



**FINAL ENVIRONMENTAL ASSESSMENT**  
**Section 9.0 Cumulative Effects**  
**November 2023**

## Acknowledgements

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We wish to acknowledge that the Waasigan Transmission Line Project is located within lands that represent the traditional territories and homelands of the Robinson-Superior Treaty (1850) First Nations and Treaty #3 (1873), and traverse the Red Sky Métis Independent Nation, Northwestern Ontario Métis Community and Northern Lake Superior Métis Community.

Hydro One also wishes to acknowledge Indigenous artist, Storm Angeconeb, for developing the covering page and wildlife designs throughout the Final Environmental Assessment. Storm is a highly recognized visual artist from Lac Seul First Nation in Treaty #3 and currently resides in Red Lake. Many of her works include animals and birds as representations of herself or those close to her. The artist's description of the covering page is presented below.

Hydro One Environmental Study Art:

What stands out in this art piece is the symbolic representation of solar rays as “Bringing Power”; we can see the environment represented through the wildlife and Ojibwe floral visuals. This artwork is an excellent representation of Hope, Life, and Opportunity, visually portrayed through the Black Bear and her two cubs. The colour theme of this artwork comes from the Waasigan Transmission Line Project brand identity.

Artist: Storm Angeconeb



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## 9.0 Cumulative Effects Assessment Summary

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In addition to assessing the net environmental effects of the Project, which considered past and present developments, this assessment also evaluates and assesses the significance of net effects from the Project that overlap temporally and spatially with effects from other future reasonably foreseeable developments (RFDs) and activities (i.e., cumulative effects). The RFDs considered for the cumulative effects assessment are provided in Table 9.0-1. A summary of the results of the cumulative effects assessments completed in Section 6.0 and Section 7.0 are provided in Table 9.0-2. Project-environment interactions assessed as having no net effects, only positive net effects, negligible net effects or net effects assessed with a likelihood as 'unlikely' or 'possible' were not carried forward to the Cumulative Effects Assessment, as identified in the environmental assessment method in Section 5.0. The valued components that did not complete a cumulative effects assessment based on these factors include:

- Surface Water (Section 6.2) – negligible net effects;
- Air Quality (Section 6.7) – likelihood of net effects are 'possible';
- Community Well Being (Section 7.2) – negligible net effects;
- Economy (Section 7.3) – positive net effects;
- Archaeological Resources (Section 7.5) – no net effects; and
- Built Heritage Resources and Cultural Heritage Landscapes (Section 7.6) – no net effects.



**Table 9.0-1: Projects Considered in the Cumulative Effects Assessment**

ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
1	Thunder Bay Correctional Complex	Construction of the new 345-bed, multipurpose Thunder Bay Correctional Complex to replace the city's existing jail and correctional centre.	<ul style="list-style-type: none"> <li>● Construction began: Nov 3, 2022</li> <li>● Construction ends: unknown date</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Fish and Fish Habitat</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Infrastructure Ontario 2022
2	Couchiching First Nation Industrial Lands Remediation Project	Remediation of contaminated land and removal of debris upland along the shoreline and in the water lot of Rainy Lake for Contaminated Site (FCSI # 5152001).	<ul style="list-style-type: none"> <li>● Start date: June 2022</li> <li>● End date: within 5-6 years</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Canada 2022a
3	Nigigoonsiminikaaning Wastewater Treatment and Collection System Project	Development of a communal wastewater collection and treatment system. The wastewater system will consist of approximately 3,500 m of small diameter low-pressure sewer system with individual septic tank effluent pumping systems at each house/building and a packaged membrane bioreactor wastewater treatment plant located in a new building. The existing, individual, on-site septic systems will be removed or decommissioned.	<ul style="list-style-type: none"> <li>● Start date: June 2021</li> <li>● End date: unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Canada 2022a
4	Nootkamegwaning First Nation Wastewater Treatment Plant replacement	Replace and decommission an aging wastewater treatment facility with a new mechanical treatment plant.	<ul style="list-style-type: none"> <li>● Start date: April 2022</li> <li>● End date: Unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Economy</li> </ul>	Government of Canada 2022a



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
5	Lac Seul First Nation broadband upgrade	Installation of two new 36 m self-supporting towers, 6.5 km of new fibre optic cable (terrestrial), and 2 km of new underwater fibre optic cable. The broadband towers will be installed in sites that are partially disturbed. The terrestrial fibre optic cable will be trenched along existing roadway and water pipeline rights-of-way. The new underwater fibre will be laid between the Kejick Bay boat launch and the Whitefish Bay landing.	<ul style="list-style-type: none"> <li>● Start Date: November 2022</li> <li>● End date: unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Canada 2022a
6	McIntyre Creek culvert rehabilitations	Culvert rehabilitations at McIntyre Creek, 1 km west of Highway 102, Thunder Bay, and Wild Goose Creek, 6 km east of Highway 527, Shuniah	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
7	Paved shoulders, resurfacing Highway 11	Adding paved shoulders and resurfacing 35.3 km of Highway 11, starting 6.0 km east of Highway 102.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022
8	Blind Creek culvert rehabilitation	Culvert rehabilitation at Blind Creek, 7 km east of Highway 527, Shuniah.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
9	McVicars and Corbett Creek culverts rehabilitation	Rehabilitation of McVicars Creek culvert, 6 km west of Hodder Ave, and Corbett Creek culvert, 5 km west of Highway 130, Thunder Bay	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022
10	John Street culvert replacement	Replacement of the John Street culvert, west of Highway 11/17, Thunder Bay	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
11	Highway 61, reconstruction	Reconstruction of Highway 61, south of Highway 130 north to Kaministiquia River bridge, Thunder Bay	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Ontario 2022
12	Highway 17, resurfacing	Resurfacing of Highway 17 west, west of Highway 72, Dinorwic.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Visual Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022

ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
13	Osaquan, Melgund, and Shoshowae Creek culverts, rehabilitation	Rehabilitation of Osaquan Creek culver, 8 km west of Ignace, Melgund Creek culvert, 56 km west of Ignace, and Shoshowae Creek culvert, 10 km west of Dryden.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Visual Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022
14	Highway 17 East of Highway 105, reconstruction	Reconstruction of Highway 17 East, east of Highway 105, Vermilion Bay.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Ontario 2022
15	CPR overhead, bridge rehabilitation	Rehabilitation of the CPR overhead bridge, 2 km east of Highway 671, Kenora	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
16	Highway 17, resurfacing	Resurfacing of Highway 17 from the west limit of Kenora westerly to the Highway 17A west connection, and 11.0 km east of Highway 71 westerly to east limit of Kenora including Highway 71 junction	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Community Well-Being</li> <li>● Economy</li> </ul>	Government of Ontario 2022
17	Highway 11B resurfacing, paved shoulders	Resurfacing and adding paved shoulders to Highway 11B, Atikokan	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● Archeological Resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
18	Highway 11 resurfacing, paved shoulders	Resurfacing and adding paved shoulders to Highway 11, from Oliver Road, Kakabeka to Shabaqua.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● Archeological resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
19	Highway 102, resurfacing	Resurfacing Highway 102 west of Highway 589 to Highway 11/17, Thunder Bay.	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
20	CPR Kaministiquia River bridge and CNR overhead bridges rehabilitation and removal	Rehabilitation and removal of CPR overhead Kaministiquia River bridge and CNR overhead bridge, 4 km east of Highway 17, Sistonen's Corner.	<ul style="list-style-type: none"> <li>● Start date: 2023</li> <li>● End Date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
21	Seine River bridge, rehabilitation	Rehabilitation of the Seine River bridge, 21 km north of Highway 11B, Atikokan	<ul style="list-style-type: none"> <li>● Start date: 2023</li> <li>● End date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● Archeological resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
22	Turtle and Little Turtle River bridges, rehabilitation	Rehabilitation of Turtle River bridge, 44 km south of Highway 17, Atikokan, and Little Turtle River bridge, 79 km south of Highway 17, Atikokan	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022





ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
23	Revell River No. 3 bridge, rehabilitation	Rehabilitation of the Revell River No. 3 bridge, 1 km east of Highway 622, Ignace	<ul style="list-style-type: none"> <li>● Start date: 2024-2025</li> <li>● End date: 2024-2025</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Aesthetics</li> <li>● Archeological resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Government of Ontario 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
24	Treasury Metals Inc. Goliath Gold Project	Construction of one open pit with underground development, a tailings storage facility, waste rock storage, overburden storage, low-grade stockpile, a 115-kV transmission line, and on-site electrical substation. The site is 15 km east of Dryden and 5 km north of Wabigoon. Operation is anticipated to be 12 years.	<ul style="list-style-type: none"> <li>● Start date: Q4 2023 (site preparation and construction); Operations 2 years later</li> <li>● End date: Project lifespan is 18-20 years</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Archeological resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Treasury Metals 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
25	Rehabilitation of Steep Rock Mine	Stabilization and remediation of the former Steep Rock Mine, including a plan for enhanced natural recovery that will increase the size of Steep Rock Lake in the coming decades.	<ul style="list-style-type: none"> <li>● Start date: ongoing</li> <li>● End date: 2070</li> </ul>	<ul style="list-style-type: none"> <li>● Physiography, Geology, Surficial Geology and Soils</li> <li>● Surface Water</li> <li>● Groundwater</li> <li>● Vegetation and Wetlands</li> <li>● Wildlife and Wildlife Habitat</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Acoustic and Vibration Environment</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● Archeological resources</li> <li>● Built Heritage Resources and Cultural Heritage Landscapes</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	Walters 2020



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
26	Communal wastewater collection and treatment rehabilitation Niisaachewan Anishinaabe Nation	<p>Rehabilitation of the wastewater collection and treatment system in the Niisaachewan Anishinaabe Nation in Ontario. The work will include the following:</p> <ul style="list-style-type: none"> <li>● rehabilitation of two lagoon cells.</li> <li>● upgrading of two wastewater sewage pumping stations by replacing four sewage pumps, wastewater pump vaults, control systems, and electrical panels.</li> <li>● reconstruction of 500 m of road leading to the wastewater lagoon.</li> </ul>	<ul style="list-style-type: none"> <li>● Start date: 2021</li> <li>● End date: unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Economy</li> </ul>	Government of Canada 2022b
27	Portable water supply redevelopment, Obashkaandagaang First Nation	<p>The Project will address potable water supply interruptions on Obashkaandagaang First Nation and will prevent contamination of groundwater from wastewater. The works will occur in a developed area on reserve and will include excavation and blasting to remove and replace existing infrastructure, including 10 failed septic systems, to prevent contamination of groundwater, surface water, and the environment.</p>	<ul style="list-style-type: none"> <li>● Start date: 2021</li> <li>● End date: unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Economy</li> </ul>	Government of Canada 2022b



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
28	Couchiching First Nation stormwater management infrastructure upgrades	<p>Improve stormwater management in the Couchiching First Nation in Ontario. The work includes the following:</p> <ul style="list-style-type: none"> <li>● Regrading approximately 10 kilometres of road for water diversion.</li> <li>● Clearing and expanding ditches, and clearing or upsizing 150 culverts</li> <li>● Treating and improving the quality of stormwater effluent by introducing wetland plants and swales.</li> </ul>	<ul style="list-style-type: none"> <li>● Start date: 2021</li> <li>● End date: unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Fish and Fish Habitat</li> </ul>	Government of Canada 2022b
29	NWMO Potential deep geological repository site	<p>Preliminary assessments by NWMO are underway near Ignace to identify suitable areas for a deep geological repository site for nuclear waste. Currently no decision has been made between choosing the Ignace location or a location in South Bruce, Bruce County.</p>	<ul style="list-style-type: none"> <li>● Start date: approximate start of construction is 2033</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Fish and Fish Habitat</li> <li>● Air Quality</li> <li>● Land and Resource Use</li> <li>● Community Well-Being</li> <li>● Economy</li> <li>● First Nations Rights, Interests, and Use of Land and Resources</li> <li>● Métis Rights/Interests and Use of Land and Resources</li> </ul>	NWMO 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
30	Agnico Eagle Hammond Reef Gold Mine	Construction, operation, decommissioning, and abandonment of a new open-pit gold mine. Mining would occur for 11 years; there would be an on-site mill.	<ul style="list-style-type: none"> <li>Currently in the exploration and development stage, start of construction is unknown</li> <li>Mine would run for 11 years, and it is estimated that it could be operational by 2027</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water</li> <li>Wildlife and Wildlife Habitat (Moose only)</li> <li>Fish and Fish Habitat</li> <li>Economy</li> </ul>	Government of Canada 2022a
31	Commercial Forestry	Planned forestry harvest activities and roads derived from Forest Management Plans.	<ul style="list-style-type: none"> <li>Ongoing</li> </ul>	<ul style="list-style-type: none"> <li>All</li> </ul>	Greenmantle Forest Inc. 2019 Resolute Forest Products Canada Inc. 2021 Resolute Forest Products Canada Inc. 2020
32	Capella Minerals Savant Lake Gold Project	Exploration and development of a new gold mine.	<ul style="list-style-type: none"> <li>Currently in the exploration and development stage, start of construction is unknown</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water</li> <li>Fish and Fish Habitat</li> <li>Economy</li> </ul>	Capella Minerals 2022
33	Treasury Metals Goldlund Gold Project	Exploration of a decommissioned underground and open pit mine, 30 km from Dryden. Currently, 27,000 m of drilling is scheduled to be carried out with the intent to upgrade the current mineral resource estimate.	<ul style="list-style-type: none"> <li>Currently in the exploration and development stage, start of construction is unknown</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water</li> <li>Wildlife and Wildlife Habitat (Moose only)</li> <li>Fish and Fish Habitat</li> <li>Community Well-Being</li> <li>Economy</li> </ul>	Treasury Metals 2022



ID	Project	Project Description	Timeframe	Regional Study Areas Overlapped by Project	Reference
34	Treasury Metals Miller Gold Project	Proposed open pit mine with no associated processing infrastructure.	<ul style="list-style-type: none"> <li>● Currently in the exploration and development stage, start of construction is unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Surface Water</li> <li>● Wildlife and Wildlife Habitat (Moose only)</li> <li>● Fish and Fish Habitat</li> <li>● Economy</li> </ul>	Treasury Metals 2022

Note: CPR = Canadian Pacific Railway; CNR = Canadian National Railway; km = kilometres; kV = kilovolt; m = metre; NWMO = Nuclear Waste Management Organization.



**Table 9.0-2: Summary of Cumulative Effects for the Project**

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
<b>Natural Environment</b>									
<b>Physiography, Geology, Surficial Geology and Soils (Section 6.1)</b>									
Geology and Soil Distribution	Areal extent of productive soil	Changes to geology and soil distribution due to structures and facilities reducing available area of productive soils	Negative	Low	Project Footprint	Long-term	Infrequent	Probable	Not significant
<b>Groundwater (Section 6.3)</b>									
Groundwater Quality	Groundwater levels and flow	Changes to groundwater levels and flows from excavations and dewatering activities	Negative	Low	LSA	Short-term	Frequent	Probable	Not significant
Groundwater Quality	Groundwater quality	Changes to groundwater quality from excavations and dewatering activities	Negative	Negligible	LSA	Medium-term	Infrequent	Unlikely	Not significant
<b>Vegetation and Wetlands (Section 6.4)</b>									
Vegetation and Wetland Ecosystems	Upland Ecosystems	Ecosystem Availability	Negative	Upland ecosystem availability would be reduced by 3,723 ha (1.0% change) in the RSA relative to the baseline characterization. Loss of 77 ha (5.1% change of upland baseline characterization) to the general habitat type Barren and loss of 4 ha (0.2% change of baseline characterization) to the uncommon general habitat type Field in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant





Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Vegetation and Wetland Ecosystems	Upland Ecosystems	Ecosystem Distribution	Negative	The distribution of upland ecosystems in the RSA in terms of cumulative effects would be similar to the distribution in the baseline characterization. There would be some loss and fragmentation of upland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetland Ecosystems	Upland Ecosystems	Ecosystem Composition	Negative	Edge effects and potential introduction of invasive species may alter upland species abundance and richness. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant
Vegetation and Wetland Ecosystems	Wetland Ecosystem	Ecosystem Availability	Negative	Availability of wetlands is predicted to decrease by 435 ha (0.6% change) in the RSA relative to the wetland baseline characterization. No loss to the least common and available general habitat type Bog in the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetland Ecosystems	Wetland Ecosystem	Ecosystem Distribution	Negative	The distribution of wetland ecosystems in the RSA in the cumulative effects would be similar to the distribution in the baseline characterization. There would some predicted loss and fragmentation of wetland ecosystems throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Vegetation and Wetland Ecosystems	Wetland Ecosystem	Ecosystem Composition	Negative	Small changes in water quality and flow and potential introduction of invasive species may alter wetland species abundance and richness. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant
Vegetation and Wetland Ecosystems	Riparian Ecosystems	Ecosystem Availability	Negative	Availability of riparian habitat is predicted to decrease by 144 ha (0.4% change) in the RSA relative to the baseline characterization. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetland Ecosystems	Riparian Ecosystems	Ecosystem Distribution	Negative	There would some loss and fragmentation of riparian habitat throughout RSA relative to the baseline characterization, but riparian ecosystems remain well connected. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetland Ecosystems	Riparian Ecosystems	Ecosystem Composition	Negative	Small changes in water quality and flow and potential introduction of invasive species may alter riparian species abundance and richness. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant
Vegetation and Wetlands – Plant Species	Plant Species at Risk	Habitat Quantity	Negative	Availability of black ash (confirmed and candidate) habitat is predicted to decrease by 6.5 ha (<0.0% change) in the RSA relative to the baseline characterization. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Vegetation and Wetlands – Plant Species	Plant Species at Risk	Habitat Distribution	Negative	There would some loss of black ash habitat throughout the RSA relative to the baseline characterization, but candidate ecosystems remain present. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetlands – Plant Species	Plant Species at Risk	Survival and Reproduction	Negative	Small changes in water quality and flow and potential introduction of invasive species may alter the survival and reproduction of black ash species. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant
Vegetation and Wetlands – Plant Species	Species of Conservation Concern	Habitat Quantity	Negative	Availability of SOCC is not predicted to decrease by RFD-related projects. Availability of SWH diverse and sensitive orchid community is predicted to decrease by 371 ha (0.4% change) and ragged fringed orchid habitat is predicted to decrease by 3.5 ha (<1% change) in the RSA relative to the baseline characterization. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetlands – Plant Species	Species of Conservation Concern	Habitat Distribution	Negative	The distribution of SOCC habitat in the RSA in the cumulative effects would be similar to the distribution in the baseline characterization. There would be some predicted loss of SOCC habitat throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetlands – Plant Species	Species of Conservation Concern	Survival and Reproduction	Negative	Potential introduction of invasive species may alter the survival and reproduction of SOCC. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Vegetation and Wetlands – Plant Species	Plants of Traditional Use	Habitat Quantity	Negative	Availability of plants of traditional use habitat is predicted to decrease by 2,073 ha (0.48% change) in the RSA relative to the baseline characterization. The smallest percentage of habitat loss with respect to upland habitat is deciduous forest, while for wetland – fen. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetlands – Plant Species	Plants of Traditional Use	Habitat Distribution	Negative	The distribution of plants of traditional use habitat in the RSA in the Cumulative effects would be similar to the distribution in the baseline characterization. There would be some predicted loss and fragmentation of plants of traditional use habitat throughout the RSA. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Certain	Not significant
Vegetation and Wetlands – Plant Species	Plants of Traditional Use	Survival and Reproduction	Negative	Small changes in water quality and flow and potential introduction of invasive species may alter plants of traditional use survival and reproduction. Magnitude will depend on influences from climate change.	Beyond regional (due to climate change)	Medium-term / Permanent	Continuous	Possible	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
<b>Wildlife and Wildlife Habitat (Section 6.5)</b>									
Moose	Habitat Availability	Habitat Loss	Negative	Direct loss of 1968 ha of moderate to high suitability habitat (4.6% of the LSA) from Baseline Characterization. Direct loss of 0.2% of the RSA Baseline Characterization moderate to high suitability habitat. Reduction to habitat availability due to climate change.	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Certain	Not significant
Moose	Habitat Availability	Sensory Disturbance	Negative	Reduced quality of habitat and possible avoidance from sensory disturbance.	Local to Regional	Medium or Long-term/ Reversible or Permanent/Irreversible	Frequent to Continuous	Probable	Not significant
Moose	Habitat Distribution	Habitat Loss	Negative	Small reduction in movements among habitat patches due to fragmentation of suitable habitat. Possible range contraction due to climate change.	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Possible	Not significant
Moose	Survival and Reproduction	Use of Linear Corridors and Converted Habitat	Negative	Small increase in predation risk after implementation of mitigation measures.	Regional	Long-term/Reversible to Permanent/Irreversible	Continuous	Probable	Not significant
Gray Fox	Habitat Availability	Habitat Loss	Negative	Direct loss of 2,345 ha of moderate to high suitability habitat (3.4% of the LSA or 1.1% of the RSA from Baseline Characterization).	Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Certain	Not significant
Gray Fox	Habitat Availability	Sensory Disturbance	Negative	Reduced quality of habitat and possible avoidance from sensory disturbance.	Local to Regional	Medium or Long-term/ Reversible or Permanent/Irreversible	Frequent to Continuous	Probable	Not significant
Gray Fox	Habitat Distribution	Habitat Loss	Negative	Small reduction in movements among habitat patches due to fragmentation of suitable habitat	Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Possible	Not significant
Furbearers (Gray Wolf)	Habitat Availability	Sensory Disturbance	Negative	Reduced quality of habitat and possible avoidance.	Local to Regional	Medium or Long-term/ Reversible or Permanent/Irreversible	Frequent to Continuous	Probable	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Furbearers (American Marten)	Habitat Availability	Habitat Loss	Negative	Negligible effect from loss of moderate to high suitability habitat, including, 906 ha of the LSA and 916 ha of the RSA of (2.4% of the LSA and 0.2% of the RSA at Baseline Characterization). Reduction to habitat availability due to climate change	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Certain	Not significant
Furbearers (American Marten)	Habitat Availability	Sensory Disturbance	Negative	Reduced quality of habitat and possible avoidance. Possible abandonment of den sites.	Local to Regional	Medium or Long-term/ Reversible or Permanent/Irreversible	Frequent to Continuous	Probable	Not significant
Furbearers (American Marten)	Habitat Distribution	Habitat Loss	Negative	Small reduction in movements among habitat patches due to fragmentation of suitable habitat. Possible range contraction due to climate change.	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Possible	Not Significant
Furbearers (Beaver)	Habitat Availability	Habitat Loss	Negative	Direct loss of 509 ha of moderate to high suitability habitat (1.3% of the RSA Baseline Characterization).	Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Certain	Not Significant
Little Brown Myotis and Northern Myotis	Habitat Availability	Habitat Loss	Negative	Direct loss of approximately 1,629 ha of candidate bat maternity roost habitat in the RSA. Reduction to habitat availability due to climate change.	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Certain	Not Significant
Little Brown Myotis and Northern Myotis	Habitat Availability	Sensory Disturbance	Negative	Reduced quality of roosting habitat and possible avoidance of LSA from sensory disturbance during construction.	Local to Regional	Medium or Long-term/ Reversible or Permanent/Irreversible	Frequent to Continuous	Probable	Not Significant
Little Brown Myotis and Northern Myotis	Habitat Distribution	Habitat Loss	Negative	Small reduction in the spatial distribution of habitat due to the loss of approximately 1,629 ha of candidate maternity roost habitat in the RSA. Changes in habitat distribution due to climate change.	Regional to Beyond Regional	Long-term/Reversible to Permanent/Irreversible	Frequent to Continuous	Possible	Not Significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Herpetofauna (Snapping Turtle and Spring Peeper)	Habitat Availability	Habitat loss Sensory disturbance	Negative	Low. Habitat loss and behavioural avoidance of habitat due to increased sensory disturbance.	Local	Medium term	Frequent	Certain (direct habitat loss) Probable (Sensory disturbance)	Not significant
Herpetofauna (Snapping Turtle and Spring Peeper)	Habitat Distribution	Habitat loss Sensory disturbance	Negative	Low. Habitat loss and behavioural avoidance of habitat due to increased sensory disturbance.	Local	Medium term	Frequent	Certain (direct habitat loss) Probable (Sensory disturbance)	Not significant
Herpetofauna (Snapping Turtle and Spring Peeper)	Survival and Reproduction	Habitat loss Sensory disturbance Incidental take Vehicle collisions	Negative	Low. Reduced reproductive output due to increased sensory disturbance and increased mortality from vehicle collisions over the life of the RFDs.	Local	Medium term	Frequent	Possible	Not significant
Raptors (Bald Eagle)	Habitat Availability	Habitat loss Sensory disturbance	Negative	Direct loss of 1,976 ha of moderate to high suitability habitat (2.89%) of the LSA baseline characterization. Direct loss of 0.98% of the RSA baseline characterization. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.	Local	Permanent (direct loss) Medium term (sensory disturbance)	Continuous	Certain (direct loss) Probable (sensory disturbance)	Not significant
Raptors (Bald Eagle)	Habitat Distribution	Habitat loss Sensory disturbance	Negative	Slight shifts in territory sizes or locations due to loss of 1,976 ha of moderate to high suitability habitat. Slight shifts in territory sizes or locations due to increased human disturbance.	Local	Permanent (direct loss) Medium term (sensory disturbance)	Continuous	Possible	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Raptors (Bald Eagle)	Survival and Reproduction	Habitat loss Vehicle collisions Electrocution and collisions with the transmission line Increase in edge habitat	Negative	Reduction in predicted abundance by three individuals compared to baseline characterization (habitat loss). Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line). Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take) Medium term (vehicle collisions)	Continuous	Possible	Not significant
Marshbirds (Trumpeter Swan)	Habitat Availability	Sensory disturbance	Negative	Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.	Local	Permanent (direct loss) Medium term (sensory disturbance)	Continuous	Certain (direct loss) Probable (sensory disturbance)	Not significant
Marshbirds (Trumpeter Swan)	Habitat Distribution	Sensory disturbance	Negative	Slight shifts in territory sizes or locations due to increased human disturbance.	Local	Permanent (direct loss) Medium term (sensory disturbance)	Continuous	Possible	Not significant
Marshbirds (Trumpeter Swan)	Survival and Reproduction	Vehicle collisions Electrocution and collisions with the transmission line Increase in edge habitat Incidental take	Negative	Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line). Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat, and incidental take).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take) Medium term (vehicle collisions)	Continuous	Possible	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Songbirds (Canada Warbler, Eastern Wood-Pewee, and Olive-Sided Flycatcher)	Habitat Availability	Habitat loss; and Sensory disturbance.	Negative	<p>Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.</p> <p><b>Canada warbler</b> Direct loss of 1,820 ha of moderate to high suitability habitat (2.6 %) of the LSA baseline characterization. Direct loss of 0.92% of the RSA baseline characterization.</p> <p><b>Eastern wood-pewee</b> Direct loss of 1,461 ha of moderate to high suitability habitat (2.7%) of the LSA baseline characterization. Direct loss of 1% of the RSA baseline characterization.</p> <p><b>Olive-sided flycatcher</b> Direct loss of 2,385 ha of moderate to high suitability habitat (2.9 %) of the LSA baseline characterization. Direct loss of 0.9% of the RSA baseline characterization.</p>	Local	<p>Permanent (direct loss)</p> <p>Medium term (sensory disturbance)</p>	Continuous	<p>Certain (direct loss)</p> <p>Probable (sensory disturbance)</p>	Not significant
Songbirds (Canada Warbler, Eastern Wood-Pewee, and Olive-Sided Flycatcher)	Habitat Distribution	Habitat loss; and Sensory disturbance.	Negative	<p>Slight shifts in territory sizes or locations due to loss of approximately 1,400 ha to 2,400 ha of moderate to high suitability habitat.</p> <p>Slight shifts in territory sizes or locations due to increased human disturbance.</p>	Local	<p>Permanent (direct loss)</p> <p>Medium term (sensory disturbance)</p>	Continuous	Possible	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Songbirds (Canada Warbler, Eastern Wood-Pewee, and Olive-Sided Flycatcher)	Survival and Reproduction	Habitat loss; Vehicle collisions; Electrocution and collisions with the transmission line; Increase in edge habitat; and Incidental take.	Negative	Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line).  Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat, and incidental take).  <b>Canada warbler</b> Reduction in predicted abundance by 19 individuals compared to baseline characterization (habitat loss).  <b>Eastern wood-pewee</b> Reduction in predicted abundance by 1 individual compared to baseline characterization (habitat loss).  <b>Olive-sided flycatcher</b> Reduction in predicted abundance by three individuals compared to baseline characterization (habitat loss).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take)  Medium term (vehicle collisions and sensory disturbance)	Continuous	Probable (direct loss and sensory disturbance)  Possible (vehicle collisions, electrocution, and collisions with the transmission line, increase in edge habitat, and incidental take)	Not significant
Bank Swallow	Habitat Availability	Habitat loss Sensory disturbance	Negative	Direct loss of 230 ha of moderate to high suitability habitat (2.9%) of the LSA baseline characterization.  Direct loss of 1.4% of the RSA baseline characterization.  Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.	Local	Permanent (direct loss) Medium term (sensory disturbance).	Continuous	Certain (direct loss)  Probable (sensory disturbance).	Not significant
Bank Swallow	Habitat Distribution	Habitat loss Sensory disturbance	Negative	Slight shifts in territory sizes or locations due to loss of 230 ha of moderate to high suitability habitat.  Slight shifts in territory sizes or locations due to increased human disturbance.	Local	Permanent (direct loss) Medium term (sensory disturbance).	Continuous	Possible	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Bank Swallow	Survival and Reproduction	Vehicle collisions Electrocution and collisions with the transmission line Increase in edge habitat Incidental take	Negative	Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line).  Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat, and incidental take).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take)  Medium term (vehicle collisions and sensory disturbance).	Continuous	Probable (direct loss and sensory disturbance)  Possible (vehicle collisions, electrocution, and collisions with the transmission line, increase in edge habitat, and incidental take) <sup>(a)</sup>	Not significant
Eastern Whip-poor-will	Habitat Availability	Habitat loss Sensory disturbance	Negative	Direct loss of 2,998 ha of moderate to high suitability habitat (3.1%) of the LSA baseline characterization.  Direct loss of 1.1% of the RSA baseline characterization.  Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.	Local	Permanent (direct loss)  Medium term (sensory disturbance)	Continuous	Certain (direct loss)  Probable (sensory disturbance)	Not significant
Eastern Whip-poor-will	Habitat Distribution	Habitat loss Sensory disturbance	Negative	Slight shifts in territory sizes or locations due to loss of 2,998 ha of moderate to high suitability habitat.  Slight shifts in territory sizes or locations due to increased human disturbance.	Local	Permanent (direct loss)  Medium term (sensory disturbance)	Continuous	Possible	Not significant
Eastern Whip-poor-will	Survival and Reproduction	Vehicle collisions Electrocution and collisions with the transmission line Increase in edge habitat Incidental take	Negative	Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line).  Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat, and incidental take).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take)  Medium term (vehicle collisions and sensory disturbance)	Continuous	Possible	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Landbirds (Common Nighthawk)	Habitat Availability	Habitat loss Sensory disturbance	Negative	Direct loss of 148 ha of moderate to high suitability habitat (2.2%) of the LSA baseline characterization. Direct loss of 0.8% of the RSA baseline characterization. Reduced quality of nesting and roosting habitat and possible avoidance in the LSA from sensory disturbance during construction and reclamation.	Local	Permanent (direct loss) Medium term (sensory disturbance).	Continuous	Certain (direct loss) Probable (sensory disturbance)	Not significant
Landbirds (Common Nighthawk)	Habitat Distribution	Habitat loss Sensory disturbance	Negative	Slight shifts in territory sizes or locations due to loss of 148 ha of moderate to high suitability habitat. Slight shifts in territory sizes or locations due to increased human disturbance.	Local	Permanent (direct loss) Medium term (sensory disturbance).	Continuous	Possible	Not significant
Landbirds (Common Nighthawk)	Survival and Reproduction	Vehicle collisions Electrocution and collisions with the transmission line Increase in edge habitat Incidental take	Negative	Mortality of a few individuals over the life of the Project may occur (vehicle collisions and electrocution and collisions with the transmission line). Reduced survival and/or reproduction due to increased predation risk (increase in edge habitat and incidental take).	Local	Permanent (direct loss, increase in edge habitat, electrocution and collisions with the transmission line and incidental take) Medium term (vehicle collisions and sensory disturbance).	Continuous	Possible	Not significant

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
<b>Fish and Fish Habitat (Section 6.6)</b>									
Fish and Fish Habitat	Abundance Distribution Habitat Quantity Habitat Quality	Changes to fish habitat quantity and quality	Negative	Low	Local	Short-term to Permanent	Infrequent	Unlikely where proposed work is above the high-water mark (e.g., installation of clear-span bridge).  Probable where proposed work is below the high-water mark (e.g., installation of a culvert).	Not significant
Fish and Fish Habitat	Abundance Distribution Habitat Quantity Habitat Quality	Changes to water and sediment quality and quantity	Negative	Low	Local to Regional	Short-term to Long-term	Infrequent	Unlikely where proposed work is above the high-water mark (e.g., installation of clear-span bridge).  Probable where proposed work is below the high-water mark or ground water table (e.g., installation of a culvert).	Not significant
Fish and Fish Habitat	Abundance Distribution Habitat Quantity Habitat Quality	Changes due to public access to recreational fishing areas	Negative	Low to Moderate	Local to Regional	Permanent	Frequent	Possible where proposed work is above the high-water mark (e.g., installation of clear-span bridge).  Probable where proposed work is below the high-water mark (e.g., installation of a culvert).	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
Fish and Fish Habitat	Abundance Distribution Habitat Quantity Habitat Quality	Changes to Habitat Quantity and Quality due to the interaction of the Project with climate change	Negative	Low (may be variable and predicted to increase over time)	Local to Regional	Short-term to Permanent	Increasingly frequent	Probable	Not significant
<b>Greenhouse Gas Emissions (Section 6.8)</b>									
Greenhouse Gas Emissions	Predicted CO <sub>2</sub> emissions; predicted CH <sub>4</sub> emissions; and predicted N <sub>2</sub> O emissions.	GHG emissions during construction activities	Negative or Positive	Low	Beyond regional	Permanent	Continual	Certain	Not significant
<b>Acoustic and Vibration Environment (Section 6.9)</b>									
Noise and Vibration	Change in noise levels in the study area Compliance with applicable guidance documents Change in air and/or ground vibration levels in the study area Compliance with applicable guidance documents Change in noise levels in the study area Compliance with applicable guidance documents	Given the short-term duration and periodic nature of the non-negligible net effects to noise and vibration, it is not expected that these net effects will overlap temporally and spatially with the net effects from the reasonably foreseeable developments. If overlap does occur, it would continue to be short-term in duration and periodic; therefore, cumulative effects, if they occur, are not expected to be significant.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>Socio-economic Environment</b>									
<b>Land and Resource Use (Section 7.1)</b>									
Non-Indigenous Land and Resource Use	Changes to current land use	Cumulative changes to current land use	Negative	Moderate	Local	Long-term	Continual	Certain	Not significant



Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
<b>Visual Aesthetics (Section 7.4)</b>									
Visual aesthetics	Net change to the visual landscape during construction	Direct	Negative	Low to Moderate	Local to Regional	Short-term	Continual	Probable	Not significant
Visual aesthetics	Net change to the visual landscape during operations and maintenance	Direct	Negative	Low to Moderate	Local to Regional	Long-term	Continual	Probable	Not significant
<b>First Nations Rights, Interests and Use of Lands and Resources (Section 7.7)</b>									
Use of land and resources for the current and traditional exercise of Indigenous rights	Net change in area (ha) of unoccupied Crown land converted to occupied Crown land.	Direct	Negative	Low	Local	Short-term and Long-term	Continual to Infrequent	Possible	See below <sup>(a)</sup>
Use of land and resources for the current and traditional exercise of Indigenous rights	Net change in availability of harvested resources.	Direct and Indirect	Negative	Negligible to Low	Regional	Short-term and Long-term	Continual to Infrequent	Certain	
Use of land and resources for the current and traditional exercise of Indigenous rights	Net change in access to preferred harvesting areas.	Direct	Negative and positive	Negligible to Low	Regional	Short-term and Long-term	Infrequent	Possible	
Cultural Landscapes and Intangible Cultural Heritage	Net change in access to culturally sensitive, sacred or spiritual landscapes and sites	Direct	Negative	Negligible to Moderate	Local	Long-term	Infrequent	Possible	
Cultural Landscapes and Intangible Cultural Heritage	Net change in quality of experience/sense of place in areas of use for traditional purposes, including sensory disturbance	Indirect	Negative	Low to Moderate	Regional	Short-term and Long-term	Periodic and Continual	Probable	

Criteria	Indicators	Cumulative Net Effect	Direction	Magnitude	Geographic Extent	Duration/ Reversibility	Frequency	Likelihood of Occurrence	Significance
<b>Métis, Interests and Use of Land and Resources (Section 7.8)</b>									
<b>NWOMC and Region 2</b>									
Loss of Land/ Change in Priority Rights	Net change in land available for Métis use	Direct	Negative	Low	Local	Short-term and long-term	Continual to Infrequent	Probable	See below <sup>(a)</sup>
Harvesting/ Sites	Net change to harvesting practices (timing windows)	Direct	Negative	Negligible to Low	Regional	Short-term	Infrequent	Possible	
Harvesting/ Sites	Net change in teaching/transmittal of knowledge	Indirect	Negative	Negligible to Low	Regional	Long-term	Continual	Possible	
Cultural Identity	Net disruption of "sense of place" Net reduction in cultural practices	Direct/Indirect	Negative	Low to Moderate	Regional	Long-term	Continual	Possible	

% = percent; < = less than; EA = Environmental Assessment; ha = hectare; LSA = local study area; n/a = not applicable; RFD = reasonably foreseeable development; RSA = regional study area; SOCC = Species of Conservation Concern; SWH = significant wildlife habitat.

a) For the assessment of First Nations Rights, Interests and Use of Lands and Resources and Métis Rights, Interests and Use of Lands and Resources with the implementation of mitigation measures, the cumulative effects are not predicted to represent a substantial interference in the continued opportunity for Indigenous communities to be able to undertake use of land and resources for the current and traditional exercise of Indigenous rights. Hydro One notes that the characterization of cumulative effects is an interpretation by Hydro One and their consultants, which has been informed by the input of communities shared through comments on the Draft EA. Hydro One recognizes that each Indigenous community is best positioned to provide context on how opportunities to undertake use of land and resources for the current and traditional exercise of Indigenous rights are taken. Hydro One is committed to engaging with Indigenous communities on potential refinements to the Project footprint and incorporation of site-specific mitigation in order to avoid or minimize impacts to the use of land and resources for the current and traditional exercise of Indigenous rights.







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