Environment

Goshen Wind, Inc.

Revision to the Project Description Report – Goshen Wind Energy Centre

Prepared by:

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Glossary of Terms

MNR ..... Ontario Ministry of Natural Resources
mVA ..... mega Volt-Ampere
NextEra ..... NextEra Energy Canada, ULC
NHA ..... Natural Heritage Assessment
O.Reg. 359/09 ..... Ontario Regulation 359/09
The Project ..... Goshen Wind Energy Centre
REA ..... Renewable Energy Approval

1. Introduction

Goshen Wind, Inc. (Goshen) is proposing to construct a wind energy centre in the Municipality of Bluewater and the Municipality of South Huron in Huron County, Ontario. The following sections of this Renewable Energy Approval (REA) Revision Report describe the proposed modifications to this Project and resulting updates to the Project Description Report.

1.1 The Proponent

The Project will be owned and operated by Goshen, a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra). NextEra's indirect parent company is NextEra Energy Resources, LLC. The proponent has not changed from the initial REA submission.

The primary contacts for the Project are as follows:

Project Proponent	Project Consultant
Nicole Geneau Project Director NextEra Energy Canada, ULC 390 Bay Street, Suite 1720 Toronto, ON M5H 2Y2 Phone:….1-416-364-9714 Email: .....Goshen.Wind@NextEraEnergy.com Website: ..www.NextEraEnergyCanada.com	Marc Rose Senior Environmental Planner AECOM 105 Commerce Valley Drive West, Floor 7 Markham, ON, Canada L3T 7W3 Phone: .....1-905-747-7793 Email:.....marc.rose@aecom.com

1.2 Project Study Area

The proposed Project is located in the Municipality of Bluewater and the Municipality of South Huron in Huron County, Ontario (refer to **Figure 2-1**). The Project Study Area has not changed from the initial REA submission.

The following co-ordinates define the external boundaries of the Project Study Area:

Longitude	Latitude
-81.6753290	43.4155312
-81.3011931	43.3810955
-81.3303330	43.3036317
-81.7743607	43.2379854

2. Proposed Project Modifications

Goshen is proposing modifications to the Project. These proposed Project modifications are categorized as follows:

- Construction disturbance area modified to reduce or eliminate impacts to archaeological resources or Conservation Authority regulation limits ;
- Infrastructure or construction disturbance area added or changed to optimize project design/ constructability; and,
- Turbine and associated infrastructure removed.

Table 2-1 summarizes and documents the following about each of the proposed modifications:

1. A description of the modification and a rationale for why the modification is proposed; and
2. New potential environmental effects and corresponding mitigation measures.

Figure 2-1 illustrates the modified Project Location. **Appendix A** contains a series of figures showing the details for each of the modifications.

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
A1	Removal of Turbine 7 and associated access road and collection line	Turbine and associated infrastructure removed	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
A2	Removal of a portion of Turbine 11 construction disturbance area.	Construction disturbance area modified to reduce or eliminate impacts to Conservation Authority regulation limit	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
A3	Relocation of collection line to Turbine 9 17 m to southern property boundary, west of Bronson Line	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
B1	Relocation of collection line from private property to Babylon Line and Huron Street right-of-way	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
B2	Temporary construction laydown area modified and increased in size	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
B3	Relocation of Turbine 71 15 m north within the existing turbine construction disturbance area	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C1	Relocation of access road to Turbine 66 to the west	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C2	Removal of a portion of construction disturbance area, east of Shipka Line, for the access road and collection line to Turbine 21	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
C3	Addition of collection line construction disturbance area in the Black Bush Line right-of-way, east of Turbine 86	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C4	Relocation of collection line from private property to Black Bush Line right-of-way in two locations, northeast of Turbine 64	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C5	Relocation of collection line from private property to Crediton Road right-of-way, south of Turbine 39	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C6	Relocation of collection line from private property to Bronson Line right-of-way, southwest of Turbine 81	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C7	Relocation of collection line from private property to South Road right-of-way, southeast of Turbine 38	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
C8	Relocation of collection line from private property to South Road right-of-way, southwest of Turbine 41	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
C9	Realignment of collection line from Black Bush Line right-of-way onto private property west of Black Bush Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m **OPERATIONS** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A **OPERATIONS** N/A
C10	Removal of a portion of collection line disturbance area on private property, along Black Bush Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – removal of infrastructure **OPERATIONS** None – removal of infrastructure	**CONSTRUCTION** N/A **OPERATIONS** N/A
D1	Relocation of Turbine 83 and associated construction disturbance area 1,140 m to the east	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** <u>Natural Heritage:</u> • Generalized Candidate Significant Wildlife Habitat (Amphibian Woodland Breeding Habitat) in Natural Area 255 was changed to Amphibian Woodland Breeding Habitat Feature AWO-36 because it is within 120 m of a proposed access road. Potential effects of construction of the access road include: - Accidental intrusion into natural feature resulting in habitat damage. - Disruption or possible mortality of amphibians moving between breeding pools and home range. - Increased erosion and sedimentation resulting from clearing and grubbing, backfilling and stockpiling. - Possible indirect effects on breeding pool condition through changes to surface water drainage patterns. • Turbine is within 120 m of new Generalized Candidate Significant Wildlife Habitat Feature (Plant Species of Conservation Concern Habitat) in Natural Area 227, not previously described in the NHA. Potential effects of construction on this feature are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA.	**CONSTRUCTION** <u>Natural Heritage:</u> • For construction of the access road within 120 m of Amphibian Woodland Breeding Habitat Feature AWO-36: - Clearly delineate habitat boundaries where construction will occur within 30 m using protective fencing to ensure that construction activities occur outside the habitat boundaries. - Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. - Contingency Measures: ▪ Repair protective fencing if damaged. ▪ Any damaged trees will be pruned through implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. ▪ If accidental damage to habitat occurs, habitat restoration will occur within the disturbed area using suitable native species. - Limit construction of roads within 30 m of significant amphibian habitats to daylight hours between April 1st and June 30th (for significant frog breeding habitats) or between March 15th and April 30th (for significant salamander breeding habitat), to avoid excessive noise and vehicle caused mortality, wherever possible. - Post speed limits along construction access roads (30 km/hr). - No monitoring required if timing windows are applied. - If construction occurs within 30 m of amphibian breeding habitat (if determined to be significant) after dark within the specified timing windows, amphibian mortality surveys will be conducted the following day by a qualified Biologist. - Contingency Measures: ▪ Restrict work to daylight hours if significant amphibian mortality is detected through mortality surveys. - Install sediment and erosion control fencing along edge of construction area if within 30 m of habitat feature as per Ontario Provincial Standards Specifications (OPSD 219.130). - Monitor on-site conditions (*i.e.*, erosion and sediment control, spills, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of a feature on the following basis: ▪ Weekly during active construction periods; ▪ Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); ▪ Daily during extended rain or snowmelt periods; ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. - Contingency Measures: ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.). - Ensure no grade changes within 30 m of breeding pools. - Inspect locations following completion of access roads by an Environmental Monitor to ensure no grade changes. - Examine condition of vernal pools or ponds within 30 m of access road following completion of construction. - Contingency Measures: ▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage pattern. • For construction of the turbine within 120 m of Generalized Candidate Significant Wildlife Habitat Feature in Natural Area 227, mitigation measures are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA.

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
			Water Bodies: • Effects associated with new turbine location and associated construction disturbance area within 120 m of water body D05 include: - Increase to surface water temperature from reduced groundwater contribution if dewatering activities are required for excavation of turbine foundations - Increase to stream flows in watercourses that receive temporary groundwater dewatering discharge (if required). Groundwater discharge has potential to cause streambed and/or bank erosion and downstream sedimentation if not managed properly. - Increased erosion, sedimentation and turbidity in watercourse from clearing and grubbing for on adjacent lands for construction of turbines, pads and turnaround areas. - Soil compaction, which may result in hardening of surfaces and increased runoff into watercourses. - Release / discharge of runoff from the construction area, which has the potential to transport sediment and nutrients into the watercourse. - Soil/water contamination by oils, grease and other materials from accidental spills and release of contaminants from construction equipment.	Water Bodies : • Mitigation measures associated with turbine construction within 120 m of a water body include (refer to **Appendix B** for detailed mitigation measures under the following headings)[1]: - Water management - Timing windows - Water quality - Erosion and sediment control - Grading and excavation - Equipment use - Material Stockpiling and handling
			OPERATIONS Natural Heritage: • Generalized Candidate Significant Wildlife Habitat (Amphibian Woodland Breeding Habitat) in Natural Area 255 was changed to Amphibian Woodland Breeding Habitat Feature AWO-36 because it is within 120 m of a proposed access road. Potential effects of operation of the access road include: - Risk of road mortality to amphibians moving between breeding pools and home range. • Turbine is within 120 m of new Generalized Candidate Significant Wildlife Habitat Feature (Plant Species of Conservation Concern Habitat) in Natural Area 227, not previously described in the NHA. There are no potential effects on this feature associated with operation of the turbine. Water Bodies: • Effects associated with new turbine location within 120 m of water body D05 include: - Increase in impervious surfaces from presence of turbine foundation and access roads, resulting in increased water temperatures, increased surface runoff and stream peak flows, and reduced infiltration, base flows and upwelling.	**OPERATIONS** Natural Heritage: • For operation of the access road within 120 m of Amphibian Woodland Breeding Habitat Feature AWO-36: - Advise operations staff to avoid driving roads in proximity to this feature at night between April 1 and June 30, and any rainy nights from spring to early autumn, wherever possible. - Most access road traffic will be confined to daytime hours. Avoid access road use at night. - Maintain wildlife crossing signs and limit speed of vehicles near crossings (30 km/hr). - Conduct 3 years post-construction amphibian call surveys (frogs and toads) and egg mass or adult surveys (salamanders) to assess any potential changes in amphibian breeding populations or species distribution at feature AWO-36 by a qualified Biologist, including: ▪ Call surveys three times between April 1 and June 30, as per the Marsh Monitoring Protocol. Conduct surveys between one half-hour after sunset and 2:00 am and, to the extent possible, on nights that are clear, cloudy, damp, foggy, or have light rain and minimum night air temperatures of 5°C, 10°C and 14°C for each of the three respective survey periods. Complete a 3-minute listening survey at each station. - Report the findings of post-construction monitoring to MNR on an annual basis for the first 3 years of operation. - Contingency Measures: ▪ If significant declines or disappearance of species is detected, determine whether likely to have been caused by the Project. If so, corrective measures will be taken, to be determined through consultation with MNR. Water Bodies : • Mitigation measures associated with new turbine location within 120 m of a water body include: - N/A
D2	Removal of the southwest portion of Turbine 17 construction disturbance area	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
D3	Relocation of collection line from private property to Grand Bend Line right-of-way, south and west of Turbine 53	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** Natural Heritage: • Collection line is within 13 m of Significant Woodland Feature WOD-022, not previously described in the NHA. Potential effects of construction of the collection line include: - Accidental intrusion into significant woodland resulting in damage to trees. - Changes in surface water drainage patterns resulting in effects to soil moisture and species composition of vegetation. - Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling. • Collection line is within 120 m of new Generalized Candidate Significant Wildlife Habitat Feature (Plant Species of Conservation Concern Habitat, Common Nighthawk Habitat, Red-headed Woodpecker Habitat, and Woodland Raptor Nesting Habitat) in Natural Area 204, not previously described in the NHA. Potential effects of construction on this feature are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA.	**CONSTRUCTION** Natural Heritage: • For construction of the collection line within 13 m of Significant Woodland Feature WOD-022: - Maintain 5 m setback from significant woodland, measured from the dripline of trees. - Where construction occurs within 30 m, install and maintain protective fencing to clearly define the construction area and prevent accidental damage to vegetation. - Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. - Contingency Measures: ▪ Repair protective fencing if damaged. ▪ Any damaged trees will be pruned through implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. ▪ In the event that other woodland vegetation is damaged, habitat restoration will occur utilizing native species suited to the habitat within the disturbed area.

[1] *Refer to Appendix B for a detailed list of mitigation measures related to water bodies that were included in the Water Assessment and Water Body Report (AECOM, 2012)*

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
				- Ensure Best Management Practices are used to maintain current drainage patterns, including: ▪ Implement infiltration techniques to the maximum extent possible. ▪ Minimize paved surfaces & design roads to promote infiltration. ▪ Limit changes in land contours. - Site inspection by Environmental Monitor following grading activities within 30 m of significant woodland. - Contingency Measures: ▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage patterns. - Install sediment and erosion control fencing along edge of construction area if within 30 m of a woodland, as per Ontario Provincial Standard Specifications (OPSD 219.130). - Monitor on-site conditions (*i.e.*, erosion and sediment control, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of a feature on the following basis: ▪ Weekly during active construction periods; ▪ Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); ▪ Daily during extended rain or snowmelt periods; ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. - Contingency Measures: ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.). • For construction of the collection line within 120 m of Generalized Candidate Significant Wildlife Habitat Feature in Natural Area 204, mitigation measures are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA.
			OPERATIONS <u>Natural Heritage:</u> • Collection line is within 13 m of Significant Woodland Feature WOD-022, not previously described in the NHA. There are no potential effects on this feature associated with operation of the collection line. • Collection line is within 120 m of new Generalized Candidate Significant Wildlife Habitat Feature (Plant Species of Conservation Concern Habitat, Common Nighthawk Habitat, Red-headed Woodpecker Habitat, and Woodland Raptor Nesting Habitat) in Natural Area 204, not previously described in the NHA. There are no potential effects on this feature associated with operation of the collection line.	**OPERATIONS** N/A
D4	Relocation of collection line from private property to South Road right-of-way, east of Turbine 55	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
E1	Relocation of collection line from private property to Mollard Line right-of-way, west of Turbine 56	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
E2	Removal of a portion of Turbine 56 construction disturbance area	Construction disturbance area modified to reduce or eliminate impacts to Conservation Authority regulation limit	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
E3	Addition of collection line construction disturbance area on private property, heading west to Turbine 60 from Mollard Line, and removal of collection line heading west to Turbine 58 from Mollard Line	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
E4	Addition of construction disturbance area for access road and collection line to Turbine 56 from Eagleson Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
F1	Removal of Turbine 46 and associated access road and collection line, including collection line in the Gordon Line right-of-way and collection line on private property to Turbine 77	Turbine and associated infrastructure removed	**CONSTRUCTION** Natural Heritage: • Waterfowl (Tundra Swan) Stopover and Staging Area (Terrestrial) Feature WSST-36 was changed to Generalized Candidate Significant Wildlife Habitat because it is more than 120 m away from a proposed turbine and is not overlapped by the Project Location. Potential effects of construction on this feature are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA	**CONSTRUCTION** Natural Heritage: • For construction of the collection line within 120 m of the Generalized Candidate Significant Wildlife Habitat (Waterfowl (Tundra Swan) Stopover and Staging Area (Terrestrial)) Feature, mitigation measures are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA.
			OPERATIONS Natural Heritage: • Waterfowl (Tundra Swan) Stopover and Staging Area (Terrestrial) Feature WSST-36 was changed to Generalized Candidate Significant Wildlife Habitat because it is more than 120 m away from a proposed turbine and is not overlapped by the Project Location. There are no potential effects on this feature associated with operation of the collection line.	**OPERATIONS** N/A
F2	Removal of a portion of construction disturbance area for access road and collection line to Turbine 77	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
F3	Addition of collection line in Babylon Line right-of-way, between the access road to Turbine 77 and the access road to Turbine 49	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** Water Bodies: • New effects associated with collection line crossing water body D15 include: - Soil / water contamination by oils, gasoline, grease and other materials from accidental spills and release of contaminants from equipment. - Release / discharge of runoff from the construction area, which has the potential to transport sediment and nutrients into the watercourse	**CONSTRUCTION** Water Bodies: • Mitigation measures associated with collection line construction within 120 m of a water body include (refer to **Appendix B** for detailed mitigation measures under the following headings): - Directional Drilling - Water Quality - Equipment use - Erosion and sediment control
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
F4	Addition of transmission line construction disturbance area on private property, west of Parr Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
F5	Removal of a portion of transmission line construction disturbance area on private property west of Ausable Line and relocation of transmission line from an underground to overhead crossing of the Ausable River.	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** Natural Heritage: • Reptile Hibernacula Feature RH-06 was changed to Generalized Candidate Significant Wildlife Habitat in Natural Area 609 because it is not overlapped by the Project Location. Potential effects of construction on this feature are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA. • The transmission line is spanning the Significant Wetland Feature WET-012. Potential effects of construction of an above ground transmission line include: - Accidental intrusion into Significant Wetland resulting in damage to vegetation and disturbance to wildlife. - Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling during construction of the transmission line in Significant Wetland. - Risk of soil or water contamination in Significant Wetland resulting from accidental spills of fuel, etc. - Risk of spread of invasive species into Significant Wetland as a result of construction disturbance.	**CONSTRUCTION** Natural Heritage: • For construction of the transmission line within 120 m of the Generalized Candidate Significant Wildlife Habitat Feature in Natural Area 609, mitigation measures are the same as described for other Generalized Candidate Significant Wildlife Habitat Features in Section 5.8.3 (Table 5.5) of the NHA. • For construction of the transmission line above ground spanning the Significant Wetland Feature WET-012: - For construction activities outside Significant Wetland WET-012: ▪ Install transmission line poles outside the boundaries of the Significant Wetland. Apply a minimum setback of 5 m during installation of transmission line poles. ▪ Where construction occurs within 30 m, install and maintain protective fencing to clearly define the construction area and prevent accidental damage to vegetation. ▪ Install sediment and erosion control fencing along edge of construction area as per Ontario Provincial Standard Specifications (OPSD 219.130). - For construction activities inside Significant Wetland WET-012: ▪ Pull the transmission line across the Significant Wetland either by helicopter or by hand with the use of a winch. If required, branches may be selectively removed under the supervision of an arborist or forester by hand-held equipment (e.g., chainsaws) and accessed by foot to prevent soil compaction. Cut branches will be left in place in the wetland but will be cut up to lie low on the ground. No heavy equipment will be used within the Significant Wetland. Construction activities within the Significant Wetland should take place in the winter (November 1 to March 15), if possible, or outside the breeding bird season (May 1 to July 31). If this is not possible, MNR will be consulted regarding additional mitigation measures that may be required. - Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. - Conduct a post-construction survey to confirm that the disturbance to Significant Wetland Feature WET-012 is minimal. - **Contingency Measures:** ▪ Repair protective fencing if damaged. ▪ Prune any damaged trees through implementation of proper arboricultural techniques, under supervision of an Arborist or Forester.

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
				▪ If excessively disturbed areas are detected through the post-construction survey, restoration planting may be implemented as a contingency measure. These plantings should consist of suitable native wetland species such as nannyberry, silky dogwood, buttonbush, spicebush, or slender willow. - Monitor on-site conditions (*i.e.,* erosion and sediment control, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of the Significant Wetland on the following basis: ▪ Daily during active construction periods; ▪ Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); ▪ Daily during extended rain or snowmelt periods; ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. - **Contingency Measures:** ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.). - Develop and implement emergency spills plan outlining steps to contain any chemicals or to avoid contamination of adjacent Significant Wetland feature. - Contractor to conduct routine inspections of construction equipment for leaks / spills. - **Contingency Measures**: ▪ Immediately stop all work until the spill is cleaned up. ▪ Notify MOE's Spills Action Centre of any leaks or spills. ▪ If a spill enters Significant Wetland, collect and analyze water samples for appropriate parameters. ▪ Monitor daily until cleanup is completed. - Ensure all equipment, including clothing/boots, is thoroughly washed before entering the Significant Wetland to avoid introducing seeds or fragments of invasive species into the Significant Wetland.
			OPERATIONS <u>Natural Heritage:</u> • Reptile Hibernacula Feature RH-06 was changed to Generalized Candidate Significant Wildlife Habitat in Natural Area 609 because it is not overlapped by the Project Location. There are no potential effects on this feature associated with operation of the transmission line. • The transmission line is spanning the Significant Wetland Feature WET-012. Potential effects from operation of the above ground transmission line include: - Risk of soil or water contamination from oil, gas, etc. during maintenance of the transmission line in Significant Wetland.	**OPERATIONS** <u>Natural Heritage:</u> • For construction of the transmission line above ground spanning the Significant Wetland Feature WET-012: - Develop and implement an emergency spills plan outlining steps to contain any spills during maintenance activities to avoid contamination of Significant Wetland. - **Contingency Measures:** ▪ Report the details of the spill to MOE, including a description of any assessment and remediation undertaken.
G1	Addition of transmission line construction disturbance area on private property, west of London Road	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
G2	Addition of transmission line construction disturbance area on private property, west of London Road	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
G3	Addition of transmission line construction disturbance area in the Crediton Road right-of-way	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
G4	Removal of a portion of transmission line construction disturbance area on private property, south of Crediton Road and east of McTaggart Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
H1	Addition of transmission line construction disturbance area on private property, east of Hern Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** <u>Natural Heritage:</u> • The transmission line is within 27 m of Significant Woodland Feature WOD-145. Potential effects of construction of the transmission line include: - Accidental intrusion into significant woodland resulting in damage to trees. - Changes in surface water drainage patterns resulting in effects to soil moisture and species composition of vegetation. - Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling.	**CONSTRUCTION** <u>Natural Heritage:</u> • For construction of the transmission line within 27 m of Significant Woodland Feature WOD-145: - Maintain 5 m setback from significant woodland, measured from the dripline of trees. - Where construction occurs within 30 m, install and maintain protective fencing to clearly define the construction area and prevent accidental damage to vegetation. - Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. - Contingency Measures: ▪ Repair protective fencing if damaged.

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
				▪ Any damaged trees will be pruned through implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. ▪ In the event that other woodland vegetation is damaged, habitat restoration will occur utilizing native species suited to the habitat within the disturbed area. - Ensure Best Management Practices are used to maintain current drainage patterns, including: ▪ Implement infiltration techniques to the maximum extent possible. ▪ Minimize paved surfaces & design roads to promote infiltration. ▪ Limit changes in land contours. - Site inspection by Environmental Monitor following grading activities within 30 m of significant woodland. - Contingency Measures: ▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage patterns. - Install sediment and erosion control fencing along edge of construction area if within 30 m of a woodland, as per Ontario Provincial Standard Specifications (OPSD 219.130). - Monitor on-site conditions (*i.e.*, erosion and sediment control, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of a feature on the following basis: ▪ Weekly during active construction periods; ▪ Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); ▪ Daily during extended rain or snowmelt periods; ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. - Contingency Measures: ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.).
			OPERATIONS <u>Natural Heritage:</u> • The transmission line is within 27 m of Significant Woodland Feature WOD-145. There are no potential effects on this feature associated with operation of the transmission line.	**OPERATIONS** N/A
H2	Addition of transmission line construction disturbance area on private property, west of Sunshine Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H3	Addition of transmission line construction disturbance area on private property, east of Sunshine Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H4	Removal of a portion of transmission line construction disturbance area on private property, east of Sunshine Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H5	Addition of transmission line construction disturbance area on private property, south of Dump Road and west of Sunshine Line,	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H6	Addition of transmission line construction disturbance area on private property, south of Dump Road and west of Sunshine Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H7	Addition of transmission line construction disturbance area on private property, on the south side of Dump Road, east of Plugtown Line	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A
H8	Addition of transmission line construction disturbance area on private property, on the north side of Dump Road, west of Union Line and addition and removal of portions of the transmission line point of interconnect construction disturbance area	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** None – no new natural heritage, cultural heritage, or water body features within 120 m	**CONSTRUCTION** N/A
			OPERATIONS None – no new natural heritage, cultural heritage, or water body features within 120 m	**OPERATIONS** N/A

Table 2-1 Summary of Project Modifications

Label on Figure 2-1	Proposed Modification	Rationale for Proposed Modification	New Potential Environmental Effects	New Mitigation Measures
H9	Removal of a portion of transmission line construction disturbance area on private property, north of Crediton Road, and west of Hern Line	Construction disturbance area modified to reduce or eliminate impacts to archaeological resources	**CONSTRUCTION** None – removal of infrastructure	**CONSTRUCTION** N/A
			OPERATIONS None – removal of infrastructure	**OPERATIONS** N/A
N/A	Use of a spare 170 mVA transformer to be stored within the existing footprint of the Jericho Wind Energy Centre substation.	Infrastructure or construction disturbance area added or changed to optimize project design/ constructability	**CONSTRUCTION** N/A	**CONSTRUCTION** N/A
			OPERATIONS N/A	**OPERATIONS** N/A

Lake Huron

Legend
- Transmission Line Study Area
- Wind Energy Centre Study Area
- Properties
- A1 Layout Modification Locations
- Change Map Extent
- August 2013 - 120m Area of Investigation
- January 2013 - 120m Area of Investigation

Turbines and Permanent Meterological Tower
- Added
- Removed
- No Change

Layout Modification (Type, Status)
- Collection Line, Added
- Road, Added
- Collection Line, Removed
- Road, Removed
- Collection Line, No Change
- Access Road , No Change
- Transmission Line, No Change

Modification to Disturbance Areas
Status
- Added
- Removed
- No Change

Antoinette's Lane
Bedard Rd
Moore Crt
Zurich-hensall Rd
Main St
Blind Line
King St
Hensall Rd
Oak Rd
Perth 183 Rd
182 Rd
Sararas Rd
Bronson Line
Lk Shore Dr
Hendrick Rd
Pepper Rd
Parr Line
Ausable Line
Bell's Line
London Rd
Rogerville Rd
Perth 17 Rd
181 Rd
Hurondale Rd
Alexander Rd
Perth 180 Rd
Shadeview Rd
Blackbush Line
Goshen Line
Babylon Line
Airport Line
Morrison Line
Macdonald Rd
Bluewater Hwy
Turnbull's Rd
Centre St
Dashwood Rd
Thames Rd
Perth 20 Line
Gore Rd
Hill St
Main St E
Shoreline Dr
Huron Dr
John St
Ontario St S
B Line
Huron St
Marlborough St
William St
Albert St
Bryde Blvd
Main St N
Mctaggart Line
Elimville Line
Plugtown Line
Union Line
Parkview Cres
Mallard Line
Kirkton Rd
Dump Rd
Hern Line
Sunshine Line
Lakeshore Rd
Goosemarsh Line
Klondyke Rd
Greenway Rd
Grand Bend Line
South Rd
Comet Line
Shipka Line
Crediton Rd
Victoria Ave E
Evergreen Line
Mary St
Perth 8 Line
Woodham Rd
B St
Huron Park Rd
Park Rd
Perth 164 Rd
6 Line
Perth 161 Rd
Squires Sideroad
23 Hwy
Whalen Line
Greenway Dr
Black Bush Line
Bronson Line
Victoria Dr
Tasko Dr
Mount Carmel Dr
Hutchinson Rd
Eagleson Line
Hagmier Rd
Bullock Rd
Cedar Swamp Rd
Salem Rd
Adare Dr
Richmond St
Coursey Line
Saintsbury Line
Roman Line
Mitchell Line
Mark Settlement Dr
Prance Rd
Harmony Rd
Mcinnis Rd
W Corner Dr
Grand Bend Rd
Grieves Rd
Gorkin Rd
Mcgillivray Dr
Mooresville Dr
Creamery Rd
Cassidy Rd
Brinsley Rd
Maguire Rd
Neil Rd
Lieury Rd
Ausable Dr
Breen Dr
Avenue Dr
Parkhill Dr
Sylvan Rd
Pete Sabe Rd
Elliot Dr

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N W E S

1:105,000

UTM Zone 17N, NAD 83

Goshen Wind Energy Centre
REA Amendment

Project Location

September 2013
Project 60155032

AECOM

Figure 2-1

Path: F:\GIS\Nextera\GISSpatial\MXDs\ReportMXDs\Change_report\GSH_NHA_Amend_Report\60155032_GSH_LocationChanges_20130805.mxd

3. Edits to the Project Description Report

Table 3-1 documents the edits to the Project Description Report resulting from the modifications described in **Section 2**. The table includes the text from the original REA submission and edits to the text (underlined text represents additions and strikethrough text represents deletions).

Table 3-1 Edits to the Project Description Report

Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
Section 2.1 / page 5	Up to 71 GE 1.6-100 Wind Turbine generator locations and pad mounted step-up transformers and one GE 1.56-100 Wind Turbine generator location and pad mounted step-up transformer (however, only 63 turbines will be constructed)	Up to ~~71~~ 69 GE 1.6-100 Wind Turbine generator locations and pad mounted step-up transformers and one GE 1.56-100 Wind Turbine generator location and pad mounted step-up transformer (however, only 63 turbines will be constructed)
Section 2.1.1 / page 5	Although NextEra is seeking an REA for up to 72 wind turbines, only 63 are proposed to be constructed for the Project.	Although NextEra is seeking an REA for up to ~~72~~ 70 wind turbines, only 63 are proposed to be constructed for the Project.
Section 2.2.3.4 / page 16	The collection lines and substation will require periodic preventative maintenance activities. Routine maintenance will include condition assessment for above-ground infrastructure and protective relay maintenance of the substation, in addition to monitoring of the secondary containment system for traces of oil. Finally, vegetation control will be required around the transmission line to prevent any damage to the line and ensure safe operation. Any vegetation that has the potential to grow to more than 4.3 m above grade will be cleared. The vegetation is typically cleared by mechanized equipment (e.g., chainsaw / hydro axe).	The collection lines and substation will require periodic preventative maintenance activities. Routine maintenance will include condition assessment for above-ground infrastructure and protective relay maintenance of the substation, in addition to monitoring of the secondary containment system for traces of oil. Finally, vegetation control will be required around the transmission line to prevent any damage to the line and ensure safe operation. Any vegetation that has the potential to grow to more than 4.3 m above grade will be cleared. The vegetation is typically cleared by mechanized equipment (e.g., chainsaw / hydro axe). In the event of a transformer failure, a spare transformer (stored within the existing footprint of the Jericho Wind Energy Centre substation) will be installed at the same location as the transformer proposed for the Goshen WEC.
Table 3-3 / page 25	**Potential Effect** Accidental intrusion into turtle wintering areas causing habitat damage. **Performance Objectives** • Avoid accidental intrusion into habitat. **Mitigation Strategy** • Clearly delineate habitat boundaries within 10 m of the habitat boundary using protective fencing to ensure that construction activities occur outside the habitat boundaries. **Residual Effects** • Disruption to turtle wintering habitats avoided through habitat delineation and fencing. • Negligible residual effects. **Monitoring Plan and Contingency Measures** • Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. • **Contingency Measures:** • Repair protective fencing if damaged. • Consultation with MNR to determine additional contingency measures if necessary.	~~**Potential Effect**~~ ~~Accidental intrusion into turtle wintering areas causing habitat damage.~~ ~~**Performance Objectives**~~ ~~• Avoid accidental intrusion into habitat.~~ ~~**Mitigation Strategy**~~ ~~• Clearly delineate habitat boundaries within 10 m of the habitat boundary using protective fencing to ensure that construction activities occur outside the habitat boundaries.~~ ~~**Residual Effects**~~ ~~• Disruption to turtle wintering habitats avoided through habitat delineation and fencing.~~ ~~• Negligible residual effects.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction.~~ ~~• **Contingency Measures:**~~ ~~▪ Repair protective fencing if damaged.~~ ~~▪ Consultation with MNR to determine additional contingency measures if necessary.~~
Table 3-3 / page 27	**Potential Effect** Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling near Significant Wetlands and/or woodlands. **Mitigation Strategy** • For construction of access roads at Turtle Over-Wintering Habitat Features: fence area as far from pond and as close to road as possible and install sediment and erosion control fencing at fenced area location. • For construction of the transmission line at Azure Bluet Habitat Feature, Turtle Over-Wintering Habitat Feature and Amphibian Woodland Breeding Habitat Features: ▪ Fence area as far from pond and as close to transmission line disturbance area as possible. ▪ Install sediment and erosion control fencing at fenced area location.	**Potential Effect** Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling near Significant Wetlands and/or woodlands. **Mitigation Strategy** ~~• For construction of access roads at Turtle Over-Wintering Habitat Features: fence area as far from pond and as close to road as possible and install sediment and erosion control fencing at fenced area location.~~ • For construction of the transmission line at ~~Azure Bluet Habitat Feature, Turtle Over-Wintering Habitat Feature and~~ Amphibian Woodland Breeding Habitat Features: ~~▪ Fence area as far from pond and as close to transmission line disturbance area as possible.~~ ~~▪ Install sediment and erosion control fencing at fenced area location.~~
Table 3-3 / page 29	**Potential Effect** Disruption of Tundra Swans in stopover and staging habitat due to construction/ decommissioning activities in waterfowl stopover and staging areas. **Performance Objectives** • Avoid disruption of Tundra Swan during migration. **Mitigation Strategy** • Schedule construction activities within 300 m of the stopover and staging habitat to occur outside the important period of staging Tundra Swan (March 1 to April 15). If this is not possible, MNR will be consulted regarding mitigation measures that may be required. • Clearly delineate work area using erosion fencing or similar barrier to avoid accidental damage to staging habitat. • Restore temporary construction areas to pre-construction conditions as soon as possible (e.g., re-vegetate formerly naturally vegetated areas with native plants). **Residual Effects** • Disruption of Tundra Swans will be minimized through the application of mitigation measures. • Negligible residual effects. **Monitoring Plan and Contingency Measures** No monitoring or contingency measures required as long as construction occurs outside migration period.	~~**Potential Effect**~~ ~~Disruption of Tundra Swans in stopover and staging habitat due to construction/ decommissioning activities in waterfowl stopover and staging areas.~~ ~~**Performance Objectives**~~ ~~• Avoid disruption of Tundra Swan during migration.~~ ~~**Mitigation Strategy**~~ ~~• Schedule construction activities within 300 m of the stopover and staging habitat to occur outside the important period of staging Tundra Swan (March 1 to April 15). If this is not possible, MNR will be consulted regarding mitigation measures that may be required.~~ ~~• Clearly delineate work area using erosion fencing or similar barrier to avoid accidental damage to staging habitat.~~ ~~• Restore temporary construction areas to pre-construction conditions as soon as possible (e.g., re-vegetate formerly naturally vegetated areas with native plants).~~ ~~**Residual Effects**~~ ~~• Disruption of Tundra Swans will be minimized through the application of mitigation measures.~~ ~~• Negligible residual effects.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~No monitoring or contingency measures required as long as construction occurs outside migration period.~~

Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
Table 3-3 / page 29	**Potential Effect** Changes to surface water drainage patterns resulting in indirect effects on waterfowl stopover and staging areas. **Performance Objectives** • Minimize changes in surface water drainage patterns. **Mitigation Strategy** • Ensure Best Management Practices are used to maintain current drainage patterns, including: • Implement infiltration techniques to the maximum extent possible. • Minimize paved surfaces and design roads to promote infiltration. • Limit changes in land contours. **Residual Effects** • Habitat damage avoided through maintaining surface water drainage patterns. • Low likelihood and limited magnitude of effect as a result. **Monitoring Plan and Contingency Measures** • Site inspection by Environmental Monitor following grading activities within 30 m of stopover and staging area. • **Contingency Measures:** ▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage pattern.	~~**Potential Effect**~~ ~~Changes to surface water drainage patterns resulting in indirect effects on waterfowl stopover and staging areas.~~ ~~**Performance Objectives**~~ ~~• Minimize changes in surface water drainage patterns.~~ ~~**Mitigation Strategy**~~ ~~• Ensure Best Management Practices are used to maintain current drainage patterns, including:~~ ~~• Implement infiltration techniques to the maximum extent possible.~~ ~~• Minimize paved surfaces and design roads to promote infiltration.~~ ~~• Limit changes in land contours.~~ ~~**Residual Effects**~~ ~~• Habitat damage avoided through maintaining surface water drainage patterns.~~ ~~• Low likelihood and limited magnitude of effect as a result.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• Site inspection by Environmental Monitor following grading activities within 30 m of stopover and staging area.~~ ~~• **Contingency Measures:**~~ ~~▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage pattern.~~
Table 3-3 / page 31	**Potential Effect** Disruption or possible mortality of turtles moving between wintering ponds and other areas. **Performance Objectives** • Minimize disruption of turtle movement. **Mitigation Strategy** • Fence area as far from pond and as close to proposed road as possible. • Post speed limits (30 km/hr) and turtle crossing signage along relevant construction access roads. • To avoid collisions with turtles, schedule construction activities within 30 m to occur during daylight hours and not during the period of emergence (March 15 to May 31). If construction must occur during this timing window, conduct area searches for turtles daily prior to construction activities. **Residual Effects** • Disruption and/or mortality minimized through construction timing and speed limits. • Low likelihood of occurring and limited magnitude. **Monitoring Plan and Contingency Measures** • If construction occurs within 30 m of a turtle wintering area (if determined to be significant) between March 15 and May 31, conduct area searches for turtles by a qualified Biologist prior to soil stripping or grubbing, as well as daily prior to construction activities by the Contractor within the construction footprint. • **Contingency Measures:** ▪ Turtles encountered within the construction area will be moved to a safe location (nearby pond) under the direction of the Environmental Monitor or a qualified Biologist.	~~**Potential Effect**~~ ~~Disruption or possible mortality of turtles moving between wintering ponds and other areas.~~ ~~**Performance Objectives**~~ ~~• Minimize disruption of turtle movement.~~ ~~**Mitigation Strategy**~~ ~~• Fence area as far from pond and as close to proposed road as possible.~~ ~~• Post speed limits (30 km/hr) and turtle crossing signage along relevant construction access roads.~~ ~~• To avoid collisions with turtles, schedule construction activities within 30 m to occur during daylight hours and not during the period of emergence (March 15 to May 31). If construction must occur during this timing window, conduct area searches for turtles daily prior to construction activities.~~ ~~**Residual Effects**~~ ~~• Disruption and/or mortality minimized through construction timing and speed limits.~~ ~~• Low likelihood of occurring and limited magnitude.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• If construction occurs within 30 m of a turtle wintering area (if determined to be significant) between March 15 and May 31, conduct area searches for turtles by a qualified Biologist prior to soil stripping or grubbing, as well as daily prior to construction activities by the Contractor within the construction footprint.~~ ~~• **Contingency Measures:**~~ ~~▪ Turtles encountered within the construction area will be moved to a safe location (nearby pond) under the direction of the Environmental Monitor or a qualified Biologist.~~
Table 3-3 / page 31	**Potential Effect** Increased erosion and sedimentation resulting from clearing and grubbing, backfilling and stockpiling resulting from access road construction near turtle wintering areas. **Performance Objectives** • Minimize erosion and sedimentation in wintering pond. **Mitigation Strategy** • Install sediment and erosion control fencing along edge of construction area if within 30 m of habitat feature as per Ontario Provincial Standards Specifications (OPSD 219.130). **Residual Effects** • Erosion and sedimentation mitigated through sediment and erosion control fencing. • Moderate likelihood; if erosion and sedimentation occur, negative effects may be measurable but would likely represent a small change relative to existing conditions. **Monitoring Plan and Contingency Measures** • Monitor on-site conditions (i.e., erosion and sediment control, spills, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of a feature on the following basis:	~~**Potential Effect**~~ ~~Increased erosion and sedimentation resulting from clearing and grubbing, backfilling and stockpiling resulting from access road construction near turtle wintering areas.~~ ~~**Performance Objectives**~~ ~~• Minimize erosion and sedimentation in wintering pond.~~ ~~**Mitigation Strategy**~~ ~~• Install sediment and erosion control fencing along edge of construction area if within 30 m of habitat feature as per Ontario Provincial Standards Specifications (OPSD 219.130).~~ ~~**Residual Effects**~~ ~~• Erosion and sedimentation mitigated through sediment and erosion control fencing.~~ ~~• Moderate likelihood; if erosion and sedimentation occur, negative effects may be measurable but would likely represent a small change relative to existing conditions.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• Monitor on-site conditions (i.e., erosion and sediment control, spills, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of a feature on the following basis:~~

Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
	• Weekly during active construction periods; • Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); • Daily during extended rain or snowmelt periods; • Monthly during inactive construction periods, if the site is left alone for 30 days or longer. • **Contingency Measures:** ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.).	~~• Weekly during active construction periods;~~ ~~• Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet);~~ ~~• Daily during extended rain or snowmelt periods;~~ ~~• Monthly during inactive construction periods, if the site is left alone for 30 days or longer.~~ ~~• **Contingency Measures:**~~ ~~▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.).~~
Table 3-3 / page 31	**Potential Effect** Changes to surface water drainage patterns causing indirect effects on turtle wintering areas. **Performance Objectives** • Minimize indirect effects on wintering habitat through changes to surface water drainage patterns. **Mitigation Strategy** • Ensure no grade changes within 30 m of pond. **Residual Effects** • Indirect effects to habitat minimized by maintaining grade. • Low likelihood of occurring and limited magnitude. **Monitoring Plan and Contingency Measures** • Inspect locations following completion of access roads by an Environmental Monitor to ensure no grade changes. • Monitor condition of the pond during on-site monitoring events at frequency described for sediment and erosion control. • **Contingency Measures:** ▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage pattern.	~~**Potential Effect**~~ ~~Changes to surface water drainage patterns causing indirect effects on turtle wintering areas.~~ ~~**Performance Objectives**~~ ~~• Minimize indirect effects on wintering habitat through changes to surface water drainage patterns.~~ ~~**Mitigation Strategy**~~ ~~• Ensure no grade changes within 30 m of pond.~~ ~~**Residual Effects**~~ ~~• Indirect effects to habitat minimized by maintaining grade.~~ ~~• Low likelihood of occurring and limited magnitude.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• Inspect locations following completion of access roads by an Environmental Monitor to ensure no grade changes.~~ ~~• Monitor condition of the pond during on-site monitoring events at frequency described for sediment and erosion control.~~ ~~• **Contingency Measures:**~~ ~~▪ If surface water drainage alterations are detected, undertake corrective measures to restore drainage pattern.~~
Table 3-3 / page 36		**Potential Effect** Accidental intrusion into Significant Wetland WET-012 resulting in damage to vegetation and disturbance to wildlife. **Performance Objective** • Avoid accidental damage to Significant Wetland. **Mitigation Strategy** • For construction activities outside Significant Wetland WET-012: ▪ Install transmission line poles outside the boundaries of the Significant Wetland. Apply a minimum setback of 5 m during installation of transmission line poles. ▪ Where construction occurs within 30 m, install and maintain protective fencing to clearly define the construction area and prevent accidental damage to vegetation. • For construction activities inside Significant Wetland WET-012: ▪ Pull the transmission line across the Significant Wetland either by helicopter or by hand with the use of a winch. If required, branches may be selectively removed under the supervision of an arborist or forester by hand-held equipment (e.g., chainsaws) and accessed by foot to prevent soil compaction. Cut branches will be left in place in the wetland but will be cut up to lie low on the ground. No heavy equipment will be used within the Significant Wetland. Construction activities within the Significant Wetland should take place in the winter (November 1 to March 15), if possible, or outside the breeding bird season (May 1 to July 31). If this is not possible, MNR will be consulted regarding additional mitigation measures that may be required. **Residual Effects** • Accidental damage will be avoided through clear delineation of boundaries and protective fencing. • Negligible residual effects. **Monitoring Plan and Contingency Measures** • Undertake weekly site inspections by an Environmental Monitor to ensure that protective fencing is intact and that there is no damage caused during construction. • Conduct a post-construction survey to confirm that the disturbance to Significant Wetland Feature WET-012 is minimal. • **Contingency Measures:** ▪ Repair protective fencing if damaged. ▪ Prune any damaged trees through implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. ▪ If excessively disturbed areas are detected through the post-construction survey, restoration planting may be implemented as a contingency measure. These plantings should consist of suitable native wetland species such as nannyberry, silky dogwood, buttonbush, spicebush, or slender willow.

Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
Table 3-3 / page 36		**Potential Effect** Increased erosion and sedimentation resulting from clearing and grubbing, excavation, backfilling and stockpiling during construction of the transmission line in Significant Wetland WET-012. **Performance Objective** • Minimize erosion and sedimentation from clearing, grubbing, excavation, backfilling and stockpiling. **Mitigation Strategy** • For construction activities outside the Significant Wetland: ▪ Install transmission line poles outside the boundaries of the Significant Wetland. Apply a minimum setback of 5 m during installation of transmission line poles. ▪ Install sediment and erosion control fencing along edge of construction area as per Ontario Provincial Standard Specifications (OPSD 219.130). • For construction activities inside the Significant Wetland: ▪ Pull the transmission line across the Significant Wetland by hand or by helicopter. No heavy equipment will be used within the Significant Wetland. **Residual Effects** • Sedimentation avoided or minimized through application of mitigation measures. • Minimal residual effects. **Monitoring Plan and Contingency Measures** • Monitor on-site conditions (*i.e.,* erosion and sediment control, flooding, etc.) by an Environmental Monitor where construction occurs within 30 m of the Significant Wetland on the following basis: ▪ Daily during active construction periods; ▪ Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (*i.e.*, spring freshet); ▪ Daily during extended rain or snowmelt periods; ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. • **Contingency Measures:** ▪ Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place (e.g., install the extra erosion and sediment control materials kept on site, such as heavy duty silt fencing, straw bales, etc.).
Table 3-3 / page 36		**Potential Effect** Risk of soil or water contamination in Significant Wetland WET-012 resulting from accidental spills of fuel, etc. **Performance Objective** Minimize soil or water contamination. **Mitigation Strategy** • Develop and implement emergency spills plan outlining steps to contain any chemicals or to avoid contamination of adjacent Significant Wetland feature. **Residual Effects** • Soil and water contamination avoided or minimized through application of mitigation measures. • Low likelihood and limited magnitude of effect as a result. **Monitoring Plan and Contingency Measures** • Contractor to conduct routine inspections of construction equipment for leaks / spills. • Develop an emergency spills plan. • **Contingency Measures**: ▪ Immediately stop all work until the spill is cleaned up. ▪ Notify MOE's Spills Action Centre of any leaks or spills. ▪ If a spill enters Significant Wetland, collect and analyze water samples for appropriate parameters. ▪ Monitor daily until cleanup is completed.
Table 3-3 / page 36		**Potential Effect** Risk of spread of invasive species into Significant Wetland WET-012 as a result of construction disturbance. **Performance Objective** • Avoid spread of invasive species into Significant Wetland. **Mitigation Strategy** • Ensure all equipment, including clothing/boots, is thoroughly washed before entering the Significant Wetland to avoid introducing seeds or fragments of invasive species into the Significant Wetland.

Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
		Residual Effects • Spread of invasive species avoided or minimized through the application of mitigation measures. • Low likelihood and limited magnitude of effect as a result. **Monitoring Plan and Contingency Measures** • Daily monitoring of areas where construction activities are occurring within the Significant Wetland by Environmental Monitor. • Conduct post-construction survey, as described above.
Table 3-4 / page 38	**Potential Effect** Avoidance by Tundra Swans of stopover and staging habitats during migration due to proximity of turbines. **Performance Objective** Minimize disturbance or disruption to Tundra Swan stopover and staging habitats. **Mitigation Strategy** Implement contingency mitigation measures if disturbance effects are detected through post-construction monitoring (contingency measures). **Residual Effects** Significance of residual effects will be determined based on the results of post-construction monitoring. **Monitoring Plan and Contingency Measures** • Conduct 3 years of post-construction Tundra Swan monitoring at Features WSST-15 and WSST-36 (if determined to be significant) by a qualified Biologist, including: ▪ Conduct surveys on three occasions approximately one week apart during the peak migratory period, which typically occurs in March but can range from mid-February to mid-April. ▪ One survey station will be placed per 0.5 km of candidate Tundra Swan stopover and staging habitat and be monitored for approximately 15 min. ▪ All observed waterfowl will be recorded along with their approximate location, age and behaviour. • The findings of the Tundra Swan monitoring programs will be reported back to MNR on an annual basis for the first 3 years of operation. • **Contingency Measures:** ▪ If significant declines or disappearance of species is detected, determine whether this is likely to have been caused by the Project. If so, implement corrective measures that are developed through consultation with MNR.	~~**Potential Effect**~~ ~~Avoidance by Tundra Swans of stopover and staging habitats during migration due to proximity of turbines.~~ ~~**Performance Objective**~~ ~~Minimize disturbance or disruption to Tundra Swan stopover and staging habitats.~~ ~~**Mitigation Strategy**~~ ~~Implement contingency mitigation measures if disturbance effects are detected through post-construction monitoring (contingency measures).~~ ~~**Residual Effects**~~ ~~Significance of residual effects will be determined based on the results of post-construction monitoring.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• Conduct 3 years of post-construction Tundra Swan monitoring at Features WSST-15 and WSST-36 (if determined to be significant) by a qualified Biologist, including:~~ ~~▪ Conduct surveys on three occasions approximately one week apart during the peak migratory period, which typically occurs in March but can range from mid-February to mid-April.~~ ~~▪ One survey station will be placed per 0.5 km of candidate Tundra Swan stopover and staging habitat and be monitored for approximately 15 min.~~ ~~▪ All observed waterfowl will be recorded along with their approximate location, age and behaviour.~~ ~~• The findings of the Tundra Swan monitoring programs will be reported back to MNR on an annual basis for the first 3 years of operation.~~ ~~• **Contingency Measures:**~~ ~~▪ If significant declines or disappearance of species is detected, determine whether this is likely to have been caused by the Project. If so, implement corrective measures that are developed through consultation with MNR.~~
Table 3-4 / page 39	**Potential Effect** Disturbance to Tundra Swan stopover and staging habitats due to vehicular traffic on access roads. **Performance Objective** Minimize disturbance or disruption to Tundra Swan stopover and staging habitat. **Mitigation Strategy** • Schedule regular (non-critical) maintenance activities to occur outside of the important period of staging Tundra Swan (March 1 to April 15), to the extent possible. • Maintain wildlife crossing signs and limit speed of vehicles (30 km/hr) near stopover and staging areas. **Residual Effects** • Disturbance effects reduced through mitigation measures. • Operational effects minor (i.e., no or limited disturbance expected). **Monitoring Plan and Contingency Measures** • No monitoring or contingency measures required.	~~**Potential Effect**~~ ~~Disturbance to Tundra Swan stopover and staging habitats due to vehicular traffic on access roads.~~ ~~**Performance Objective**~~ ~~Minimize disturbance or disruption to Tundra Swan stopover and staging habitat.~~ ~~**Mitigation Strategy**~~ ~~• Schedule regular (non-critical) maintenance activities to occur outside of the important period of staging Tundra Swan (March 1 to April 15), to the extent possible.~~ ~~• Maintain wildlife crossing signs and limit speed of vehicles (30 km/hr) near stopover and staging areas.~~ ~~**Residual Effects**~~ ~~• Disturbance effects reduced through mitigation measures.~~ ~~• Operational effects minor (i.e., no or limited disturbance expected).~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• No monitoring or contingency measures required.~~
Table 3-4 / page 41	**Potential Effect** Risk of road mortality to turtles moving between wintering ponds and other areas. **Performance Objective** Minimize turtle mortality along access roads. **Mitigation Strategy** • Maintain wildlife crossing signs and limit speed of vehicles (30 km/hr) near turtle wintering areas. **Residual Effects** • Risk of turtle road mortality reduced through mitigation measures. • Low likelihood of occurring and limited magnitude due to limited volume of maintenance vehicles. **Monitoring Plan and Contingency Measures** • No monitoring or contingency measures required.	~~**Potential Effect**~~ ~~Risk of road mortality to turtles moving between wintering ponds and other areas.~~ ~~**Performance Objective**~~ ~~Minimize turtle mortality along access roads.~~ ~~**Mitigation Strategy**~~ ~~• Maintain wildlife crossing signs and limit speed of vehicles (30 km/hr) near turtle wintering areas.~~ ~~**Residual Effects**~~ ~~• Risk of turtle road mortality reduced through mitigation measures.~~ ~~• Low likelihood of occurring and limited magnitude due to limited volume of maintenance vehicles.~~ ~~**Monitoring Plan and Contingency Measures**~~ ~~• No monitoring or contingency measures required.~~

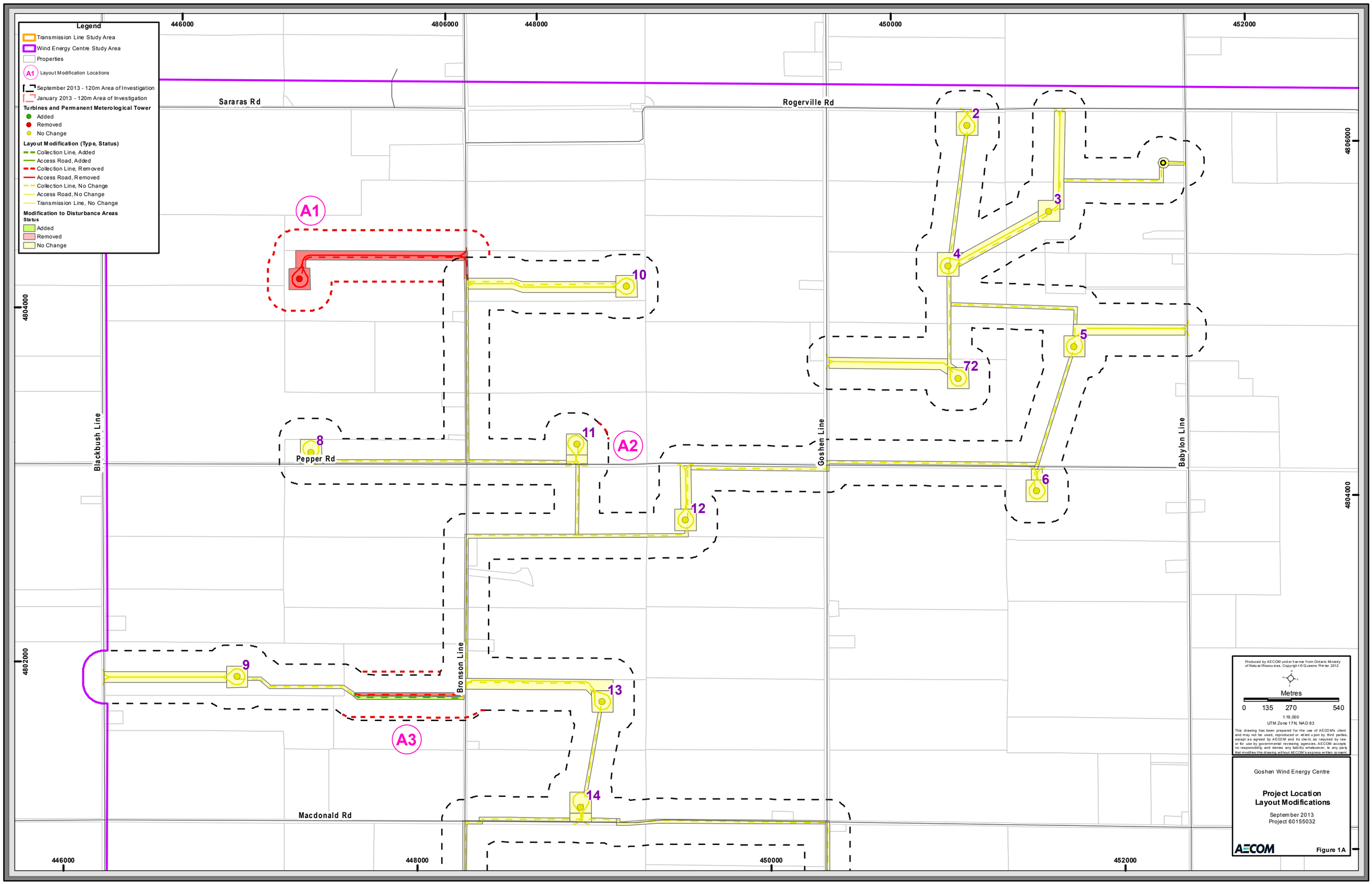
Section / Page	Original Text	Revised Text (Underlined text represents additions and ~~strikethrough text~~ represents deletions)
Table 3-4 / page 42	**Potential Effect** Risk of road mortality to amphibians moving between breeding pools and home range. **Monitoring Plan and Contingency Measures** Conduct 3 years post-construction amphibian call surveys (frogs and toads) and egg mass or adult surveys (salamanders) to assess any potential changes in amphibian breeding populations or species distribution (if Features deemed to be significant) at features AWO-02, AWO-25, AWO-27 and AWO-30 by a qualified Biologist	**Potential Effect** Risk of road mortality to amphibians moving between breeding pools and home range. **Monitoring Plan and Contingency Measures** Conduct 3 years post-construction amphibian call surveys (frogs and toads) and egg mass or adult surveys (salamanders) to assess any potential changes in amphibian breeding populations or species distribution (if Features deemed to be significant) at features ~~AWO-02,~~ AWO-25, AWO-27, ~~and~~ AWO-30 and AWO-36 by a qualified Biologist
Table 3-4 / page 46		**Potential Effects** Risk of soil or water contamination from oil, gas, etc. during maintenance of the transmission line in Significant Wetland WET-012. **Performance Objective** • No off-site contamination of soil and no contamination of groundwater or surface water. **Mitigation Strategy** • Develop and implement an emergency spills plan outlining steps to contain any spills during maintenance activities to avoid contamination of Significant Wetland. **Residual Effects** • Residual effects considered negligible. **Monitoring Plan and Contingency Measures** • No monitoring required. • **Contingency Measures:** ▪ Report the details of the spill to MOE, including a description of any assessment and remediation undertaken.
Table 3-14 / page 63	Damage to crops or trees due to turbine malfunction or failure associated with 16 turbines located within 80 m of neighbouring property lines.	Damage to crops or trees due to turbine malfunction or failure associated with ~~16~~ 15 turbines located within 80 m of neighbouring property lines.

4. Summary and Conclusions

The Project modifications described in this REA Revision Report do not change the overall conclusion of the Project Description Report which states that “this project can be constructed, installed and operated without any significant adverse residual effects to the environment. Post-construction monitoring related to effects on wildlife, including birds and bats, will be undertaken to confirm this conclusion”.

Appendix A

Project Modifications



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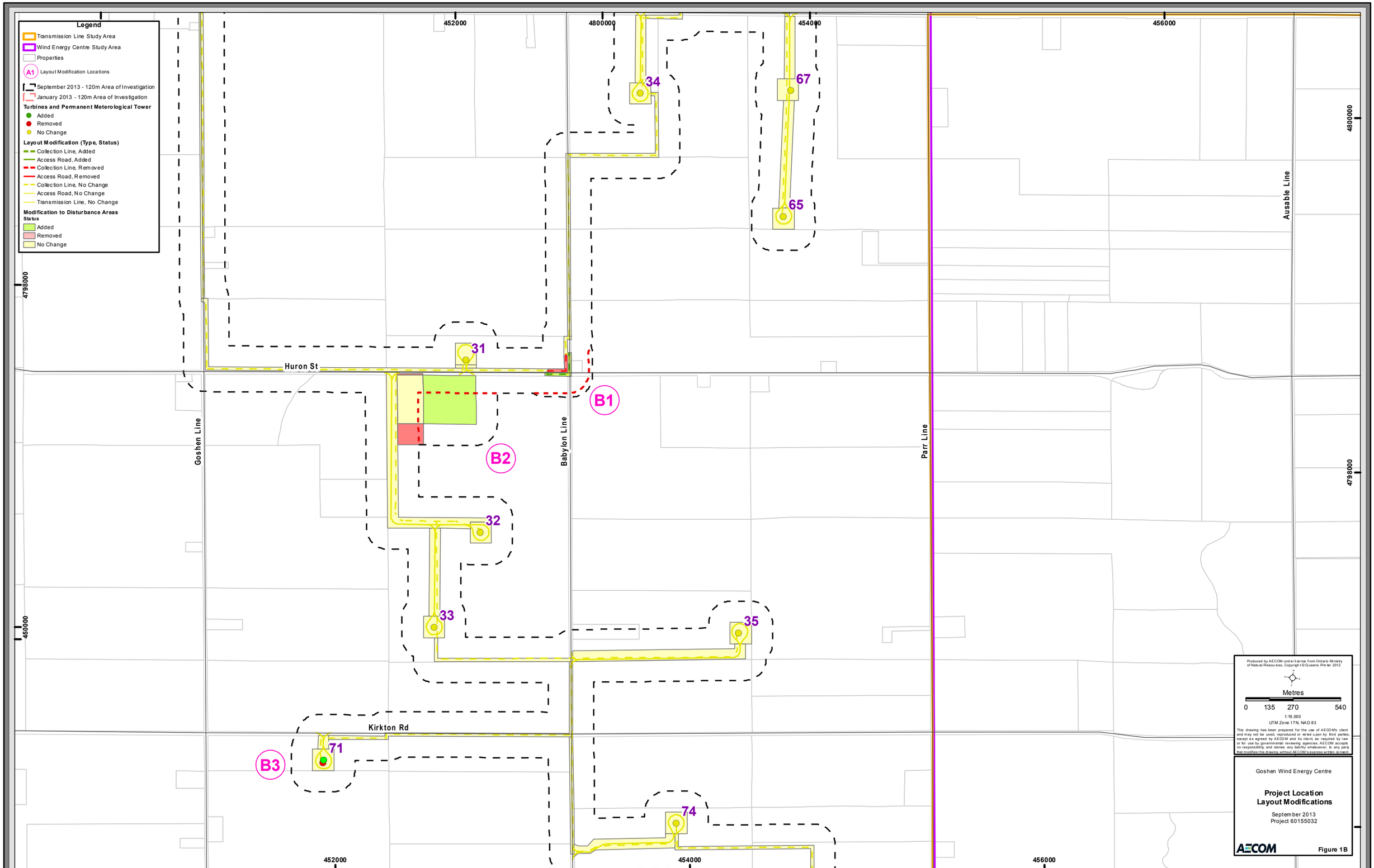

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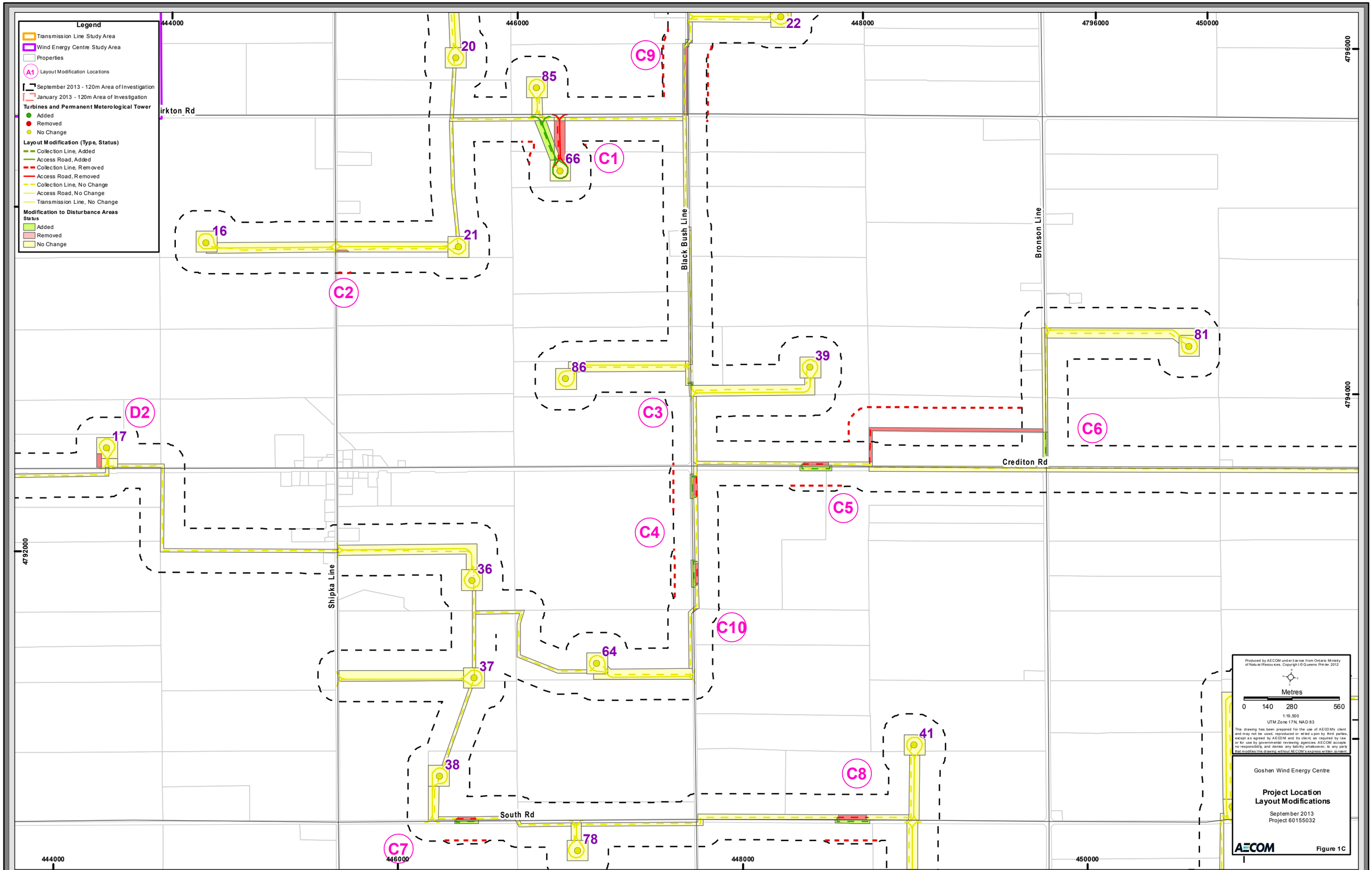

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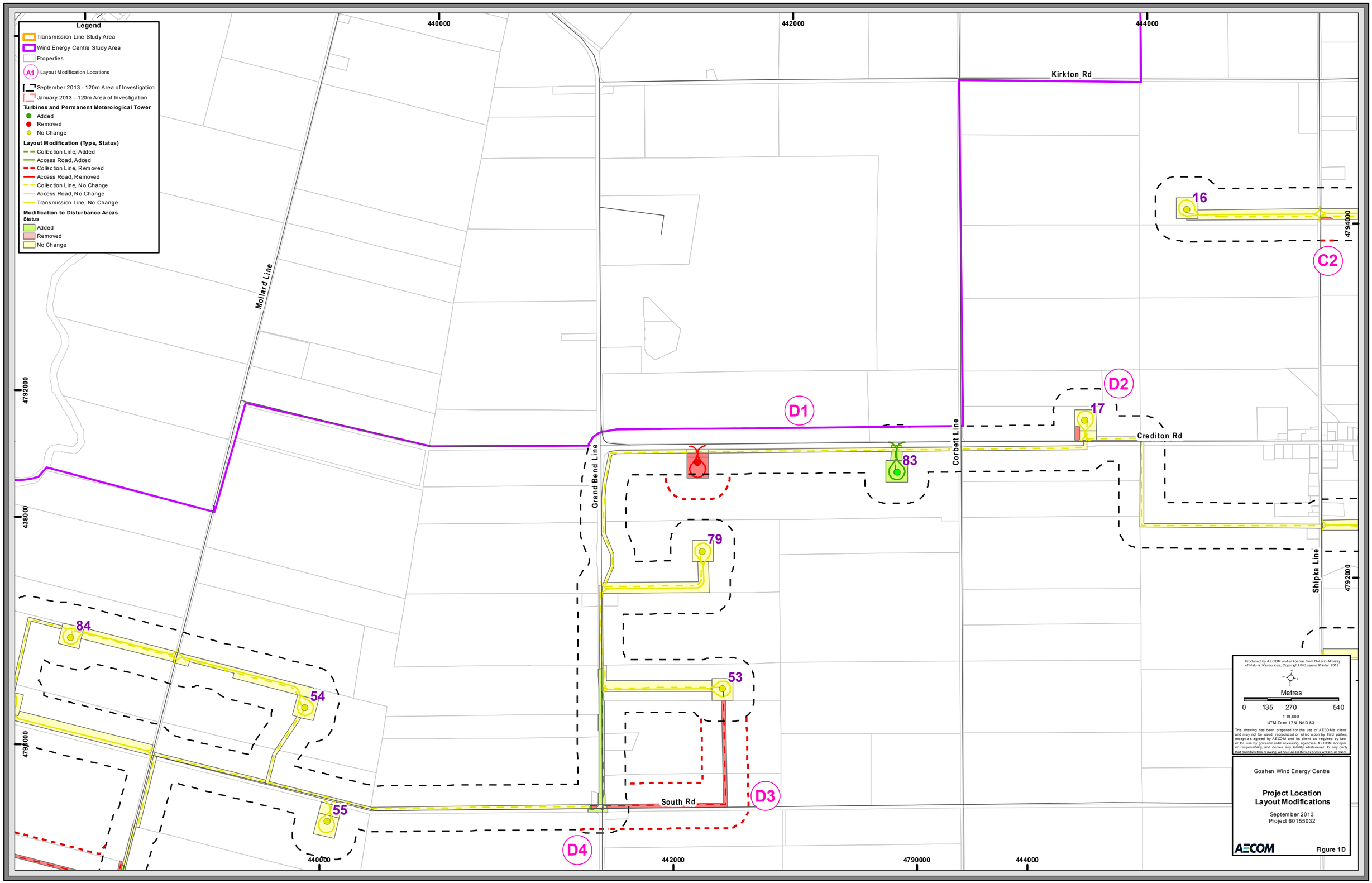

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Legend

- Transmission Line Study Area
- Wind Energy Centre Study Area
- Properties
- A1 Layout Modification Locations
- September 2013 - 120m Area of Investigation
- January 2013 - 120m Area of Investigation

Turbines and Permanent Meterological Tower

- Added
- Removed
- No Change

Layout Modification (Type, Status)

- Collection Line, Added
- Access Road, Added
- Collection Line, Removed
- Access Road, Removed
- Collection Line, No Change
- Access Road, No Change
- Transmission Line, No Change

Modification to Disturbance Areas

Status

- Added
- Removed
- No Change

436000 438000 440000

4790000

Lakeshore Rd
Cold Storage Rd
Klondyke Rd
Goosemarsh Line
Museum Rd
Greenway Rd
Mollard Line
South Rd
Greenway Dr
Hagmier Rd
Eagleson Line
Hutchinson Rd

84 57 54 55 58 60 59 61 62 63 56 52

E1 E2 E3 E4

4788000

4786000 436000 438000 440000

434000

Metres

0 135 270 540

1:19,000

UTM Zone 17N, NAD 83

Goshen Wind Energy Centre

Project Location
Layout Modifications

September 2013
Project 60155032

AECOM

Figure 1E

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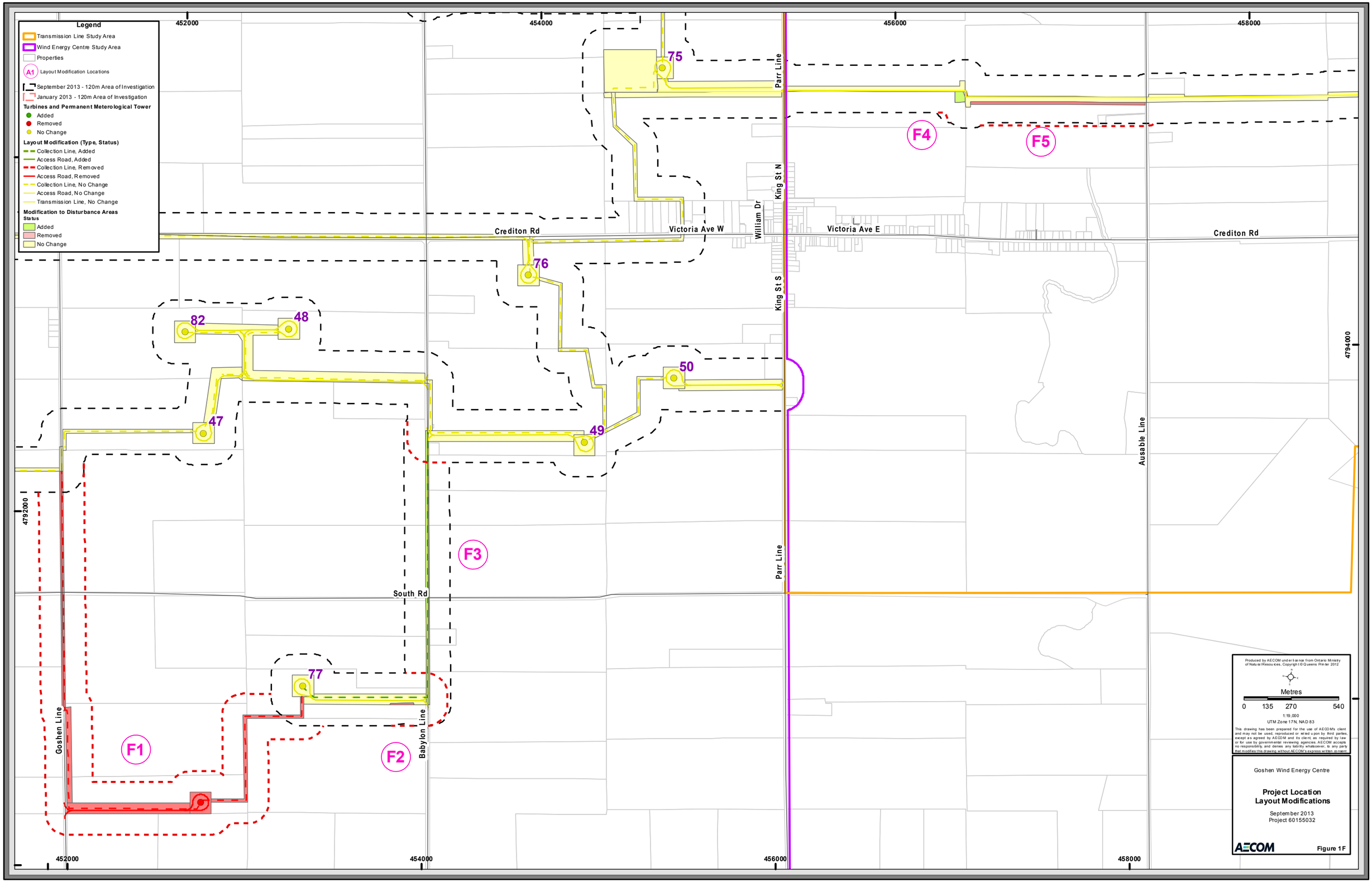

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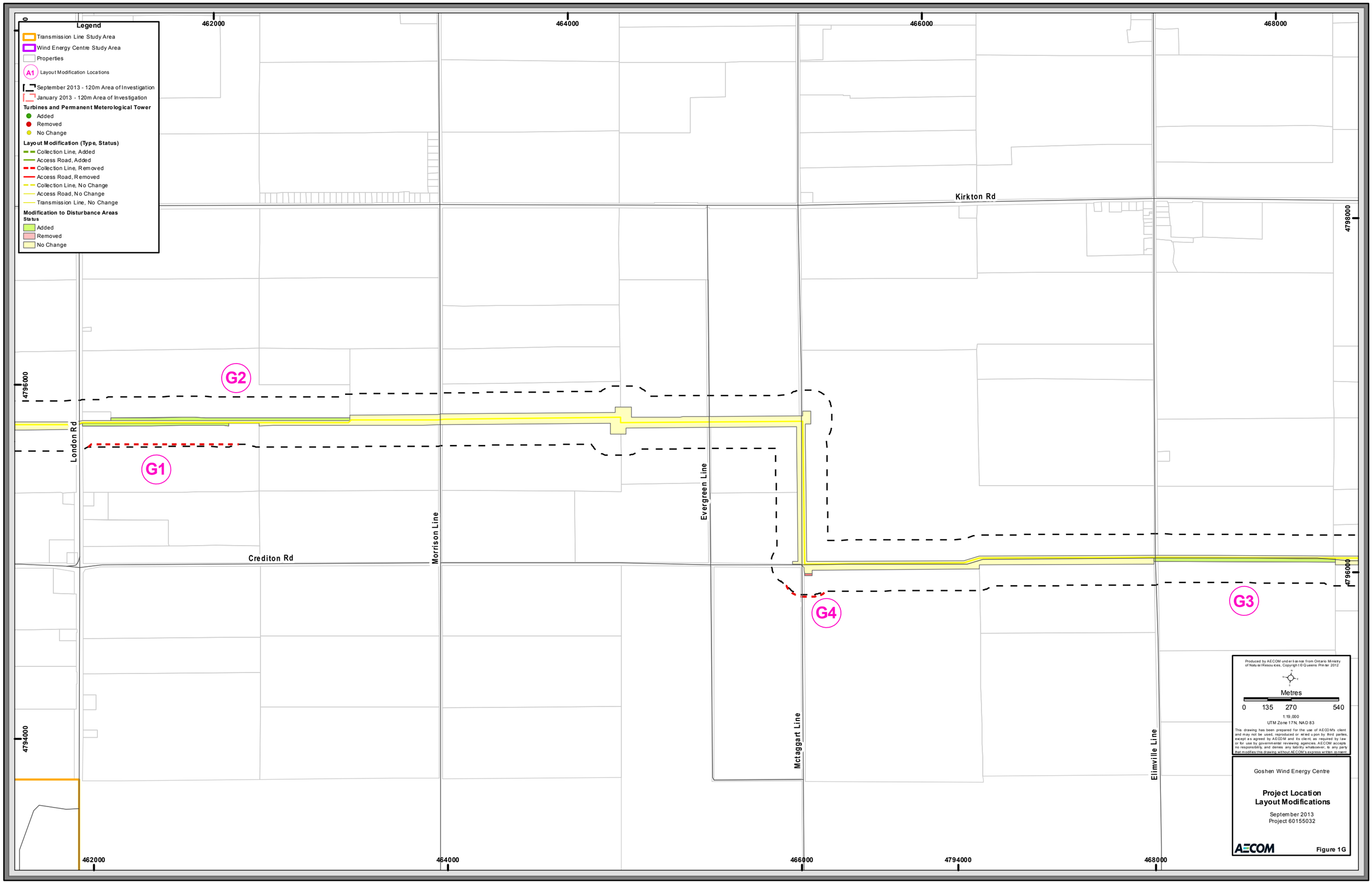

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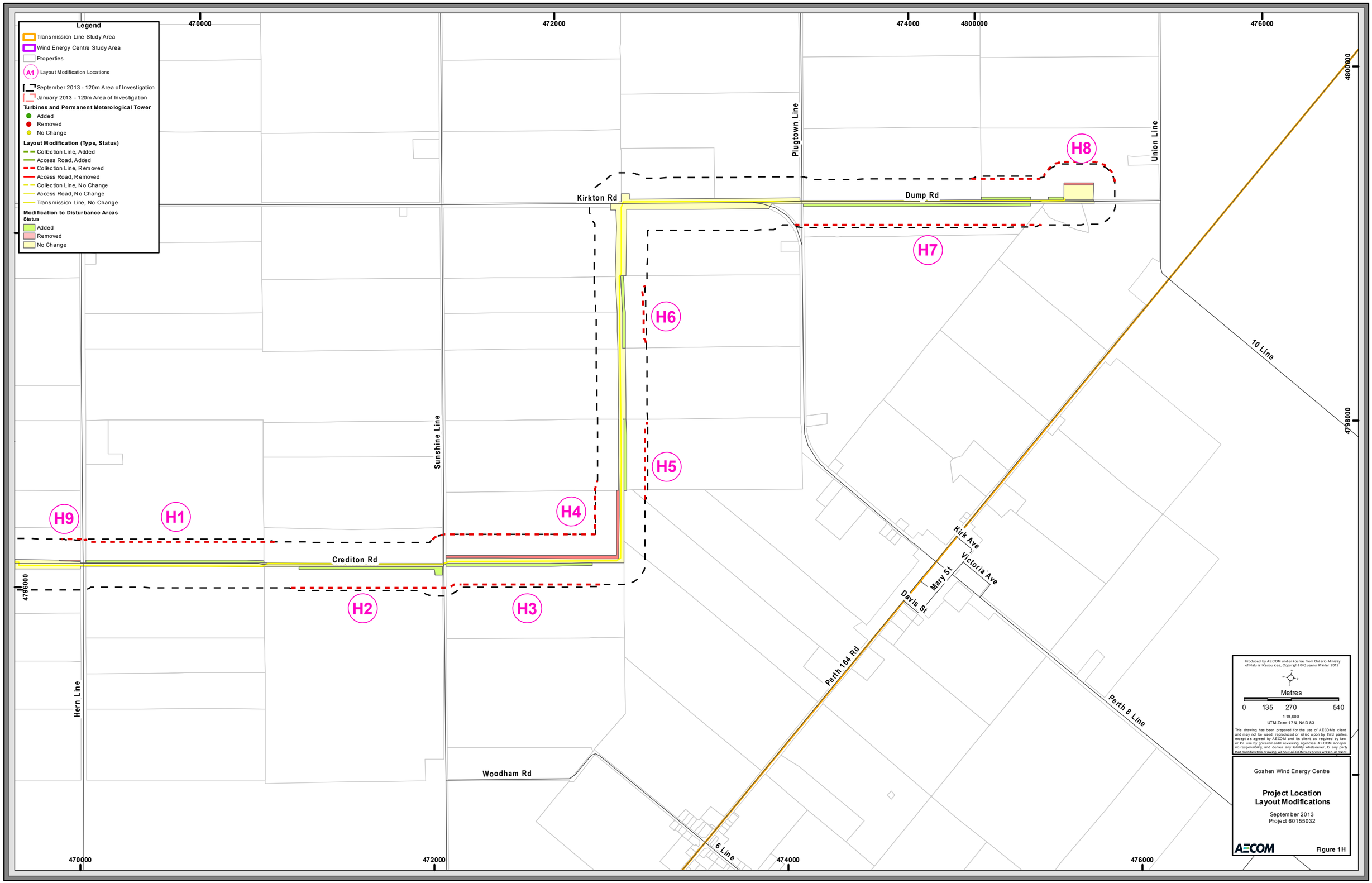

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Appendix B

Water Body Mitigation Measures

Mitigation Measures

Mitigation techniques are proposed to offset possible effects of the construction, decommissioning and operation activities of the Goshen Wind Energy Centre. Mitigation measures recommended to minimize risk associated with potential impacts to the water bodies include the implementation of standard Best Management Practices (BMPs), as described below.

BMPs are work practices that outline acceptable practices to follow when carrying out certain activities. DFO has developed a series of operational statements (BMPs) as guidelines to avoid conditions that may harmfully alter aquatic habitat. The following are applicable to this Project:

Work Area

- Stabilize banks where necessary, minimizing the area and duration of soil exposure.
- Operate machinery on land and in a manner that minimizes disturbance to stream banks.
- Erect sediment fencing around water bodies and areas to be avoided (i.e., near unstable banks, vegetation communities).
- Locate staging areas away from watercourses to limit risk of impacts to aquatic habitat.

Equipment Use

- Ensure machinery arrives on site in a clean, washed condition and is maintained free of fluid leaks.
- Minimize vehicle traffic on exposed soils, avoid compacting or other hardening of natural ground surface, and avoid the movement of heavy machinery on areas with sensitive slopes.
- Locate site maintenance, vehicle washing and refuelling stations where contaminants are handled at least 30 m away from water bodies.
- Implement vehicle and equipment cleaning procedures and practices to minimize or eliminate the discharge of pollutants from vehicle/ equipment cleaning operations to watercourses.
- Limit speed of vehicles near watercourse crossings.

Erosion and Sediment Control

- Develop and implement an erosion and sediment control plan before commencement of construction.
- Utilize erosion blankets, erosion control fencing, straw bales, etc., where necessary to mitigate potential excessive erosion and sedimentation. Ensure any materials placed in floodline are free from silt and other such particles. Keep extra erosion and sediment control materials on site (*e.g.*, heavy duty silt fencing, strawbales).
- Keep sediment and erosion control measures in place until disturbed areas have been stabilized (i.e., re-vegetated).
- Schedule grading to avoid times of high runoff volumes where possible. Temporarily suspend work during storm events to avoid excessive flows of sediment discharges.
- Direct discharged water to an appropriately sized energy dissipating outlet device to prevent erosion at the point of discharge.

Maintenance

- Maintain and repair permanent and temporary erosion and sediment control measures as needed to ensure continued performance of their intended function for the duration of the works.
- Remove temporary erosion and sediment control measures after the final site stabilization is achieved.
- Permanently stabilize disturbed soil resulting from removal of BMPs or vegetation.

Material Stockpiling and Handling

- Store any stockpiled materials away from water bodies to prevent deleterious substances from inadvertently discharging to the environment.
- Dispose of any waste material from construction activities by authorized and approved off-site vendors.

Grading and Excavation

- Minimize changes in land contours and natural drainage to maintain timing and quantity of flows.

Construction Timing Windows

- Time construction within 30 m of watercourses to avoid periods of habitat use to the extent possible. These timing windows are applied to protect fish from any works in and around water during spawning, migration and other critical life history stages. Construction timing windows are based on site specific criteria such as type of fish species present, thermal regime and fish spawning times (spring or fall). The generic restricted in-water work timing windows established by DFO are:
  - Fall Spawning Period – October 1st to May 31st
  - Spring Spawning Period – May 1st to July 15th
- Specific fisheries timing windows will be developed in co-operation with ABCA and UTRCA.

Isolated Crossing

- In-water works for permanent water bodies must occur in the dry via dry conditions and dam and pump method to maintain fish passage during in-water works. For intermittent water bodies, work is preferred to be completed in the dry and carried out during seasonally dry times or when the water body is frozen to the bottom.
- Develop and implement a fish rescue plan for dewatering areas. This will include appropriate sized end-of-pipe fish screen to prevent potential losses of fish due to entrainment or impingement as outlined in the DFO – Freshwater Intake End-of-Pipe Fish Screen Guideline.

Stream Flow

- Design and install culverts to prevent creation of barriers to fish movement and maintain bankfull channel functions.
- Design culverts to accommodate high flows of the watercourse.
- Embed the culvert below the streambed to maintain lateral flow.
- Install adequate gravel base to maintain flow of shallow groundwater.
- Locate crossings within straight sections of the stream, perpendicular to the bank. Avoid crossings on meander bends, braided streams and any other unstable areas.
- Use only clean material (i.e., rock or coarse gravel) for approaches to culverts.
- Regularly maintain culverts to ensure no debris build-up is impeding stream flow.

Water Quality

- Develop a spill response plan and train staff on associated procedures.
- Maintain emergency spill kits on site.
- Pass groundwater from dewatering activities (if required) through a sediment filtration system prior to being discharged to a watercourse.
- Control soil / water contamination through best management practices.
- Install a temporary storage basin to allow water to infiltrate, or use permanent stormwater management facilities as necessary for dewatering discharge.

Water Management

- Control rate and timing of water pumping; pump from deep wells to infiltration galleries adjacent to water bodies or wetlands.
- Control rate and timing of water pumping from surface water features.
- Control quantity and quality of surface water runoff using best management practices, and implement infiltration techniques to the extent possible.
- Restrict taking groundwater and surface water during drought conditions.
- Regulate the discharge of water-taking to ensure that there is no flooding in the downstream area and no soil erosion, or stream channel scouring is caused at the point of discharge. The water taker will use a discharge diffuser or other energy dissipation device, if necessary, to mitigate flows which physically alter the stream channel or banks.
- Install siltation control measures that are sufficient for the volumes pumped at both the taking location upstream of the construction site and (if necessary) the discharge site. All measures will be taken to properly maintain these control devices throughout the construction period.

Directional Drilling

- Conduct all drilling by licensed drillers in accordance with Regulation 903 under *Ontario Water Resources Act*, R.S.O. 1990.
- Locate drill entry and exit pits at least 30 m from water bodies.
- Collect drill cuttings as they are generated, and place in a soil bin or bag for off-site disposal.
- Ensure drill depth is at an appropriate depth below the water body to reduce the risk of a ‘frac-out’.
- Monitor water bodies for signs of surface disturbance.
- Develop a ‘frac-out’ contingency plan prior to the start of construction outlining protocols to monitor, contain and clean up a ‘frac-out’.

Rehabilitation

- Re-vegetate and restore the turbine staging area following turbine installation with tiling (if desired by the owner).
- Restore and maintain vegetative buffers around water bodies including within the foundation footprint where possible.
- Restore & maintain vegetative buffers around water bodies including within the temporary construction areas.
- Keep vegetation removal to a minimum.
- Add suitable stream substrates (e.g., gravel or rip rap) to stabilize sediment and provide cover.