnitude
Housing and temporary accommodation	<ul style="list-style-type: none"> Population change; Housing demand; and Housing supply. 	Low magnitude	Low magnitude	Low magnitude
Services and infrastructure	<ul style="list-style-type: none"> Population change; Service and infrastructure demand; and Services and infrastructure capacity. 	Negligible magnitude	Negligible magnitude	Negligible predicted net effects.
Community wellbeing	<ul style="list-style-type: none"> Nuisance; and Public safety. 	Nuisance Noise – Low magnitude for construction Public safety - Negligible	Nuisance Noise – Low magnitude for construction Public safety - negligible	Nuisance Noise – Low magnitude for construction Public safety - negligible
Parks and protected areas	<ul style="list-style-type: none"> Land use quantity; Land use quality (due to changes in environmental conditions); and Natural, cultural and recreational values 	Negligible magnitude	Negligible magnitude	Negligible magnitude
Commercial industry land and resource use	<ul style="list-style-type: none"> Land use quantity; Resource availability. 	Negligible magnitude for all uses and indicators, except for forestry resource availability, which is low magnitude	Negligible magnitude for all uses and indicators, except for forestry resource availability, which is low magnitude	Negligible magnitude for all uses and indicators, except for forestry resource availability, which is low magnitude

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Outdoor tourism and recreational land and resource use	<ul style="list-style-type: none"> ■ Land use quantity; ■ Land use quality (due to changes in environmental conditions); and ■ Hunting, trapping, and fishing harvest levels (due to changes in resource availability). 	Negligible magnitude for all indicators, except for land use quantity, which is moderate magnitude	Negligible magnitude for all indicators, except for land use quantity, which is moderate magnitude	Negligible magnitude for all indicators, except for land use quantity, which is moderate magnitude
Archaeological resources	<ul style="list-style-type: none"> ■ Number, type and location of known archaeological resources; ■ Area of archaeological potential; and ■ Area of marine archaeological potential. 	Negligible magnitude	Negligible magnitude	Negligible magnitude
Heritage Resources	Number, type and location of identified and potential built heritage resources and cultural heritage landscapes	Negligible magnitude	Negligible magnitude	Negligible magnitude
Visual Aesthetics	Visibility of the Project	Low magnitude	Low magnitude	Low magnitude
	Visual contrast of the Project relative to the existing landscape	Low magnitude	Low magnitude	Low magnitude
Human health	<ul style="list-style-type: none"> ■ Changes in environmental quality, including surface water, groundwater and air quality, and specifically chemical concentrations in these media that could affect human health. ■ Changes in noise levels. 	<ul style="list-style-type: none"> ■ Negligible magnitude for air quality ■ Low magnitude for noise levels 	<ul style="list-style-type: none"> ■ Negligible magnitude for air quality ■ Low magnitude for noise levels 	<ul style="list-style-type: none"> ■ Negligible magnitude for air quality ■ Low magnitude for noise levels

Table 13.1-3: Environmental Assessment Criteria and Indicator Magnitude Evaluation by Corridor

Criteria	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Aboriginal and Treaty Rights and Interests	<ul style="list-style-type: none"> ■ Quantitative changes in preferred harvested species. ■ Qualitative changes in, or restrictions on, preferred harvesting methods. ■ Quantity and quality of identified cultural use locations and access routes where use of or access to those locations is changed. ■ Qualitative changes in the experience of lands and resources for cultural purposes. 	<ul style="list-style-type: none"> ■ Negligible magnitude for Aboriginal communities that have been engaged, and TLRUS data and information has been received. These communities include Cat Lake First Nation, Slate Falls Nation, Eagle Lake First Nation, Lac Seul First Nation, Lac des Mille Lacs First Nation (LDMLFN) and Wabigoon Lake Ojibway First Nation. Data and information collected for the communities that have been engaged is determined to be sufficient to understand current traditional land and resource use and potential effects to Aboriginal and Treaty Rights. Spatial land use features, Aboriginal access routes and modes for engaged communities, and the availability of traditional land and resource use opportunities are also well understood. LDMLFN TLRU data and information was not within the Preliminary Proposed Corridor LSA; and was only identified in the corridor alternatives LSA. ■ Wataynikaneyap will continue to engage with Aboriginal communities as the EA process continues, and will consider and incorporate any further information received, as appropriate. 	<ul style="list-style-type: none"> ■ Negligible magnitude for Aboriginal communities that have been engaged, and TLRUS data and information has been received. These communities include Cat Lake First Nation, Slate Falls Nation, Eagle Lake First Nation, Lac Seul First Nation, Lac des Mille Lacs First Nation and Wabigoon Lake Ojibway First Nation. Data and information collected for these communities engaged is determined to be sufficient to understand current traditional land and resource use and potential effects to Aboriginal and Treaty Rights. Spatial land use features, Aboriginal access routes and modes for engaged communities, and the availability of traditional land and resource use opportunities are also well understood. Wataynikaneyap has received TLRU data and information from LDMLFN; and it is only located within the corridor alternatives LSA. ■ Wataynikaneyap will continue to engage with Aboriginal communities as the EA process continues, and will consider and incorporate any further information received, as appropriate. 	

Notes:

CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; ha = hectare; km = kilometres; km/km² = kilometre per square kilometre; L_{eq, day} = daytime equivalent noise level; L_{eq, 1 hour (day, night)} = one-hour equivalent noise level, day or night; LSA = local study area; m = metre; NO₂ = nitrogen dioxide; N₂O = nitrous oxide; PM₁₀ = Particulate Matter less than 10 microns; PM_{2.5} = Particulate Matter less than 2.5 microns; POR = Points of Reception; ROW = right-of-way; RSA = regional study area; SPM = suspended particulate matter; SO₂ = sulfur dioxide; % = percent. 1

13.1.2.2 Step 2 – Identify Cost and Constructability and Technical Criteria

Table 13.1-4 lists the identified cost and constructability and technical criteria, their indicators, and the potential effects they could have when used in the final corridor routing analysis.

Table 13.1-4: Evaluation Criteria, Indicators and Potential Effects of Cost and Constructability and Technical Criteria

Criterion	Indicator	Potential Effect
Cost and Constructability		
Route length	Length (km) of corridor.	Potential effect on cost and constructability of the Project, as well as land disturbance due to land clearing.
Access roads	Total length (km) of access roads/trails.	Potential effect on cost and constructability of the Project, as well as land disturbance due to land clearing.
Large watercourse crossings	Number of watercourse crossings with a span between 200 m and 400 m.	These crossings typically need to either be built during winter or require specialized construction techniques to cross water with the cabling and avoid riparian impacts. Potential effect on Project complexity and risk, cost and constructability of the Project and effects on waterbodies.
Very large watercourse crossings	Number of watercourse crossings with a span greater than 400 m and up to 600 m.	These crossings typically need to either be built during winter or require specialized construction techniques to cross water with the cabling. Potential effect on Project complexity and risk, cost and constructability of the Project and effects on waterbodies.
Infrastructure crossings	Number of highway crossings, power line crossings and railway crossings.	Infrastructure crossings typically require specific design considerations as well as an approval process with the infrastructure controlling entity, associated supporting documentation, and resulting conditions to accommodate. Potential effect on cost and constructability of the Project, as well as disturbance to traffic because of construction.

Table 13.1-4: Evaluation Criteria, Indicators and Potential Effects of Cost and Constructability and Technical Criteria

Criterion	Indicator	Potential Effect
Cost and Constructability		
Angle points	Number of angle points that are greater than 10 degrees.	Angle points typically require increased foundation capacity, guy wires, anchors, and potentially additional poles. Installation and design effort increases. Potential effect on cost and constructability of the Project.
Relative cost	Cost based on current design, construction and materials. Lowest cost for each area used as baseline.	Potential effect on cost and constructability of the Project.
First Nation Reserve land	Length (km) of First Nation Reserve land traversed by the 40-m-wide transmission line alignment ROW.	If construction occurs on First Nations Reserve lands, obtaining the associated easements and permits may affect Project schedule and cost,
Crown land	Percent of overall length (km) of Crown Land traversed by the 40-m-wide transmission line alignment ROW, including MNRF unpatented land, non-freehold dispositions and acquisitions within the ROW. It is noted that the First Nations entered into a treaty relationship with the Crown within the spirit and intent of Indigenous Peoples' understanding based on respect, friendship and mutuality. It is always understood that there would be sharing of lands and resources. Any references to Crown Land in the final corridor routing analysis are without prejudice to the positions of First Nations in relation to Treaty and Aboriginal Rights.	Potential effect on cost and constructability for acquiring Crown Land easements.
Private land	Area (ha) of private land, including mining claims, traversed by the 40-m-wide transmission line alignment ROW.	Potential effect on cost and constructability of acquiring private land parcels for the Project, including the potential scheduling and cost implications.

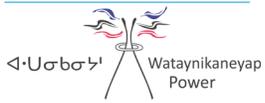
Table 13.1-4: Evaluation Criteria, Indicators and Potential Effects of Cost and Constructability and Technical Criteria

Criterion	Indicator	Potential Effect
Technical		
Pickle Lake short circuit level	Pickle Lake short circuit level	Line transfer capability. Measure of useable capacity. If a line has too high a level, it limits how much load you can put on it. A low level requires more control. The short circuit level is a measure of the strength of the transmission system. The higher the short circuit level, the stronger the system.
Length of Corridor close to E1C	Length of corridor close to E1C	The longer the section within 1 km of existing E1C, the higher the potential for a loss of both lines (forest fire risk).
Connection to Dryden TS	Connection to Dryden TS	Connection at substation may potentially be more reliable and some equipment may be used to support the new transmission facilities.
Potential new load customers	Potential new load customers along corridor	Increase transmission reliability and growth for industries and communities adjacent the transmission line alternatives.
Distance of tap from Dryden TS	Distance of tap from Dryden TS	Shorter distance means better switching reliability, maintenance and restoration, as operators are present at Dryden. Potential for greater voltage stability.
Waterpower potential within 30 km	Waterpower potential within 30 km	Amount of generation capacity that could potentially link into the circuit.

Notes:

IESO = Independent Electricity System Operators; ha = hectare; km = kilometre; m = metre; MVA = Megavolt Ampere; MW = megawatt; ROW = right-of-way; TS = transformer station.

Table 13.1-5 provides a summary of the cost and constructability and technical criteria and indicators by corridor. Blue highlighted cell indicates the preferred corridor by criterion.



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Table 13.1-5: Cost and Constructability and Technical Criteria and Indicators by Corridor

Criteria	Indicator	Appreciable Difference ^(a)	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Cost and Constructability					
Route length	Length (km) of corridor.	5 km	303 km	293 km	293 km
Access roads	Total length (km) of access roads/trails.	5 km	Total: 343.3 km New: 85.6 km Existing: 257.7 km	Total: 180.1 km New: 32.0 km Existing: 148.1 km	Total: 157.8 km New: 14.9 km Existing: 142.9 km
Large watercourse crossings	Number of watercourse crossings with a span between 200 m and 400 m.	One crossing	4	13	13
Very large watercourse crossings	Number of watercourse crossings with a span greater than 400 m and up to 600 m.	One crossing	1	3	2
Infrastructure crossings	Number of highway crossings, power line crossings and railway crossings.	Five crossings	51	47	56
Angle points	Number of angle points that are greater than 10 degrees.	One angle point	25	45	50
Relative cost	Cost based on current design, construction and materials. Lowest cost for each area used as baseline.	5%	\$211 M	\$216 M	\$211
First Nation Reserve land	Length (km) of First Nation Reserve land traversed by the 40-m-wide transmission line alignment ROW.	5 km	0	0	17.7 km
Crown land	Percent of overall length (km) of Crown Land traversed by the 40-m-wide transmission line alignment ROW, including MNRF unpatented land, non-freehold dispositions and acquisitions within the ROW. It is noted that the First Nations entered into a treaty relationship with the Crown within the spirit and intent of Indigenous Peoples' understanding based on respect, friendship and mutuality. It is always understood that there would be sharing of lands and resources. Any references to Crown Land in the final corridor routing analysis are without prejudice to the positions of First Nations in relation to Treaty and Aboriginal Rights.	10%	99.7%	98.4%	90.8 %
Private land	Area (ha) of private land, including mining claims, traversed by the 40-m-wide transmission line alignment ROW.	5 ha	3.6 ha	18.6 ha	36.8 ha
Technical					
Pickle Lake short circuit level	Pickle Lake short circuit level	10 MVA	282 MVA	285 MVA	285 MVA
Length of Corridor close to E1C	Length of corridor close to E1C	20 km	33	0	0
Connection to Dryden TS	Connection to Dryden TS	n/a	N	N	N
Potential new load customers	Potential new load customers along corridor	One customer	2	0	0
Distance of tap from Dryden TS	Distance of tap from Dryden TS	20 km	40 km	90 km	90 km
Waterpower potential within 30 km	Waterpower potential within 30 km	10 MW	42.7 MW	40.7 MW	44.7 MW

Notes:

a) The difference considered to be appreciable is the difference \geq the appreciable difference value between two corridor options that would be considered noticeable for the criterion.

ha = hectare; km = kilometre; M = million dollars; m = metres; MVA = mega-volt ampere; MW = megawatt; n/a = not applicable.



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13.1.2.3 Step 3 – Assign Criteria Numerical Ranking Value

The ranking used for the criteria is similar to that used in the screening level corridor routing analysis included in the Amended ToR and is presented in Table 13.1-6.

Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
Effects Assessment Criteria (maximum criteria rank score is 73)		
Air quality	1	This criterion is assigned a ranking of 1 because effects from the Project to air quality will be mostly restricted to the construction stage.
Greenhouse gases (GHG)	2	This criterion is assigned a ranking of 2 because potential effects from the Project to GHGs will be mostly restricted to the construction stage. Phase 1 is also required to be constructed and operated for <i>Phase 2 Connecting 17 Remote First Nation Communities</i> , which will have high potential benefits with respect to the reduction in GHG emissions from the elimination and/or decreased use of diesel generators at the Aboriginal communities.
Noise	1	This criterion is assigned a ranking of 1 because effects from the Project to noise will be mostly restricted to the construction stage.
Surface water	1	This criterion is assigned a ranking of 1 because the proposed Project is not likely to have measurable effects on surface water with the implementation of appropriate impact management (e.g., sediment and erosion control) and best management practices, and the proposed Project will span large and very large waterbodies with no likely in-water works (e.g., transmission pole foundations).
Groundwater	2	This criterion is assigned a ranking of 2 due to the potential effects to water supplies, and because of concerns raised by Aboriginal participants and stakeholders during engagement on the Draft ToR on the potential effects of the proposed Project on water supplies and/or drinking water.
Brook Trout, Lake Trout, Walleye, Lake Sturgeon	1	These criteria are assigned a ranking of 1 because the proposed transmission line will span watercourses and waterbodies and any temporary or permanent in-water works will be designed to minimize potential effects to fish and fish habitat.
Upland ecosystems	2	This criterion is assigned a ranking of 2 due to the potential effects to this ecosystem during construction and operation of the proposed Project. It is also ranked as a 2 based on Aboriginal community use of vegetation associated with this ecosystem.
Riparian ecosystems	2	This criterion is assigned a ranking of 2 due to the potential effects to this ecosystem during construction and operation of the proposed Project. It is also ranked as a 2 based on Aboriginal community use of vegetation associated with this ecosystem.

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Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
Wetlands	2	This criterion is assigned a ranking of 2 due to the potential effects to wetland areas during construction of the proposed Project. It is also ranked as a 2 based on Aboriginal participants and stakeholder interest in the effects of the proposed Project on wetlands as identified during engagement on the Draft ToR.
Forest-dwelling woodland caribou (presented by range)	3	This criterion is assigned a ranking of 3 because woodland caribou is listed as 'Threatened' under the <i>Endangered Species Act</i> (ESA), Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and the Species at Risk Act (SARA). The Project's potential for effects of altering woodland caribou habitat. Woodland caribou and other SAR is a concern raised by the Ministry of Natural Resources and Forestry and Aboriginal communities during review of the ToR.
Moose	2	This criterion is assigned a ranking of 2 because increase in moose density could negatively affect woodland caribou populations by increasing carnivore density.
Wolverine	3	This criterion is assigned a ranking of 3 because wolverine is listed as 'Threatened' provincially under the ESA and as 'Special Concern' by the COSEWIC.
Little brown myotis	3	This criterion is assigned a ranking of 3 because little brown myotis is listed as 'Endangered' provincially under the ESA and federally under the SARA.
Horned grebe	2	This criterion is assigned a ranking of 2 because horned grebe is listed as 'Special Concern' by COSEWIC.
Other federal or provincial Species at Risk, including: <ul style="list-style-type: none"> ■ Bald eagle ■ Canada warbler ■ Eastern whip-poor-will ■ Common nighthawk ■ Olive-sided flycatcher 	3	These criteria are assigned a ranking of 3 because these species are of conservation concern provincially under the ESA and federally under the SARA.
Labour market	2	This criterion is assigned a ranking of 2 because of the potential benefits to the labour market from the Project.
Regional economy	2	This criterion is assigned a ranking of 2 because of the potential benefits to the regional economy from the Project.
Government finances	2	This criterion is assigned a ranking of 2 because of the potential benefits to Government finances from the Project.

Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
Housing and temporary accommodation	1	This criterion is assigned a ranking of 1 because housing for construction will be self-sufficient and located in temporary construction camps along the corridors, not in municipalities.
Services and infrastructure	1	This criterion is assigned a ranking of 1 because the potential effects on these services from the Project will likely be minimal and primarily only during construction.
Community wellbeing	1	This criterion is assigned a ranking of 1 because potential effects on wellbeing from the Project will likely be minimal and primarily only during construction.
Parks and protected areas	3	This criterion is assigned a ranking of 3 because of the potential effects if the proposed Project were to be located within a Provincial Park (e.g., visual disturbance for users), and because of concerns raised by Aboriginal participants and stakeholders during engagement on the Draft ToR. This criterion is also has socio-economic importance to local residents, tourists, businesses (including outdoor recreation and tourism service providers), communities and government.
Commercial industry land and resource use	3	This criterion is assigned a ranking of 3 because they have socio-economic importance to the local residents, businesses, communities and government.
Outdoor tourism and recreational land and resource use	2	This criterion is assigned a ranking of 2 because they have socio-economic importance to the local residents, tourists, businesses (including outdoor recreation and tourism service providers), communities and government.
Archaeological resources	1	This criterion is assigned a ranking of 1 because with the impact management measures implemented during construction of the proposed Project, the Project is not anticipated to affect archaeological resources.
Built heritage and cultural heritage landscapes	1	This criterion is assigned a ranking of 1 because with the impact management measures implemented during construction of the proposed Project, the Project is not anticipated to affect built heritage.
Landscape and visual resources	2	This criterion is assigned a ranking of 2 because landscape and visual resources are important to the identification of community character and to community well-being.
Human health	3	This criterion was assigned a ranking of 3 because the health of individuals is important to the well-being of families and communities.
Aboriginal and Treaty Rights and Interests (as identified through engagement, Treaties, and other methods)	3	This criterion was assigned a ranking of 3 because Aboriginal and Treaty Rights and Interests and current use of lands and resources for cultural purposes (e.g., fishing, hunting, trapping, agriculture, horticulture and use of plants) are important for Aboriginal communities and individuals to provide sustenance.

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Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
<i>Cost and Constructability (maximum criteria rank score is 16)</i>		
Route length	1	This criterion is assigned a ranking of 1 since some consideration for route length is already reflected in the Relative Cost criterion. However, this estimate of the route length is preliminary only due to stage in Project design, and a greater route length increases the potential construction and schedule risk due to a greater Project scope and footprint.
Access roads	1	This criterion is assigned a ranking of 1 since some consideration for road access is already reflected in the Relative Cost criterion. However, this estimate of access road length is preliminary only due to stage in Project design, and a lack of road access can result in additional construction and schedule risks.
Large water crossings	1	This criterion is assigned a ranking of 1 since some consideration for large watercourse crossings is already reflected in the Relative Cost criterion. However, this estimate of the number of large water crossings is preliminary only, and large watercourse crossings have the potential for greater construction challenges, impact management requirements, and schedule risk.
Very large water crossings	2	This criterion is assigned a ranking of 2 since some consideration for very large watercourse crossings is already reflected in the Relative Cost criterion. However, this estimate of the number of very large water crossings is preliminary only, and very large watercourse crossings have the potential for substantial construction challenges, specific engineering, impact management requirements and schedule risk. Very large watercourse crossings require large steel structures, , specifically designed foundations, on-site geotechnical drilling, multi-level and multi-directional guy wires and anchors, and specialized construction equipment, resulting in a greater implementation risk.
Infrastructure crossings	1	This criterion is assigned a ranking of 1 since some consideration for infrastructure crossings is already reflected in the Relative Cost criterion. However, this estimate of the number of infrastructure crossings is preliminary only, and infrastructure crossings have the potential for construction challenges, impact management requirements (such as construction timing and methodology constraints, use of taller of poles and/or crossing location constraints, specifically engineered grounding configuration, specific engineering detail for approvals, etc) and schedule risk.
Angle points	1	This criterion is assigned a ranking of 1 since some consideration for angle points is already reflected in the Relative Cost criterion. However, this estimate of the number of angle points is preliminary only, and angle points greater than 10 degrees require three-pole structures and have the potential for greater construction challenges, (increased foundation strength requirements, multi-level guy wires and anchors), impact management requirements (larger footprint), and schedule risk.

Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
Relative cost	3	This criterion is assigned a ranking of 3 because it is the criterion that ultimately reflects a preliminary basic cost estimate based on the preceding factors. Relative cost is important since higher costs can make the Project unfeasible, all costs need to be defended to the Ontario Energy Board, and rate-base concern with electricity pricing is extremely high in Ontario.
First Nation Reserve land	2	This criterion is assigned a ranking of 2 since some consideration for First Nation Reserve land is already reflected in the Relative Cost criterion. However, this estimate is preliminary only, and crossing Reserve land has the potential for substantial construction challenges (e.g., major infrastructure proximity to generally remote dwellings, historical sensitivity to development of First Nations Reserve lands), impact management requirements (e.g., timing restrictions, traffic and safety management, security, community liaising, management of worker interaction with community), and schedule risk.
Crown land	2	This criterion is assigned a ranking of 2 because crossing Crown land has the potential for substantial construction challenges, impact management requirements and schedule risk.
Private land	2	This criterion is assigned a ranking of 2 since some consideration for private land is already reflected in the Relative Cost criterion. However, this estimate is preliminary only, and crossing private land has the potential for substantial construction challenges (e.g., likelihood of expropriation required, uncertain access), impact management requirements (additional stakeholders add complexity, disruption of 3 rd party commercial operation considerations, variable land use) and schedule risk.

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Table 13.1-6: Evaluation Criteria Ranking and Rationale

Evaluation Criterion	Rank	Ranking Rationale
Technical (maximum criteria rank score is 11)		
Pickle Lake short circuit level	3	This criterion is assigned a ranking of 3 since a higher short circuit level allows more power capacity to be transferred on the transmission line. Additional capacity is one of the key drives for the Project. If the short circuit capacity is low then the transmission line transfer capacity is reduced thereby limiting opportunities to serve loads and support economic growth, and ultimately deliver the main technical function of the Project.
Length of corridor close to E1C	2	This criterion is assigned a ranking of 2. The existing E1C line is susceptible to outages due to extreme weather and forest fires. If a section of the new transmission is parallel to the existing E1C line, then the new circuit may also be susceptible to the same outages causes. This risk may be mitigated by a wider corridor, use of steel poles, or active vegetation management.
Connection to Dryden TS	1	This criterion is assigned a ranking of 1. Connecting at an existing transformer station may potentially have advantages. The Project does not require any new transformation but rather line taps, breakers and Protection and Control equipment. Some of the Protection and Control equipment is embedded in an existing station, however it is unclear whether this equipment can be used or if additional expansion of the transformation station would be required.
Potential new load customers	2	This criterion is assigned a ranking of 2 because economic growth is facilitated if the new transmission line is located in an area of known population growth and resource development activity. Proximity to a robust grid connection is a major factor in siting decisions by resource development companies.
Distance of tap from Dryden TS	1	This criterion is assigned a ranking of 1 since it was assumed the proximity to a transformer station could provide additional voltage support and operational benefits.
Waterpower potential within 30 km	2	This criterion is assigned a ranking of 2 based on an inventory of waterpower potential within 30 km. Waterpower development is an important economic activity, especially for Aboriginal communities and Aboriginal businesses. A nearby robust grid connection point is a major factor in determining the feasibility and ultimate size (MW capacity) of a waterpower development. In addition, waterpower could provide increased load supply potential and voltage stability.

Notes:

COSEWIC = Committee on the Status of Endangered Wildlife in Canada; ESA = *Endangered Species Act*; GHG = greenhouse gases; km = kilometre; MW = megawatt; ToR = Terms of Reference; TS = transformer station.

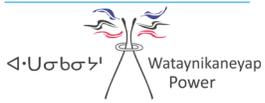
Category weightings are identified in Table 13.1-2 above.

13.1.2.4 Step 4 – Apply Numerical Ranking Value to Each Criteria (Criteria Score) and Step 5 – Calculate Weighted Category Using Category Weighting and Criteria Indicator Numerical Rankings

In Step 4, the numerical rank was applied to each criterion based on the results of the environmental assessment and cost, constructability, and technical assessment. This is referred to as the criteria score and is assigned to the corridor with the least potential for effect.

A category weighting was applied to each of the environmental assessment, cost and constructability, and technical categories. The rationale for each category weighting was based on the relative magnitude of each category that contributes to the feasibility and potential effects of the proposed Project, as well as input received from Aboriginal participants and stakeholders during engagement. Based on this rationale, the cost and constructability category is weighted 30%, the technical category is weighted 20%, and the environmental assessment category is weighted 50%.

The results of Step 4 and 5 of the final corridor routing analysis are presented in Table 13.1-7 and discussed in detail in the subsections below.



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Table 13.1-7: Final Corridor Routing Analysis

Corridors	Environmental Assessment (50%)																														Total criteria scores	Maximum possible score	Total Environmental Assessment (max 50%)		
	Air quality	Greenhouse gases (GHG)	Noise	Surface water	Groundwater	Brook Trout, Lake Trout, Mudpuppy, Lake Sturgeon	Upland ecosystems	Riparian ecosystems	Wetlands	Woodland caribou Churchill Range	Woodland caribou Brabant Range	Woodland caribou Kinloch Range	Moose	Wolverine	Little brown myotis	Horned grebe	Bald eagle	Canada warbler	Eastern whip-poor-will	Common nighthawk	Olive-sided flycatcher	Labour market	Regional economy	Government finances	Housing and temporary accommodation	Services and infrastructure	Community wellbeing	Parks and protected areas	Commercial industry land and resources	Outdoor tourism and recreational land and resources				Archaeological resources	Built heritage and cultural heritage
Preliminary Proposed Corridor																															49	73	33.6%		
Criteria score (0, 1, 2, or 3)	1	2	1	1	2	1	0	0	0	3	3	0	0	0	3	2	0	0	0	3	2	2	2	2	1	1	1	3	3	2	1	1	2	3	3
Corridor Alternative Around Mishkeegogamang																															43	73	29.5%		
Criteria score (0, 1, 2, or 3)	1	2	1	1	2	1	0	0	0	0	0	0	0	0	2	0	0	3	3	0	2	2	2	1	1	1	3	3	2	1	1	2	3	3	
Corridor Alternative Through Mishkeegogamang																															57	73	39.0%		
Criteria score (0, 1, 2, or 3)	1	2	1	1	2	1	2	2	2	0	0	3	2	3	0	2	3	3	0	0	0	2	2	2	1	1	1	3	3	2	1	1	2	3	3

Cost and Constructability (30%)													Technical (20%)						Total Corridor Score			
Route length	Access roads	Large water crossings	Very large water crossings	Infrastructure crossings	Angle points	Relative cost	First Nation Reserve land	Crown Land	Private Land	Total criteria scores	Maximum possible score	Total Cost and Constructability (max 30%)	Pickle Lake short circuit level	Length of corridor close to E1C	Connection to Dryden TS	Potential new load customers	Distance of tap from Dryden TS	Waterpower potential within 30 km		Total criteria scores	Maximum possible score	Total Technical (max 20%)
0	0	1	2	1	1	3	2	2	2	14	16	26.3%	3	0	1	2	1	2	9	11	16.4%	76.2%
1	0	0	0	1	0	3	2	2	0	9	16	16.9%	3	2	1	0	0	2	8	11	14.5%	60.9%
1	1	0	0	0	0	3	0	2	0	7	16	13.1%	3	2	1	0	0	2	8	11	14.5%	66.7%



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ENVIRONMENTAL CRITERIA

Air Quality

The environmental assessment for the air quality criterion is presented in Section 5.3: Air Quality. For all corridors, negligible net effects were predicted for changes to air quality indicators, given the effective implementation of impact management measures.

All three corridors will generate criteria air contaminants (CACs) and fugitive dust emissions from construction activities that can result in changes in ambient concentrations. The implementation of impact management measures (Table 5.3-13), including an Air Quality Management Plan, are expected to limit negative effects on air quality. Overall, negligible net effects for all three corridors are predicted on ambient concentrations of Suspended Particulate Matter (SPM), Particulate Matter less than 10 microns (PM₁₀), Particulate Matter less than 2.5 microns (PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂). There is no predicted difference in the magnitude of net effects on air quality among the corridors; therefore, all three corridors were assigned a criteria score of 1 (i.e., the criteria rank).

Greenhouse Gases (GHG)

The environmental assessment for the GHG criterion is presented in Section 5.4: Climate Change. Negligible net effects were identified for greenhouse gases as a result of the Project (Section 5.4.8).

All three corridors will generate greenhouse gas emissions from construction activities (representing the largest annual greenhouse gas emissions for the Project) that could potentially result in changes in federal and provincial annual greenhouse gas emissions. The implementation of impact management measures (Table 5.4-3) are expected to limit the generation of greenhouse gas emissions. Overall, all three corridors are expected to have a negligible net effect on the criteria based on the comparison between the estimated annual emission to both the federal and provincial greenhouse gas emissions. Provincial and federal greenhouse gas emission levels are anticipated to be maintained. There is no predicted difference in the magnitude of the net effects on greenhouse gasses among the corridors; therefore, all three corridors were assigned a criteria score of 2 (i.e., the criteria rank).

Noise

The environmental assessment for the noise criterion is presented in Section 5.5: Noise. The assessment of Net Effects on noise during the operation and maintenance stage considered the following scenarios:

- operation and maintenance of the ROW, fencing, transmission line, conductors, tower foundations, and permanent access roads;
- maintenance and operation of the transformer station and connection facility; and
- electricity transmission.

With the implementation of the impact management measures identified in Section 5.5.7, no net effects for all corridors are predicted during the operation and maintenance stage for all corridors.

The construction stage can result in noise emissions from construction activities that could increase existing noise levels at potential Points of Reception (PORs) above NPC-300 sound level limits. The magnitude at a given POR is dependent on the distance to the Project activities. Existing noise levels at given PORs can be expected to increase, on occasion, due to construction activities when occurring nearby, but construction noise will be temporary in nature and limited in durations. The increased noise levels are expected to be limited to the noise local study area (LSA) and short-term in duration at a given POR to the entire construction schedule.

During the construction stage, all corridors are predicted to result in a magnitude rating of low, moderate and high, depending on distance of the Points of Reception (POR) from the construction activities. Therefore, all corridors were assigned the criteria score of 1.

Surface Water

The environmental assessment for the surface water criterion is presented in Section 5.1: Surface Water. Negligible net effects were predicted for changes to surface water indicators, given the effective implementation of impact management measures.

All corridors will potentially affect surface water quality and quantity during construction and operation from short-term water taking, wash off of organic debris from work sites, changes in land cover, short-term water diversion and changes in reach and cross-section hydraulics at waterbody crossings. Wataynikaneyap will implement appropriate impact management measures (Table 5.1-12) to limit negative effects to surface quantity and quality. In general, the Project is expected to result in negligible net effects on surface quality and quantity related to the potential effects listed above. There is no predicted difference in the magnitude of the net effects on surface quality and quantity among the corridors, which is predicted to be negligible magnitude; therefore, all three corridors were assigned a criteria score of 1 (i.e., the criteria rank).

Groundwater

The environmental assessment for the groundwater criterion is presented in Section 5.2: Groundwater. Potential blasting for the Project will not have a significant effect on the quantity of groundwater for human and wildlife consumption and is anticipated to be suitable for continued use per Baseline Characterization conditions. The Project is not anticipated to have an effect on the overall functionality of groundwater resources as they currently exist. Therefore, the net effects of the Project on groundwater are predicted to be not significant.

Changes to groundwater quantity from blasting during construction may occur in all three corridors. Wataynikaneyap with their contractor(s) will prepare and implement a Blast Management Plan that describes specific measures to be implemented if blasting is required, such as the 50-m setback from all private wells. The predicted net effect of blasting on groundwater quantity for all three corridors is negative because, even with the use of appropriate impact management measures, blasting may create and extend fractures in the bedrock around each blast hole, thereby increasing permeability and potentially decreasing local groundwater levels. These effects are predicted to be moderate in magnitude, for all three corridors, because blasting is anticipated to increase permeability up to 4.5 to 9 metres (m) from the blast hole and local in geographic extent because the groundwater levels may be lowered adjacent to the blast hole.

There is no predicted difference in the magnitude of the net effects on groundwater quantity and quality among the corridors; Negligible magnitude is predicted for all net effects; except for blasting, which is predicted to have a low magnitude; therefore, all corridors were assigned a criteria score of 2 (i.e., the criteria rank).

Fish and Fish Habitat – Brook Trout, Lake Trout, Walleye, Lake Sturgeon

The environmental assessment for fish and fish habitat is presented in Section 6.2: Fish and Fish Habitat. Negligible net effects were predicted for changes to fish habitat quantity, habitat quality, abundance, and/or distribution, given the effective implementation of impact management measures. The absolute (i.e., area) and relative (e.g., % change) change to habitat quantity were considered negligible. As a result, there would be no significant effects on the maintenance of self-sustaining and ecologically effective populations of the criteria species (Brook Trout, Lake Trout, Walleye, and Lake Sturgeon). With the implementation the impact management measures identified in Section 6.2.7, negligible net effects are predicted which would not be significant.

All corridors have the potential to affect fish and fish habitat related to Brook Trout, Lake Trout, and Walleye. Changes to fish and fish habitat for these species relate to physical alteration of waterbodies, release of sediment during road construction at waterbody crossings and from land disturbance, placement of waterbody crossing structures, changes to hydrology or groundwater and changes to public access to recreational fishing areas. Wataynikaneyap will implement appropriate impact management measures (Table 6.2-13) to limit negative² net effects to fish and fish habitat. There is no predicted difference in the magnitude of the net effects on fish and fish habitat for all criteria species among the corridors, which is negligible magnitude; therefore, all corridors were assigned a criteria score of 1 (i.e., the criteria rank).

Upland Ecosystems

The environmental assessment for the upland ecosystems criterion is in Section 6.1: Vegetation and Wetlands. All three corridors are also predicted to contribute to small negative changes in upland ecosystem availability, distribution, and composition. There is a predicted loss of 1,277 hectares (ha), 1,162 ha, and 1,135 ha of riparian ecosystems for the Preliminary Proposed Corridor and corridor alternatives around and through Mishkeegogamang respectively.

Rare vegetation communities were also considered in the upland ecosystem assessment. The rare bur oak vegetation community can be found as part of the NW30 ecosite and is included in upland ecosystems. This ecosite was not identified in the regional study areas (RSAs) for the corridor alternatives. There is no loss of the NW30 ecosite within the Preliminary Proposed Corridor LSA.

The Corridor Alternative Through Mishkeegogamang is going to remove the least amount of upland ecosystems so it was assigned a criteria score of 2 (i.e., the criteria rank).

² Negative is used as the term to describe undesirable effects in the EA. The MOU used adverse effects. These terms will be considered equivalent.

Riparian Ecosystems

The environmental assessment for the riparian ecosystems criterion is in Section 6.1: Vegetation and Wetlands. All three corridors are predicted to contribute to small negative changes in riparian ecosystem availability, distribution, and composition. With effective implementation of impact management measures, minimal changes in the remaining riparian habitat condition are predicted. The Preliminary Proposed Corridor and corridor alternatives are not predicted to change the self-sustaining and ecologically effective status of riparian ecosystems identified for the Baseline Characterization. There is a predicted loss of 66 ha, 56 ha, and 53 ha of riparian ecosystems for the Preliminary Proposed Corridor and corridor alternatives around and through Mishkeegogamang respectively.

The Corridor Alternative Through Mishkeegogamang is going to remove the least amount of riparian ecosystems so it was assigned a criteria score of 2 (i.e., the criteria rank).

Wetlands

The environmental assessment for the wetlands criterion is in Section 6.1: Vegetation and Wetlands. All three corridors are also predicted to cause small losses to wetlands. Changes are expected to be within the existing resilience limits and adaptive capacity of wetland ecosystems. For example, the incremental loss to the available wetland ecosystems for the Preliminary Proposed Corridor, and corridor alternatives around and through Mishkeegogamang is calculated to be 56 ha, 43 ha, and 41 ha, respectively. Wetlands may withstand large losses (i.e., up to 60% of historical wetlands) before their functional role on the landscape is compromised (Environment Canada 2013). In addition, the Preliminary Proposed Corridor and corridor alternatives have been designed to cause little to no disturbance to the least common land cover class (i.e., Fen-open).

The vegetation and wetlands assessment also considered effects to rare vegetation communities. For the Preliminary Proposed Corridor there is a predicted loss of 111 ha to the NW36 ecosite in the LSA. For the Corridor Alternative Around Mishkeegogamang there is a predicted loss of 95 ha to the NW36 ecosite in the LSA. For the Corridor Alternative Through Mishkeegogamang there is a predicted loss of 82 ha to NW36 ecosite in the LSA.

The Corridor Alternative Through Mishkeegogamang is going to remove the least amount of wetland ecosystems so it was assigned a criteria score of 2 (i.e., the criteria rank).

Forest-Dwelling Woodland Caribou

The environmental assessment for the woodland caribou criterion is in Section 6.3: Wildlife. To address the complexity of evaluating differences in effects to woodland caribou habitat for each corridor, this analysis has considered individual effects to each caribou range. Individual caribou ranges were selected as criteria to incorporate the ecological context of each range. There are differences in range condition and population demographics across the three ranges, suggesting that the populations have differing capacities to absorb change. The federal recovery strategy for boreal woodland caribou indicates that the range is the appropriate unit of analysis for identifying critical habitat and other requirements for self-sustaining local populations of caribou (Environment Canada 2012). Furthermore, the federal population and distribution objectives for caribou are linked to the spatial scale of individual ranges (Environment Canada 2012). Similarly, Ontario's *Range Management Policy in Support of Woodland Caribou Conservation and Recovery* outlines a management approach focused on the scale of individual ranges to support the policy's objective "To maintain or move towards a sufficient range condition in all caribou ranges in Ontario" (MNRF 2014).

The Preliminary Proposed Corridor has a lesser effect to habitat connectivity in the Churchill Range (i.e., local scale effects compared to potential regional scale effects for the corridor alternatives). The number of collared individuals within 10 km of the footprints is similar across all three corridors (ranging from 20 to 24 individuals). Given the difference in lengths of the three corridors within the Churchill Range (i.e., the Preliminary Proposed Corridor is approximately twice the length of the corridor alternatives), the similarity in number of collared caribou occurring within 10 km of the footprints provides evidence of the importance of the northeastern portion of the Churchill Range, which is crossed by the corridor alternatives. However, the number of collar points within 10 km of the Preliminary Proposed Corridor is larger, indicating a high level of use. For all these reasons, Preliminary Proposed Corridor was assigned the best score (of 3) for the Churchill Caribou Range.

The Preliminary Proposed Corridor does not traverse – and as a consequence completely avoids - the Brightsand Range. The other corridors go through the Brightsand Range. As a consequence, the Preliminary Proposed Corridor was assigned the best criteria score for the Brightsand Range (of 3).

The corridor alternatives around and through Mishkeegogamang have the least effect to the Kinloch Range with removal of 93 ha and 94 ha of suitable habitat respectively, compared to removal of 300 ha of suitable habitat by the Preliminary Proposed Corridor. Effects to nursery and winter use areas is less along the corridor alternatives around and through Mishkeegogamang than for the Preliminary Proposed Corridor. The Corridor Alternative Through Mishkeegogamang has the lower amount of indirect loss of nursery areas and winter use areas. Part of the nursery and winter use areas directly affected by the Preliminary Proposed Corridor overlap spatially, meaning that they support year-round use by caribou and are of relatively high importance. In addition, there is a high degree of documented caribou use within these areas: there are 32,126 caribou locations from 33 collared individuals within 10 km of the Preliminary Proposed Corridor. Effects to habitat connectivity were similar across all three corridors. Therefore, the corridor alternatives were both assigned the best criteria score of 3 for the Kinloch Range.

Table 13.1-8: Magnitude Results for Woodland Caribou by Range and Corridor

Caribou Range	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang	Preferred Corridor
Churchill Range	Habitat availability	<ul style="list-style-type: none"> 2 ha nursery areas; one nursery area affected 106 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 450 ha nursery area and 2,664 ha winter use area. Six nursery areas and two winter use areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.3%. 	<ul style="list-style-type: none"> 165 ha nursery areas; two nursery areas affected. 2 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 4,333 ha nursery area and 55 ha winter use area. Two nursery areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.3%. 	<ul style="list-style-type: none"> 126 ha nursery areas; two nursery areas affected. 2 ha winter use areas; one winter use area affected. Indirect habitat loss (within 500 m of footprint): 2,655 ha nursery area and 55 ha winter use area. Two nursery areas located within 10 km of footprint. Increase in proportion of range disturbed from 44.1% to 44.2%. 	Preliminary proposed corridor for direct and indirect effects to nursery areas and winter use areas
	Habitat distribution	<ul style="list-style-type: none"> Three potential travel corridors affected, including two that are fragmented at Baseline Characterization and one that is relatively undisturbed. Incremental change in linear feature density in the range, from 0.46 km/km² to 0.47 km/km². 	<ul style="list-style-type: none"> Two potential travel corridors affected, both are bisected by Hwy. 599 but few other disturbances in area. Includes undisturbed areas in north portion of range. No measurable change in linear feature density. 	<ul style="list-style-type: none"> Two potential travel corridors affected, both are bisected by Hwy 599 but few other disturbances are present in area. Avoids undisturbed areas in north portion of range affected by the corridor. No measurable change in linear feature density. 	<ul style="list-style-type: none"> Preliminary proposed corridor for connectivity beyond the range Corridor alternatives for connectivity within the range
	Survival and reproduction	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 164 ha suitable habitat (i.e., Category 1 and 2) More important effects predicted around Bamaji Lake/Blackstone Lake area (undisturbed); forest harvesting in other parts of the range have altered landscape conditions at Baseline Characterization. 114 caribou locations from 8 collared individuals within 500 m of the footprint; 8,633 locations from 23 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 314 ha suitable habitat (i.e., Category 1 and 2) More important effects predicted around Lake St. Joseph and DeLesseps Lake area (regionally important calving/nursery areas, little/no forest harvest disturbance at Baseline Characterization). 91 caribou locations from 9 collared individuals within 500 m of the footprint; 3,588 locations from 24 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 275 ha suitable habitat (i.e., Category 1 and 2). Avoids undisturbed areas in north portion of range affected by the corridor. More important effects predicted around Lake St. Joseph and DeLesseps Lake area (regionally important calving/nursery areas, little/no forest harvest disturbance at Baseline Characterization). 72 caribou locations from 7 collared individuals within 500 m of the footprint; 2,533 locations from 20 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Preliminary proposed corridor for incremental change in predation risk All three corridors have similar number of collared individuals within 10 km
Churchill Range criteria score		3	0	0	

Table 13.1-8: Magnitude Results for Woodland Caribou by Range and Corridor

Caribou Range	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang	Preferred Corridor
Brightsand Range	Habitat availability	Corridor does not intersect range	<ul style="list-style-type: none"> 7 ha nursery areas (including 7 ha overlap with winter use areas); one nursery area affected 20 ha winter use areas (including 7 ha overlap with nursery areas); one winter use area affected Indirect habitat loss (within 500 m of footprint): 295 ha nursery area and 442 ha winter use area (132 ha overlap). Six nursery areas and three winter use areas located within 10 km of footprint. No change in proportion of range disturbed, remains at 45.4%. 	<ul style="list-style-type: none"> 55 ha nursery areas (including 7 ha overlap with winter use areas); one nursery area affected 20 ha winter use areas (including 7 ha overlap with nursery areas); one winter use area affected Indirect habitat loss (within 500 m of footprint): 1,824 ha nursery area and 442 ha winter use area (132 ha overlap). Six nursery areas and three winter use areas located within 10 km of footprint. No change in proportion of range disturbed, remains at 45.4%. 	Preliminary proposed corridor
	Habitat distribution	Corridor does not intersect range	<ul style="list-style-type: none"> Three potential travel corridors affected, including two fragmented corridors and two corridors with considerable fragmentation. No measurable change in linear feature density. 	<ul style="list-style-type: none"> Three potential travel corridors affected, including two fragmented corridors and one corridor with considerable fragmentation. No measurable change in linear feature density. 	Preliminary proposed corridor
	Survival and reproduction	Corridor does not intersect range	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 126 ha suitable habitat (i.e., Category 1 and 2), with limited effects due to low occupancy. More important effects expected around Savant Lake (regionally important calving/nursery area). 7 caribou locations from 3 collared individuals within 500 m of the footprint; 3,445 locations from 16 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 173 ha suitable habitat (i.e., Category 1 and 2), with limited effects due to low occupancy. More important effects expected around Savant Lake (regionally important calving/nursery area). 8 caribou locations from 4 collared individuals within 500 m of the footprint; 3,809 locations from 19 collared individuals within 10 km of the footprint. 	Preliminary proposed corridor
Brightsand Range criteria score		3	0	0	■

Table 13.1-8: Magnitude Results for Woodland Caribou by Range and Corridor

Caribou Range	Indicator	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang	Preferred Corridor
Kinloch Range	Habitat availability	<ul style="list-style-type: none"> 207 ha nursery areas (incl. 61 ha overlap with winter use areas); one known nursery area affected 84 ha winter use areas (incl. 61 ha overlap with nursery areas; one winter use area affected) Indirect habitat loss (within 500 m of footprint): 6,313 ha nursery area and 1,945 ha winter use area (with 1,388 ha overlap). Two nursery areas and one winter use area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.2%. 	<ul style="list-style-type: none"> 67 ha nursery areas; one known nursery area affected 0 ha winter use areas; zero winter use area affected Indirect habitat loss (within 500 m of footprint): 2,454 ha nursery area and 0 ha winter use area. One nursery area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.1%. 	<ul style="list-style-type: none"> 51 ha nursery areas; one known nursery area affected 0 ha winter use areas; zero winter use area affected Indirect habitat loss (within 500 m of footprint): 1,236 ha nursery area and 0 ha winter use area. One nursery area located within 10 km of footprint. Increase in proportion of range disturbed from 18.9% to 19.0%. 	<ul style="list-style-type: none"> Corridor alternative through Mishkeegogamang for direct effects on nursery areas Corridor alternatives around and through Mishkeegogamang for direct effects on winter use areas Corridor alternative through Mishkeegogamang for indirect effects on nursery and winter use areas
	Habitat distribution	<ul style="list-style-type: none"> One potential travel corridor affected. Corridor has little fragmentation at Baseline Characterization. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km². 	<ul style="list-style-type: none"> One potential travel corridor affected. Southern extent of corridor has little fragmentation. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km². 	<ul style="list-style-type: none"> One potential travel corridor affected, route avoids effects to undisturbed portion. Incremental change in linear feature density in the range, from 0.03 km/km² to 0.04 km/km². 	No measurable difference in effects to connectivity within or beyond the range
	Survival and reproduction	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 300 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted in areas that support both calving and nursery function. 2,179 caribou locations from 16 collared individuals within 500 m of the footprint; 32,126 locations from 33 collared individuals within 10 km of the footprint 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 93 ha suitable habitat (i.e., Category 1 and 2). More important effects predicted around Lake St. Joseph (regionally important calving/nursery area, undisturbed). 50 caribou locations from 3 collared individuals within 500 m of the footprint; 4,352 locations from 19 collared individuals within 10 km of the footprint. 	<ul style="list-style-type: none"> Incremental increase in predation risk associated with removal of 94 ha suitable habitat (i.e., Category 1 and 2). Avoids undisturbed areas affected by the corridor. More important effects predicted around Lake St. Joseph (regionally important calving/nursery area). 0 locations within 500 m of the footprint; 3,227 locations from 13 collared individuals within 10 km of the footprint. 	Corridor alternative through Mishkeegogamang for potential effects to collared individuals
Kinloch Range criteria score		0	0	3	

ha = hectares; km = kilometre; km² = square kilometre; % = percent.



**ENVIRONMENTAL ASSESSMENT REPORT FOR THE PHASE 1
NEW TRANSMISSION LINE TO PICKLE LAKE PROJECT
SECTION 13.0: FINAL CORRIDOR ROUTING ANALYSIS AND
CONCLUSION**

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Moose

The environmental assessment for the moose criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 1,290 ha of moderate to high suitability moose habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 1,054 ha of moderate to high suitability moose habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 1,042 ha of moderate to high suitability moose habitat.

The Corridor Alternative Through Mishkeegogamang was predicted to remove the least amount of moderate to high moose habitat and was assigned the criteria score of 2.

Wolverine

The environmental assessment for the wolverine criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 13,750 ha of high suitability wolverine habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 7,713 ha of high suitability wolverine habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 4,454 ha of high suitability wolverine habitat.

The Corridor Alternative Through Mishkeegogamang was predicted to remove the smallest area of high wolverine habitat and was assigned the criteria score of 3.

Little Brown Myotis

The environmental assessment for the little brown myotis criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in the smallest area of direct loss of potential maternity roost habitat of 112 ha. The Corridor Alternative Around Mishkeegogamang is predicted to result in the largest area of direct loss of potential maternity roost habitat of 134 ha. The Corridor Alternative Through Mishkeegogamang is predicted to result in 124 ha of direct loss of maternity roost habitat.

The Preliminary Proposed Corridor was predicted to remove the smallest area of maternity habitat and was assigned the criteria score of 3.

Horned Grebe

The environmental assessment for the horned grebe criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor or corridor alternatives are not expected to change the availability or distribution of habitat for horned grebe as the corridors will not negatively affect wetlands or waterbodies. Therefore, the Project is expected to result in negligible net effects on horned grebe. There is no predicted difference in the net effects on horned grebe among the three corridors. Therefore, all three corridors were assigned a criteria score of 2 (i.e., the criteria rank).

Bald Eagle

The environmental assessment for the bald eagle criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 236 ha of moderate to high suitability bald eagle habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 167 ha of moderate to high suitability bald eagle habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 152 ha of moderate to high suitability bald eagle habitat.

The Corridor Alternative Through Mishkeegogamang was predicted to remove the smallest area of bald eagle habitat and was assigned the criteria score of 3.

Canada Warbler

The environmental assessment for the Canada warbler criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 637 ha of moderate to high suitability Canada warbler habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 608 ha of moderate to high suitability Canada warbler habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 596 ha of moderate to high suitability Canada warbler habitat.

The Corridor Alternative Through Mishkeegogamang was predicted to remove the smallest area of moderate to high suitability Canada warbler habitat and was assigned the criteria score of 3.

Eastern Whip-poor-will

The environmental assessment for the Eastern whip-poor-will criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 372 ha of Eastern whip-poor-will habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 244 ha of Eastern whip-poor-will habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 250 ha of Eastern whip-poor-will habitat.

The Corridor Alternative Around Mishkeegogamang was predicted to remove the least amount of Eastern whippoorwill Habitat and was assigned the criteria score of 3.

Common Nighthawk

The environmental assessment for the common nighthawk criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 372 ha of common nighthawk habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 244 ha of common nighthawk habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 253 ha of common nighthawk habitat.

The Corridor Alternative Around Mishkeegogamang was predicted to remove the smallest area of common nighthawk habitat and was assigned the criteria score of 3.

Olive-sided Flycatcher

The environmental assessment for the olive-sided flycatcher criterion is in Section 6.3: Wildlife. The Preliminary Proposed Corridor is predicted to result in a direct loss of 461 ha of moderate to high suitability olive-sided flycatcher habitat. The Corridor Alternative Around Mishkeegogamang is predicted to result in a direct loss of 545 ha of moderate to high suitability olive-sided flycatcher habitat. The Corridor Alternative Through Mishkeegogamang is predicted to result in a direct loss of 523 ha of moderate to high suitability olive-sided flycatcher habitat.

The Preliminary Proposed Corridor was predicted to remove the smallest area of moderate to high suitability olive-sided flycatcher habitat and was assigned the criteria score of 3.

Labour Market

The assessment for the labour market criterion is in Section 7.3: Socio-economics. Over the course of the approximately 18 to 24-month construction period, the Project is expected to require 450-500 full time equivalent (FTEs) of direct employment (or annual average of 225-250 FTEs). The relatively small direct and indirect employment numbers generated through Project construction (with respect to overall labour force size in the labour market LSA and the expectation that a large proportion of the construction labour will be sourced from outside the labour market LSA) indicates that the Project will not negatively affect labour market balance in the labour market LSA. Approximately eight FTEs of employment annually will be required to operate and maintain the Project. The small amount of operational employment generated during operations will not negatively affect labour market balance in the labour market LSA.

The Project would support total employment income in the LSA of an estimated \$132.5 million annually (or \$198.75-\$265 million over the 18- to 24-month construction period). In the case of direct and indirect hiring from local LSA communities, direct, indirect and induced employment associated with construction of the Project would temporarily boost average wage and salary levels and total community employment income within these smaller communities. As such, a beneficial effect on employment income in the LSA communities is predicted during the construction stage.

A positive effect on training in the LSA is predicted during the construction stage. This is based on the experience with training on other Projects in the LSA the impact management providing for skills development and upgrading that would be obtained in association with construction stage employment or in anticipation of employment with the Project, and which would be incremental to existing conditions.

The Project is predicted to have a low positive magnitude on employment, income, training opportunities and skill development for all corridors; therefore, all corridors were assigned the criteria score of 2.

Regional Economy

The assessment for the labour market criterion is in Section 7.3: Socio-economics. Business opportunities and revenues are expected to be created in response to Project-related demand for and spending on goods and services. A portion of these opportunities and revenues could be provided by local and regional businesses. During the construction stage, local and regional procurement opportunities are expected to generally consist of short-term contracts with firms to provide construction services and products.

The Project will advertise all publicly available contracts, which will be open to all qualified businesses including local ventures and First Nations. For goods and services that may be sourced locally, the Project has committed to prioritising employment and procurement in Aboriginal communities.

Project operations would require a relatively small amount of spending on goods and services for its operations. The spending that would occur for business suppliers in the LSA would be mainly for general maintenance purposes. Any purchase of replacement equipment or materials would be primarily from supplies outside the immediate LSA.

The Project is predicted to have low to moderate positive magnitude on the regional economy for all corridors. Therefore, all corridors were assigned the criteria score of 2.

Government Finances

The assessment for the government finances criterion is in Section 7.3: Socio-economics. The economic activity associated with the Project construction (including that of contractors, suppliers and employees) is anticipated to positively contribute to government net revenues through income and other taxes. The small amount of taxes generated through employment income and goods and supplies used during Project operations would further contribute to government net revenues during operations.

Payments made to governments during the operation and maintenance stage are low positive magnitude for all corridors. Therefore, all corridors were assigned the criteria score of 2.

Housing and Temporary Accommodation

The assessment for the housing and temporary accommodation criterion is in Section 7.3: Socio-economics. Three temporary construction camps are planned for the Preliminary Proposed Corridor housing between 300 and 450 workers in total. The Project will require specialized contractors and suppliers from outside the region and some of these contractors and suppliers will require temporary accommodation. It is anticipated that during peak construction periods, the work camps along the Preliminary Proposed Corridor will be at capacity with the direct workforce and some contractors and suppliers will secure temporary accommodation in nearby communities (e.g., Sioux Lookout, Dryden, and Pickle Lake). An estimated 300-450 direct construction workers will potentially require housing in the temporary accommodation and rental housing LSA during peak construction, it is unlikely that all of the workers can be comfortably housed in LSA communities if peak construction falls during the peak tourism season.

Four temporary construction camps are planned for the corridor alternatives around and through Mishkeegogamang housing between 400 and 600 workers in total. As with the Preliminary Proposed Corridor temporary accommodation will be required for specialized contractors and suppliers from outside the region. An estimated 350 workers will potentially require housing in the temporary accommodation and rental housing LSA during peak construction, it is likely that all of the workers could be housed in the LSA even if peak construction falls during the peak tourism season.

The magnitude of the net effects to changes in rental housing and temporary accommodation availability and supply for all corridors is predicted to be low to moderate. Therefore, all corridors were assigned the criteria score of 1.

Services and Infrastructure

The assessment for the services and infrastructure criterion is in Section 7.3: Socio-economics. Project-induced in-migration during construction is not anticipated, and there would be no net effect on in-Project-induced migration and maintenance of availability and access to education services, non-emergency healthcare services, social services, recreational services, and water, waste and power supply and infrastructure.

Project use of and demand on emergency services is not expected to negatively affect service capacity or regional government expenditure outlays. A negligible net effect on maintenance of maintenance of solid and liquid waste infrastructure service availability and emergency and protective service availability and access is expected.

There are no predicted differences in the magnitude of net effects to services and infrastructure for all corridors, which is negligible magnitude. Therefore, all corridors were assigned the criteria score of 1.

Community Wellbeing

The assessment for the services and infrastructure criterion is in Section 7.3: Socio-economics. The potential Project nuisance effects on community wellbeing were assessed taking into consideration the changes to air quality from fugitive dust emissions and noise during Project construction and potential for these changes to result in nuisance effects on sensitive human receptors. Nuisance effects associated with air quality are expected to be negligible, and would not affect community or individual wellbeing.

Two sensitive receptors were identified within the Preliminary Proposed Corridor community wellbeing noise LSA. The closest potentially affected active sensitive socio-economic receptor in the residential area in Central Patricia would conservatively be 175 m from the transmission line alignment ROW, where change in %HA are predicted to be 14.9% to 20.7% which is above the 6.5% threshold established by Health Canada.

Six sensitive human receptors were identified within the community wellbeing noise LSA for the Corridor Alternative Around Mishkeegogamang. These include residential areas, public school, and community centre within 1,500 m of either the transmission line, connection facility/transformer station, construction camp, or new access roads. The closest potentially affected active receptor in the residential area in Central Patricia would conservatively be 175 m from the transmission line alignment ROW, where change in %HA is predicted to be 14.9% to 20.7% which is above the Health Canada threshold for impact management measures.

Seven sensitive human receptors were identified within the community wellbeing LSA for the Corridor Alternative Through Mishkeegogamang. These include residential areas, public school, and community centre within 1,500 m of either the transmission line alignment ROW, connection facility/transformer station, construction camp, or new access roads.

The magnitude of the net effects to changes in community wellbeing associated with nuisance noise from is predicted to be low (operation) and moderate (construction), negligible magnitude for nuisance from air quality and negligible magnitude for public safety for all three corridors. Therefore, each corridor was assigned the criteria score of 1.

Parks and Protected Areas

The assessment for the parks and protected areas criterion is in Section 7.4: Non-Aboriginal Land and Resource Use. The parks and protected areas LSA for the Preliminary Proposed Corridor overlaps:

- Two provincial parks; however, access will primarily be restricted in the Project footprint, where only 2 ha and 1 ha of each park's identified boundary will be affected.
- Three conservation reserves; however, none of these conservation reserves are transected by the Project footprint, where the greatest access restrictions will exist.
- The Cat Lake Slate Falls Community-based Land Use Plan Dedicated Protected Area (DPA); however, access will primarily be restricted in the Project footprint, where only 0.01% of the DPA will be disturbed.

The parks and protected areas LSA for the Corridor Alternative Around Mishkeegogamang overlaps:

- Three provincial parks; however, access will primarily be restricted in the Project footprint, where only 3 ha, 19 ha and 38 ha of each park's land mass will be disturbed.
- One conservation reserve; however, the conservation reserve is not transected by the Project footprint, where the greatest access restrictions will exist.

The parks and protected areas LSA for the Corridor Alternative Through Mishkeegogamang overlaps:

- Four provincial parks; however, access will primarily be restricted in the Project footprint, where only three provincial parks will be disturbed, for 3 ha, 19 ha and 32 ha of each park's total land mass.
- One conservation reserve; however, this conservation reserve is not transected by the Project footprint, where greatest access restrictions will exist.

Although access to and use of these parks and protected areas may face temporary restrictions during the construction stage (i.e., an 18 to 24-month timeframe), these disturbances to access, parklands and associated roads will not be continuously in effect for the entire construction stage, as construction will be completed using a staged approach. Temporary access restrictions will only be put in place for a few weeks to a few months in segmented areas within the larger construction schedule, as Project construction progresses along the ROW. Access and use of the ROW will generally be permitted throughout operation and maintenance of the ROW, except for intermittent occasions during maintenance activities for safety reasons.

There are no predicted differences in the magnitude of net effects to parks and protected areas for all corridors, which is negligible magnitude. Therefore, all corridors were assigned the criteria score of 3.

Commercial Industry Land and Resource Use

The assessment for the commercial industry land and resource use criterion is in Section 7.4: Non-Aboriginal Land and Resource Use. Disturbances and reductions in access would be experienced at the local level, predominantly where forestry, mining, aggregate and agricultural activities overlap the Project footprint. The forest industry will experience a direct decrease in production forest area as a result of the Project footprint, and indirectly, a decrease in the availability of forest resources for the industry as a result of effects to the disturbance footprints in caribou ranges. Wataynikaneyap will meet all regulatory requirements and address potential effects to commercial industrial users (including tenure holders) by engaging, negotiating, and developing mutually beneficial agreements and Project implementation approaches that consider potential effects, including compensation, where relevant.

There are no predicted differences in the magnitude of net effects to commercial industry land and resource use for all corridors, which are negligible to low magnitude. Therefore, all corridors were assigned the criterion score of 3.

Outdoor Tourism and Recreational Land and Resource Use

The assessment for the outdoor tourism and recreational land and resource use criterion is in Section 7.4: Non-Aboriginal Land and Resource Use. Net effects on the land use quantity indicator under the outdoor tourism and recreation criterion are deemed to be both negative and positive in direction. As identified during the Aboriginal and stakeholder engagement Program, primary data collection interviews with outdoor tourism and recreation land users, and through other Project experience in Northern Ontario, these net effects may be considered to be positive or negative depending on the land user in question. Hunters, anglers and trappers are likely to perceive new, additional land base access to areas of the outdoor tourism and recreation LSA as beneficial, creating new opportunities and areas to participate in hunting, trapping and fishing activities. However, guided outfitters, who operate commercially and have benefited from exclusive or limited access to certain areas (i.e., creating visitor experiences based on values of remoteness and wilderness) are likely to see the expansion of access to have a negative effect their activities.

The net effect on land use quantity is predicted to be moderate magnitude for all corridors. Therefore, all corridors were assigned the criteria score of 2.

Archaeological Resources

The assessment for the archaeological resources criterion is in Section 7.1: Archaeological Resources. All three corridors could potentially result in the loss of, or damage to, an archaeological resource during construction. Wataynikaneyap will complete Stage 2 archaeological assessments (and Stage 3 and 4 if required) to determine whether archaeological sites are present within LSA and to recommend appropriate impact management measures should archaeological resources be identified. Completing the Stage 2 (and Stage 3 and 4, if required) will result in effective protection of archaeological resources that could be affected by the Project. Further, in the event that archaeological resources not previously identified are encountered unexpectedly during construction, Wataynikaneyap will implement a Chance Find Procedure. There is no net effect for all corridors on the number, type and location of known archaeological resources, and the area of potential archaeological resources with the implementation of the impact management measures, including completing the State 2 (and Stage 3 and 4, if required) and the Chance Find Procedure. Therefore, all corridors were assigned a criteria score of 1.

Heritage Resources

The assessment for heritage resources (built heritage and cultural heritage landscapes) criterion is in Section 7.2: Heritage Resources. Heritage resources in all three corridors could potentially be altered by vibration from construction equipment during construction, clearing and grubbing of vegetation along the transmission line alignment ROW, creating access roads and trails, and other construction activities. As currently mapped, none of the potential heritage resources are within 60 m of the Project footprint and at potential risk for vibration effects, but the exact locations of these resources have not been field verified and may be inaccurate. Once the preferred corridor is selected, field survey, research, and evaluation as part of a Cultural Heritage Evaluation Report (CHER) will be completed to determine if any of the identified potential cultural heritage resources are of cultural heritage value or interest according to the criteria prescribed in Ontario Regulation 9/06 and if other, not previously documented cultural heritage resources are present in the LSA. If resources of cultural heritage value or interest are identified, the CHER may recommend site-specific Heritage Impact Assessments (HIAs), which will recommend conservation measures to ensure all cultural heritage resources potentially affected by the Project are protected. With effective implementation of the impact management measures summarized in Table 7.2-8, the magnitude of net effect of the Project on potential cultural heritage resources is predicted to be negligible for all corridors. Therefore, all corridors were assigned a criteria score of 1 (i.e., the criteria rank).

Visual Aesthetics

The assessment for visual aesthetics (landscape and visual resources) criterion is in Section 7.5: Visual Aesthetics. All three corridors will negatively affect visual quality through the visibility of built structures, vegetation clearing and grading during construction and the maintenance of vegetation disturbances during operation. For most viewing locations along the Preliminary Proposed Corridor and corridor alternatives the visual effect would be of a low magnitude as visibility of Project components would be partially or fully obstructed. Therefore, all corridors were assigned a criteria score of 2 (i.e., the criteria rank).

Human Health

The effects assessment for human health is in Section 7.6: Human Health. All three corridors could potentially affect human health through the release of CAC and fugitive dust emissions and noise emissions. The implementation of impact management measures (Table 5.3-13), including an Air Quality Management Plan, are expected to limit negative effects on air quality. Negligible net effects for all three corridors are predicted on changes in air quality and specifically ambient concentrations of TSP, PM₁₀, PM_{2.5}, CO, NO_x (as NO₂) and SO₂ that could affect human health.

Predicted changes to noise levels as a result of the Project were provided by the noise discipline. The Project-related changes in noise levels for construction activities are predicted to be greater than the Health Canada criterion for change in %HA of 6.5% at distances of up to 300 m from the Project. The magnitude of the effect on human health from a change in noise levels was predicted to be the low for each corridor.

There is no predicted difference in the magnitude of the net effects on air and noise emissions related to human health all corridors; therefore, all three corridors were assigned a criteria score of 3 (i.e., the criteria rank).

Aboriginal and Treaty Rights and Interests

The effects assessment for Aboriginal and Treaty Rights and Interests is in Section 8.0. The assessment in this section was focussed on potential effects of the Project on Aboriginal and Treaty Rights on Group 1 Aboriginal communities, which include communities identified in the Memorandum of Understanding with the Crown that was signed by Wataynikaneyap in November 23, 2016. Cat Lake First Nation and Eabametoong First Nation were also considered because of the joint community-based land use plans that are completed and underway respectively. Lac des Mille Lac First Nation stated that they have traditional land and resource use sites that may be affected by the Project, and they provided some information on their use. Wabauskang First Nation also stated that they may be affected by the Project. The effects assessment considered potential effects related to Rights activities, such as hunting, trapping, fishing, plant harvesting, spiritual, and sensitive cultural sites and changes in access that may affect these activities.

The communities that shared information for the TLRU included Cat Lake First Nation, Slate Falls Nation, Eagle Lake First Nation, Lac Seul First Nation, Wabauskang First Nation, Lac des Mille Lacs First Nation, Wabigoon Lake Ojibway First Nation and Eabametoong First Nation.

Consideration was given to effects on the preferred harvested species, changes in or restrictions on preferred harvesting methods, quantity and quality of cultural use locations and access routes and changes that may occur, and qualitative changes in the experience of land and resource use.

Site preparation, construction, operation and maintenance of the Project footprint could affect the criteria the access, locations and access routes and potentially alter land and resource use. However, changes in access were considered a benefit to some communities and individuals. Other potential effects can be managed through ongoing engagement with communities. Given the pattern of use, effects were considered not significant.

While potential effects to ongoing traditional land and resource use were not identified for the corridor alternatives; all corridors were assigned a criteria score of 3 to manage any potential effects that may be identified through ongoing engagement with communities that have not yet provided information that could be considered in the Aboriginal and Treaty Rights assessment.

Wataynikaneyap will continue to engage with Aboriginal communities as the EA process continues, and will consider and incorporate any further information received, as appropriate. Wataynikaneyap will continue to engage with Aboriginal communities as the EA process continues, and will consider and incorporate any further information received, as appropriate.

COST AND CONSTRUCTABILITY CRITERIA

Route Length

The route lengths for the Preliminary Proposed Corridor, and the corridor alternatives around and through Mishkeegogamang are 303 kilometres (km), 293 km, and 293 km respectively. The difference between these route lengths is less than 4% and was not considered to be a differentiating factor, therefore all three corridors were awarded the criteria score of 1.

Access Roads

The total access road lengths (existing, upgraded, and new) for the Preliminary Proposed Corridor, and the corridor alternatives around and through Mishkeegogamang are 343 km (85.6 km new), 180 km (32.0 km new), and 158 km (14.9 km new) respectively. The Corridor Alternative Through Mishkeegogamang has the shortest access road requirements according to the current Project design and was assigned the criteria score of 1 because it would have the least effect on cost and constructability of the Project based on the amount of access roads required, as well as the least disturbance to traffic from construction.

Large Water Crossings

A large waterbody crossing was considered to have a span between 200 m and 400 m based on bankfull width. The Preliminary Proposed Corridor has four large waterbody crossings and the corridor alternatives would each have 13. The Preliminary Proposed Corridor has the least number of large waterbody crossings and was assigned the criteria score of 1 because it would have the least effect to cost and constructability of the Project and effects on waterbodies; each alternative was assigned a 0.

Very Large Water Crossings

A very large waterbody crossing was considered to have a span over 400 m. The Preliminary Proposed Corridor crosses one very large waterbody, an unnamed lake/pond in the Otoskwin watershed (waterbody ID 1770.0-WC-P). The Corridor Alternative Around Mishkeegogamang crosses three very large waterbodies, two unnamed ponds or lakes in the Upper Albany – Cat watershed (waterbody ID 3180.0-WC-A, 3710.0-WC-AA) and Lake St. Joseph (3590.0-WC-AA). The Corridor Alternative Through Mishkeegogamang crosses two very large waterbodies, an unnamed pond/lake in the Upper Albany – Cat watershed (waterbody ID 3180.0-WC-A) and Eric Lake in the Upper Albany – Cat watershed (3250.0-WC-AT). The Preliminary Proposed Corridor has the least number of very large waterbody crossings with one, compared to the corridor alternatives around and through Mishkeegogamang which cross three and two respectively. Therefore, Preliminary Proposed Corridor was assigned the criteria score of 3.

Infrastructure Crossings

Infrastructure crossings include highways, rail lines, gas, and hydro-electric lines. The Preliminary Proposed Corridor will require six infrastructure crossings, the Corridor Alternative Around Mishkeegogamang will require 19, and the Corridor Alternative Through Mishkeegogamang will require 27. The appreciable difference between alternatives is five crossings. Therefore, the Preliminary Proposed Corridor and the Corridor Alternative Around Mishkeegogamang were considered equal and the most favourable resulting in a criteria score of 1. The Corridor Alternative Through Mishkeegogamang was considered the least favourable resulting in a criteria score of 0.

Angle Points

The Preliminary Proposed Corridor has 25 angle points that are greater than 10 degrees, the Corridor Alternative Around Mishkeegogamang has 50, and the Corridor Alternative Through Mishkeegogamang has 45. Angle points greater than 10 degrees require three-pole structures which result in larger local disturbance and have the potential for greater construction challenges, impact management measures, and schedule risk. The Preliminary Proposed Corridor has the least number of angle points and was assigned the criteria score of 1, the corridor alternatives were assigned 0.

Relative Cost

The relative cost for the Preliminary Proposed Corridor and corridor alternatives around and through Mishkeegogamang are \$221M, \$211M, and \$216M respectively. The difference between the relative costs for each corridor is less than 5% and was not considered to be a differentiating factor, therefore all three corridors were awarded the criteria score of 3.

Alignment that is located on First Nation Reserve Land

The Preliminary Proposed Corridor and the Corridor Alternative Around Mishkeegogamang will not be located on First Nation Reserve land. Approximately 17.7 km of the alignment for the Corridor Alternative Through Mishkeegogamang will be located on First Nation Land. Therefore, the Preliminary Proposed Corridor and the Corridor Alternative Around Mishkeegogamang were considered most favourable and were assigned a criteria score of 2. The Corridor Alternative Through Mishkeegogamang was assigned a criteria score of 0.

Crown Land

The alignments for the three corridors will consist of approximately 99.7%, 98.4%, and 90.8% of Crown land (or one, six, and nine Crown leases) for the Preliminary Proposed Corridor, the Corridor Alternative Around Mishkeegogamang, and the Corridor Alternative Through Mishkeegogamang, respectively. The appreciable difference between corridors is 1%. Therefore, the Preliminary Proposed Corridor was considered most favourable and assigned the criteria score of 2. The two alternatives were considered less favourable and were assigned the criteria score of 0.

Private Land

The Preliminary Proposed Corridor 40-m-wide transmission line alignment ROW will traverse approximately 3.6 ha of private land, including four private parcels. The Corridor Alternative Around Mishkeegogamang 40-m-wide transmission line alignment ROW will traverse approximately 18.6 ha of private land, including 19 private parcels and one full taking. The Corridor Alternative Through Mishkeegogamang 40-m-wide transmission line alignment ROW will traverse approximately 36.8 ha of private land, including nine private parcels and one full taking of a parcel of private land. The appreciable difference between corridors is 5 ha. Therefore, the Preliminary Proposed Corridor is considered most favourable and assigned the criteria score of 2. The corridor alternatives were considered less favourable and assigned a criteria score of 0.

TECHNICAL CRITERIA

Pickle Lake Short Circuit Level

Wataynikaneyap has not yet received the draft system impact assessment (SIA) report from Independent Electricity System Operator (IESO), which will indicate expected short circuit levels at Pickle Lake. As part of the application, the following parameters were provided:

- 230 kilovolt (kV) transmission line rated at 1164A (winter) and 912A (summer);
- 230kV bus at Pickle Lake TS rated at 1200A;
- 115kV bus at Pickle Lake TS rated at 2000A; and
- 230/115kV transformer at Pickle Lake TS rated at 250 Megavolt Ampere (MVA).

Without updated information the short circuit levels from the analysis in the ToR were used which were 282 MVA and 285 MVA for the Preliminary Proposed Corridor and corridor alternatives respectively. The appreciable difference is 10 MVA, therefore all three corridors were assigned the criteria score of 3.

Length of Corridor close to E1C

The Preliminary Proposed Corridor is close to the E1C line for approximately 33 km length. Neither of the corridor alternatives are near the E1C line. Proximity, within 1 km of the existing E1C line, has a higher potential for a loss of both lines from the risk of forest fire. The Preliminary Proposed Corridor was therefore not assigned the criteria score and the corridor alternatives were each assigned the criteria score of 2.

Connection to Dryden Transformer Station

As currently designed, the southern terminus of the Preliminary Proposed Corridor will be a new 230 kV tap (with associated switching facilities) along Hydro One Networks Inc.'s (HONI's) D26A 230 kV transmission line in the Dinorwic area. If the corridor alternatives are selected the tap will be located in the Ignace area. No connection to the Dryden TS is currently planned, therefore all three corridors were assigned the criteria score of 1.

Potential New Load Customers

For IESO and HONI purposes, other new load customers are outside the scope of the SIA or customer impact assessment (CIA) process, as they are evaluating only the requirements to interconnect and serve the remote Aboriginal communities to be served by the Phase 2 Project. However, HONI will evaluate in the CIA the impact on existing customers of upgrading the delivery capabilities to Pickle Lake. Additionally, IESO in its North of Dryden report notes the potential for serving new loads (e.g., mines) by increasing delivery capabilities to Pickle Lake.

As per the Preliminary Corridor Routing analysis in the approved Amended ToR, two potential new load customers were identified for the Preliminary Proposed Corridor; and no potential new load customers were identified for the corridor alternatives. Therefore, the Preliminary Proposed Corridor was assigned a criteria score of 2. The potential new load customers identified for the Preliminary Proposed Corridor are either industrial or municipal.

Distance of Tap from Dryden Transformer Station

It is expected that the new tap and Dinorwic sub-station for the Preliminary Proposed Corridor will be approximately 30 km from the Dryden TS and the corridor alternatives are approximately 90 km from the Dryden TS. Therefore, as this distance is greater than the appreciable difference of 40 km, the Preliminary Proposed Corridor was given a score of 1.

Waterpower Potential within 30 kilometres

The waterpower potential within 30 km for the Preliminary Proposed Corridor is 42.7 Megawatts (MW), for the Corridor Alternative Around Mishkeegogamang is 40.7 MW, and for the Corridor Alternative Through Mishkeegogamang is 44.7 MW. A difference of 10 MW is considered appreciable for waterpower potential within 30 km, therefore all three corridors were assigned the criteria score of 2.

13.1.2.5 Step 6 – Calculate and Compare Total Corridor Scores to Identify Preferred Corridor

Table 13.1-9 summarizes the scores for each category and total scores for the corridors.

Table 13.1-9: Category Scores by Corridor

Category	Preliminary Proposed Corridor	Corridor Alternative Around Mishkeegogamang	Corridor Alternative Through Mishkeegogamang
Environmental Assessment	33.6%	29.5%	39.0%
Cost and Constructability	26.3%	16.9%	13.1%
Technical	16.4%	14.5%	14.5%
Total	76.2%	60.9%	66.7%

Notes:

% = percent.

The Preliminary Proposed Corridor has scored the highest overall with 76.2% and there is approximately 9% difference between the category score for this corridor and the next highest scored corridor, the Corridor Alternative Through Mishkeegogamang.

13.2 Advantages and Disadvantages

This section presents a summary of the key advantages and disadvantages among the corridors. Owing to the number of indicators and the quantitative and qualitative nature of the effects assessment to woodland caribou, a summary of advantages and disadvantages to this SAR is also described in further detail below.

13.2.1 Summary

Table 13.2-1 summarizes the key advantages and disadvantages of the environmental assessment, cost and constructability and technical criteria and indicators. The Preliminary Proposed Corridor scored the highest with a score of 76.2%. The key advantages identified for the Preliminary Proposed Corridor resulting in the identification of the preferred corridor are as follows:

- The Preliminary Proposed Corridor is predicted to have the least effect to woodland caribou in the Churchill range, when considering the magnitude measures identified in the table below and discussed in more detail above under the environmental assessment criteria woodland caribou;
- The Preliminary Proposed Corridor does not cross the woodland caribou Brightsand range; and therefore does not potentially affect this range. Both corridor alternatives cross the Brightsand Range; with the Corridor Alternative Through Mishkeegogamang resulting in the highest amount of Category 1 habitat (nursery and winter use areas) and highest effect to predation risk in this range.
- Least amount of little brown myotis maternity roost habitat affected;
- Least amount of olive-sided flycatcher habitat affected;

- The Preliminary Proposed Corridor had the most advantages among the cost and constructability criteria, including:
 - Lowest number of large waterbody crossings;
 - Lowest number of very large waterbody crossings;
 - Lowest number of Infrastructure crossings;
 - Lowest number of angle points;
 - Does not cross First Nation Reserve land; and
 - Least amount of private land.

For the technical criteria, the Preliminary Proposed Corridor had the advantage for the potential new load customers (highest number) and distance of taps from Dryden TS. The remaining criteria within this category were equal among the corridors.

The Corridor Alternative Through Mishkeegogamang category score was second (66.7%); which is primarily because of its advantages among the environmental assessment criteria and indicators. However, this corridor had a number of disadvantages, primarily among the cost and constructability and technical criteria and indicators, including:

- Infrastructure crossings;
- Large waterbody crossings;
- Angle points;
- Crown land;
- First Nation Reserve land;
- Private land; and
- Distance of tap from Dryden TS.

The Corridor Alternative Around Mishkeegogamang has the lowest corridor score (60.9%). This corridor alternative had the lowest number of advantages among the environmental, cost and constructability and technical criteria and indicators.

13.2.2 Woodland Caribou

With respect to woodland caribou, there are three individual caribou ranges potentially affected by the Project, the Churchill, Brightsand and Kinloch ranges. Given the current condition of these ranges, the Churchill and Brightsand ranges are considered to be most sensitive to further change relative to the Kinloch Range. The Churchill and Brightsand ranges face a greater risk owing to the level of existing disturbances within the ranges but also greater pressure from future cumulative disturbances, such as climate change induced effects (e.g., fire) and ongoing forest harvesting and resource extraction projects.

The main advantage of the Preliminary Proposed Corridor is the minimization of direct and indirect effects to known functional habitat, particularly Category 1 habitat, in the Churchill and Brightsand ranges. This is important because the populations are currently in decline and available information suggests that low survival of calves is a key component of this population trend. Direct and indirect effects to caribou calving and nursery areas can therefore have disproportionately larger effects on these populations given that improved calf survival is a fundamental element for successful caribou recovery.

Nursery areas are however not all equivalent in terms of their relative importance to populations, and this is discussed in more detail in Section 6.3.8.2. Briefly, the one nursery area directly intersected by the Preliminary Proposed Corridor in the Churchill Range is considered of lower relative importance than the two nursery areas directly intersected by the corridor alternatives in the Churchill Range. The one nursery area along the Preliminary Proposed Corridor is associated with collar location points of one collared female, while the two nursery areas intersected along the corridor alternatives are recognized as regionally important and are part of a broad network of 30 overlapping nursery areas that span across the Churchill, Brightsand and Kinloch ranges (the full extent is associated with nursery use points from 64 females). The one nursery area directly intersected by the corridor alternatives in the Brightsand Range is associated with collar points of four females.

As discussed in Section 6.3, Project effects on caribou populations are likely to extend beyond the physical boundary of the Project footprint, which means that individuals in proximity to the Project could be negatively affected through sensory disturbances and indirect loss of habitat, if caribou avoid areas around the physical footprint. As previously described, the number of collared individuals within 10 km of the footprints is similar across all three corridors in the Churchill, varying from 20 individuals (Corridor Alternative Through Mishkeegogamang) to 24 individuals (Corridor Alternative Around Mishkeegogamang). Given the difference in lengths of the three corridors within the Churchill Range (i.e., the Preliminary Proposed Corridor is approximately twice the length of the corridor alternatives), the similarity in number of collared caribou occurring within 10 km of the footprints provides evidence of the importance of the northeastern portion of the Churchill Range, which would be crossed by the corridor alternatives. However, the number of collar points within 10 km of the Preliminary Proposed Corridor in the Churchill Range is larger, indicating a high level of use (Table 13.1-8). No individuals from the Brightsand Range are within 10 km of the Preliminary Proposed Corridor, while 16 and 19 collared individuals occur within 10 km of the corridor alternatives around and through Mishkeegogamang, respectively.

The main disadvantages of the Preliminary Proposed Corridor are that it directly and indirectly affects the largest spatial extent of high-use areas (Category 1 habitat) in the Kinloch Range.

For caribou management purposes, disturbances are calculated as the direct physical footprint of the disturbance feature plus a 500-m buffer around the footprint. The spatial arrangement of a linear disturbance, such as a transmission line, therefore results in a disproportionately larger disturbance than a footprint of the same area that is arranged as a square polygon. As described in Section 6.3, the proportion of overlap between the Project disturbance (i.e., including a 500-m buffer around the footprint) and existing disturbances varies across all three corridors:

- Preliminary Proposed Corridor: Churchill Range 86% (614 ha); Kinloch Range 33% (155 ha);
- Corridor Alternative Around Mishkeegogamang: Churchill Range 66% (220 ha); Brightsand Range 92% (429 ha); Kinloch Range 42% (91 ha); and
- Corridor Alternative Through Mishkeegogamang: Churchill Range 93% (257 ha); Brightsand Range 91% (469 ha); Kinloch Range 80% (170 ha).

Although Wataynikaneyap has endeavoured to align the corridors with existing disturbances, the Preliminary Proposed corridor and corridor alternatives vary in the amount of temporary disturbances that are overlapped. The overlap with temporary disturbance is most important within the Churchill Range, for the Preliminary Proposed Corridor. As a result, there is variation among the corridor footprints in the incremental contribution to the amount of existing permanent disturbance within each range (quantified as the footprint plus a 500 m around the footprint). Assuming the success of future decommissioning and restoration of existing temporary footprints (e.g., forestry access roads, harvested areas) that overlap with the corridor footprints, and the absence of future human and natural (e.g., fire) disturbance in proximity to the corridors, the contribution to new permanent disturbance in each caribou range would be as follows:

- Preliminary Proposed Corridor: Churchill Range 16,939 ha; Kinloch Range 11,254 ha;
- Corridor Alternative Around Mishkeegogamang: Churchill Range 3,733 ha; Brightsand Range 3,308 ha; Kinloch Range 5,017 ha; and
- Corridor Alternative Through Mishkeegogamang: Churchill Range 1,412 ha; Brightsand Range 3,577 ha; Kinloch Range 1,648 ha

Despite these differences, the three corridor alternatives do not differ markedly in their incremental contribution to the cumulative proportion of caribou range that is currently disturbed. The largest change occurs in the Kinloch Range for the Preliminary Proposed Corridor with an increase from 18.9% to 19.2%, followed by changes in the Churchill Range from 44.1% to 44.3% for the Preliminary Proposed Corridor (Table 13.1-8). However, the distinction between permanent and temporary disturbance is important because the introduction of new permanent disturbances in a caribou range affects the amount of future habitat that can be achieved within a range; permanent disturbances remain on the landscape in perpetuity while temporary disturbances are assumed to be restored in the future. Temporary disturbances therefore offer the possibility to return caribou habitat in the future, which then would reduce the total cumulative amount of disturbance within a given caribou range. The cumulative disturbance within a caribou range (i.e., percentage of a caribou range that is disturbed) is an important consideration because managing cumulative disturbance in caribou ranges is one of the three principles of Ontario's *Range Management Policy in Support of Woodland Caribou Conservation and Recovery*.

Although Project-induced disturbances will remain on the landscape permanently, the transmission line ROW is not expected to result in long-term fragmentation effects because caribou habitat in proximity to the Project is not expected to lose its function, and the ROW is not expected to create a barrier to caribou movement. These predictions are based on the documented permeability of transmission lines (following the construction period), the occurrence of overlapping high-use areas (winter use and nursery areas) around the E1C transmission line, and the documented permeability of the Vermilion Road to caribou in the Churchill Range (MNR 2017i). Fragmentation effects associated with the transmission line ROW are expected to be smaller than those associated with the Vermilion Road because there will be selective clearing and retention of shrubs and trees along parts of the ROW, and compatible vegetation communities will be allowed to return in cleared areas under the line, after construction. Further, as outlined in Section 9.3.1.17, preferred reclamation efforts on Crown Land are to return conifer dominated vegetation communities to be consistent with adjacent vegetation communities. In the Churchill Range in particular, the Preliminary Proposed Corridor limits effects to high suitability caribou habitats (Category 1 and 2 habitat) which are associated with documented caribou use and function. The addition of permanent disturbance is therefore expected to have a more important effect on achieving habitat management targets than on the caribou population.

Ontario manages the cumulative amount of disturbance in caribou range as part of the *Range Management Policy in Support of Woodland Caribou Conservation and Recovery*; however, the introduction of new permanent disturbance can also affect forest harvest plans. As described in Section 6.3, forest harvesting within caribou ranges is managed through Dynamic Caribou Habitat Schedules (DCHS), which enable forestry companies to plan the spatial-temporal arrangement of harvest in a manner that achieves long-term supply of caribou habitat on the landscape. As described in Section 6.3, the Preliminary Proposed Corridor intersects 14 DCHS polygons, and the corridor alternatives intersect 23 DCHS polygons. The introduction of permanent disturbance within these defined DCHS therefore affects the amount of future caribou habitat available within them, once overlapping temporary disturbances have been restored. In addition, the transmission line ROW can fragment delineated DCHS polygons, which can reduce the size of future intact habitat patches that could be achieved following successful recovery of the existing (and future) temporary disturbances. Owing to the greater overlap between existing temporary disturbances and the Preliminary Proposed Corridor, there is more potential for DCHS fragmentation along this alignment than for the corridor alternatives.

ENVIRONMENTAL ASSESSMENT REPORT FOR THE PHASE 1 NEW TRANSMISSION LINE TO PICKLE LAKE PROJECT

SECTION 13.0: FINAL CORRIDOR ROUTING ANALYSIS AND CONCLUSION

Table 13.2-1: Comparison of Advantages and Disadvantages for the Corridors

Corridor	Advantages	Disadvantages
Preliminary Proposed Corridor	<ul style="list-style-type: none"> ■ Least amount of caribou category 1 habitat (nursery and winter use areas) directly removed in the Churchill Range ■ Least effect to caribou connectivity beyond Churchill Range. ■ Least effect to predation risk to caribou in Churchill Range. ■ No effect to caribou or caribou habitat in Brightsand Range. ■ Least direct effects to regionally important caribou nursery areas in Churchill Range ■ Similar number of collared caribou occurring within 10 km of the footprint in Churchill Range ■ Least amount of maternity roost habitat for little brown myotis removed. ■ Least amount of olive-sided flycatcher habitat removed. ■ Lowest number of large waterbody crossings by the 40-m-wide transmission line alignment ROW ■ Lowest number of very large waterbody crossing by the 40-m-wide transmission line alignment ROW ■ Lowest number of infrastructure crossings along the 40-m-wide transmission line alignment ROW ■ Lowest number of angle points ■ Does not cross First Nation Reserve land. ■ Lowest area of private land within the 40-m-wide transmission line alignment ROW ■ Highest number of potential new load customers ■ Lowest distance of tap from Dryden TS 	<ul style="list-style-type: none"> ■ Highest amount of caribou winter use and nursery areas removed in Kinloch Range ■ Largest contribution to amount of new permanent disturbance in Churchill and Kinloch Ranges, as quantified using a 500-m buffer around the Project footprint and around existing permanent disturbances ■ Highest amount of upland ecosystem area removed. ■ Highest amount of riparian ecosystem area removed. ■ Highest amount of wetlands and rare vegetation communities removed. ■ Highest amount of moose habitat removed ■ Highest amount of wolverine habitat removed ■ Highest amount of bald eagle habitat removed ■ Highest amount of common nighthawk habitat removed ■ Highest amount of eastern whip-poor-will habitat removed ■ Highest amount of Canada warbler habitat removed ■ Highest need of the new access for construction of the 40-m-wide transmission line alignment ROW

ENVIRONMENTAL ASSESSMENT REPORT FOR THE PHASE 1 NEW TRANSMISSION LINE TO PICKLE LAKE PROJECT SECTION 13.0: FINAL CORRIDOR ROUTING ANALYSIS AND CONCLUSION

Table 13.2-1: Comparison of Advantages and Disadvantages for the Corridors

Corridor	Advantages	Disadvantages
Corridor Alternative Around Mishkeegogamang	<ul style="list-style-type: none"> ■ Least effect to predation risk to caribou in the Brightsand Range ■ Least effect to predation risk to caribou in the Kinloch range ■ Least amount of eastern whip-poor-will habitat removed ■ Least amount of common nighthawk habitat removed ■ Does not cross First Nation Reserve land 	<ul style="list-style-type: none"> ■ Highest amount of maternity roots habitat for little brown myotis removed ■ Highest amount of olive-sided flycatcher habitat removed ■ High number of large waterbody crossings by the 40-m-wide transmission line alignment ROW ■ Highest number of very large waterbody crossings by the 40-m-wide transmission line alignment ROW ■ High distance of tap from Dryden TS
Corridor Alternative Through Mishkeegogamang	<ul style="list-style-type: none"> ■ Least amount of upland ecosystem area removed. ■ Least amount of riparian ecosystem area removed. ■ Least amount of wetlands and rare vegetation communities removed. ■ Least effect to caribou connectivity within Churchill Range ■ Least amount of caribou nursery area habitat removed in the Kinloch Range. ■ Least effect to predation risk to caribou in the Kinloch Range. ■ Least amount of bald eagle habitat removed. ■ Least amount of moose habitat removed. ■ Least amount of wolverine habitat removed. ■ Least amount of Canada warbler habitat removed ■ Lowest length of access roads for construction of the 40-m-wide transmission line alignment ROW 	<ul style="list-style-type: none"> ■ Highest amount of category 1 (nursery and winter use areas) caribou habitat removed in the Brightsand Range. ■ Highest effect to predation risk to caribou in the Brightsand Range ■ Highest number of infrastructure crossings along the 40-m-wide transmission line alignment ROW ■ High number of large waterbody crossings by the 40-m-wide transmission line alignment ROW ■ Highest number of angle points ■ Lowest length of Crown land within the 40-m-wide transmission line alignment ROW ■ Highest length of First Nation Reserve land within the 40-m-wide transmission line alignment ROW ■ Highest area of private land within the 40-m-wide transmission line alignment ROW ■ High distance of tap from Dryden TS

m = metres; ROW = right-of-way.

13.2.3 Conclusion

Based on the corridor score and the discussion of advantages and disadvantages, the Preliminary Proposed Corridor, Dinorwic (east of Dryden) to Pickle Lake is identified as the preferred corridor. The identification of the Preliminary Proposed Corridor as the preferred corridor is based primarily on the cost and constructability criteria and the technical criteria. The cost and constructability and technical criteria play a critical role in the selection of a preferred corridor when considering the feasibility of the Project, including schedule and constructability risks. Although most of the environmental assessment criteria were the same among the corridors, the Corridor Alternative Through Mishkeegogamang scored higher for the EA category. However, there were advantages for the Preliminary Proposed Corridor for some SAR species, including woodland caribou Churchill and Brightsand range.

13.3 Conclusions

Transmission reliability and expansion to Pickle Lake has been identified in Ontario's *Achieving Balance Long-Term Energy Plan* (released in November 2013) as a key priority for the connection of Aboriginal communities in northwestern Ontario to the provincial grid (Ministry of Energy 2013). A new line to Pickle Lake will help serve new demand in the area north of Dryden and provide increased capacity to connect remote communities (Ministry of Energy 2013). Construction of the Phase 1 Project is required for the Phase 2: Connecting 17 Remote First Nations Project to proceed. The Phase 2 Project includes the construction, operation and maintenance of approximately 1,500 km of 115 kV and 44 kV transmission lines for subsystems north of Pickle Lake and Red Lake to connect 17 remote First Nation communities, currently powered by diesel generation, to the provincial electrical grid.

Wataynikaneyap will own, construct, operate, and maintain the Phase 1 New Transmission Line to Pickle Lake Project. Wataynikaneyap is a licenced transmission company formed by 22 First Nation communities and partnered with FortisOntario. The Project is undergoing an Individual EA in accordance with the approved Amended ToR and MOECC guidance, including the Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario (MOECC 2014a) and the Code of Practice: Consultation in Ontario's Environmental Assessment Process (MOECC 2014b).

As described above in Section 13.1, an analysis of the Preliminary Proposed Corridor, two corridor alternatives, and associated Project components, was completed to identify the preferred corridor, based on environmental assessment, cost and constructability and technical criteria and indicators. Based on this analysis and the advantages and disadvantages comparison provided in Table 13.2-1, the Dinorwic (east of Dryden) to Pickle Lake corridor (Preliminary Proposed Corridor) and associated Project components is identified as the preferred undertaking for which Wataynikaneyap seeks approval. The Project will therefore include the construction, operation, and maintenance of:

- An overhead 230 kV Alternating Current (AC) transmission line originating in Dinorwic and extending north to terminate at Pickle Lake.
- A connection facility in the Dryden area to serve as a 230-kV interconnection station to deal with the various requirements of new and existing transmission lines, as well as Hydro One Networks Inc. (HONI) requirements.
- A transformer station and ancillary components is proposed at Pickle Lake to provide for connection and switching of the 230 kV AC transmission line to the existing HONI (E1C) and the Musselwhite Mine (M1M) transmission lines.
- Structures associated with construction, including temporary construction camps, access roads and trails, laydown areas, watercourse crossings, and waste management and staging areas. Some access roads and trails will remain permanent.

Proceeding with the Project will have net effects. Based on the Project Description (Section 3.0) prepared at the time of submission of this report, the existing environment (Baseline Characterization), and taking into account the implementation of the impact management measures described in the ESMP (Section 9.0), the incremental net effects associated with the Project can be effectively mitigated by standard and specific environmental protection measures.

Net negative environmental effects of the Project in combination with past, existing, and reasonably foreseeable developments, have been predicted to be not significant for all environmental assessment criteria, except for two wildlife criteria: woodland caribou in the Churchill and Brightsand ranges and little brown myotis. The Churchill and Brightsand caribou populations are not considered self-sustaining, and therefore are already significantly impacted at Baseline Characterization. Little brown myotis in the RSAs has been conservatively considered as not likely to be self-sustaining in the Baseline Characterization and significantly affected because of the presence of white-nose syndrome. For both criteria, combined effects from the Project and existing developments are predicted to remain significant in the Net Effects assessment; however, Project contribution to effects to these species are predicted to be minor.

The Project is expected to provide the following net benefits:

- Increase in labour demand from direct employment, indirect employment, and induced employment.
- Contracting opportunities and spending by local and regional consumers and service oriented businesses of wages and income from the Project will support economic development in the LSA and RSA.
- Positive contribution to government net revenues through income and other taxes.

By enabling the Phase 2 Project connecting 17 remote First Nation communities, the following additional benefits will be realized:

Environmental Benefits:

- **Fewer Fuel Spills and Contamination:** Reduced risks and lower number/volume of transport, storage and consumption based oil spills and contamination due to substantive reduction in the use of diesel fuel for electricity and space/water heating.
- **Reduced Greenhouse Gas (GHG) Emissions:** Major reduction in GHG emissions due to replacement of diesel fuel requirements with grid-based electricity. The estimate is 6.6 million tonnes CO₂ equivalent³ reduction in GHG emissions at remote off-grid Aboriginal communities over a 40-year period.
- **Enhanced Environmental Resilience:** Enhanced environmental reliance in northern Ontario due to:
 - reduced reliance on ice road and transport infrastructure and fuel storage; and
 - elimination of emergency fuel deliveries by air related to poor ice road conditions (climate change)..

First Nation Social and Community Development Benefits:

- **Reduced Health Risk:** Diesel fuel increases risks to human health. The transport and storage of fuel is an occupational health risk. Diesel-based power generation and furnace emissions from fuel oil, lead to poor indoor air quality, which can exacerbate respiratory, heart and other ailments.
- **Community Quality of Life:** The effect of replacing unreliable, poor quality diesel electricity with cleaner, cheaper and much more reliable grid power has a range of positive benefits on community quality of life (e.g., noise).

³ CO₂ equivalent – represents the amount of CO₂ that would have the equivalent global warming potential as the selected greenhouse gas.

13.4 Amendment Procedure

This EA Report has been prepared in accordance with the approved ToR and MOECC guidance, including the *Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario* (MOECC 2014). Detailed design and engagement for the Project are ongoing. There may be scenarios in which commitments made in this EA Report cannot or should not be completely met in response to changes that may arise through engagement or detailed design.

To minimize these circumstances where changes can occur, Wataynikaneyap has requested a limits of work of 200 m on either side of the 40-m-wide transmission line alignment ROW for the EA approval and subsequent permitting purposes (Section 3.9). Thus, potential location revisions to the alignment ROW in this Final EA Report and in applicable permits would be limited to this limits of work. During detailed design, there may also be minor revisions to the final locations of the access roads and trails and other Project components. The minor revisions of final Project locations are not anticipated to change the conclusions of the predicted effects and significance determination, though efforts will be made to reduce potential effects below those presented in the document. Wataynikaneyap will commit to incorporating impact management measures identified in the Section 9.0 ESMP, implementing commitments and monitoring Section 12.0 Monitoring and Commitments, and avoiding sensitive environmental features, to the extent practical. It is also important to note that many such Project components and activities will require specific environmental permits and/or other provincial, federal and municipal authorizations (Section 1.6.3, Table 1.6-1). The post-EA stage of pre-consultation and permitting process will provide the opportunity for relevant regulatory departments and agencies to receive and review these detailed designs, and to establish specific terms and conditions to further avoid or reduce environmental effects. Wataynikaneyap will adhere to all required permits and other authorizations that are required for Project construction and operation and maintenance.

13.4.1 Steps for Amendment Procedure

If Wataynikaneyap needs to make any changes outside of this limits of work or changes that are inconsistent with the results of the EA, Wataynikaneyap will follow the amendment procedure steps outlined below.

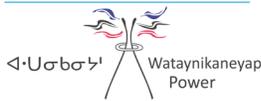
- 1) Wataynikaneyap will notify MOECC's EAB Director of the proposed change and provide the Director with a brief description of the change. The Director will review the information provided about the proposed change and confirm whether the amendment procedure can be applied to this change. If Wataynikaneyap receives written confirmation from the Director that this is an appropriate process to follow for the proposed change, Wataynikaneyap will implement the next steps outlined below.
- 2) Wataynikaneyap will assess any new potential environmental effects of the change, identify any additional mitigation measures that may be required, and identify net effects and monitoring as necessary. This information, along with the description of the change, will be documented as an amendment to the EA. Wataynikaneyap will make clear that the amendment forms part of the approved undertaking and will identify which section(s) of the EA report are being amended.
- 3) Prior to finalizing the amendment documentation, Wataynikaneyap will engage with MOECC, other relevant review agencies, Aboriginal communities and affected parties by providing them with notice and information about the proposed change. This engagement will include a minimum 30-day public review and comment period, or such other engagement as may be required by MOECC. Wataynikaneyap will also make available

on its website a draft version of the amendment document for the purposes of engagement. Once a final version of the amendment document is prepared, this will also be made available on the website for the life of the undertaking.

- 4) Wataynikaneyap will consider and address, as appropriate, any comments or concerns received from interested parties as part of the engagement process on the proposed change. If necessary, Wataynikaneyap will attempt to resolve any issues raised through meetings, discussions, negotiations, etc.
- 5) Wataynikaneyap will submit the final amendment documentation, along with a record of engagement that describes in detail the results of steps 3 and 4 above to the EAB Director. MOECC will review the documentation and, as part of its review, may conduct additional engagement with interested parties, if required. MOECC may also require that Wataynikaneyap undertake, and document, additional engagement efforts with affected/concerned parties or agencies to resolve any outstanding issues.
- 6) Once MOECC has completed its review of the amendment documentation, and any additional engagement has been undertaken to its satisfaction, MOECC will inform Wataynikaneyap, in writing, whether or not it can proceed to implement the proposed change. Wataynikaneyap will only implement the proposed change if MOECC approval is given to proceed.

13.5 References

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