Table 4-1: Evaluation of Significance Studies

Natural Feature ID	Evaluation Methods	Survey Date/ Time	Field Personnel	Duration (Person-Hours)	Air Temperature* (°C)	Cloud Cover (%)	Precipitation	Wind* (km/hr)
WR1, WR2, WR3, WR4, WR5, WR6	Winter Raptor and Short-eared Owl Surveys	February 28, 2012 10:45 - 18:30	Jon Pleizier	7.75	-3.1 - -2.1	0 - 30	None	7 - 19

Data retrieved February 2012 from Environment Canada weather station KINGSTON CLIMATE. (44°13'24.000" N, 76°35'58.000" W)

Table 4-2: Evaluation of Significance – Woodlands

Feature No.	Size (ha)	Size 100 m from edge (ha)	Township (Loyalist Township/ City of Kingston)	Woodland Size Criterion[1] (Yes/No)	Ecological Function Criteria					Uncommon Characteristic Criteria[7] (Yes/No)	Significant Woodland[8] (Yes/No)
					Woodland Interior[2] (Yes/No)	Proximity to other Significant Features[3] (Yes/No)	Linkages[4] (Yes/No)	Proximity to Water[5] (Yes/No)	Woodland Diversity Representation[6] (Yes/No)		
1	51.3	4	Loyalist Township	Yes	Yes	Yes – Woodland 1 is within 30 m of ABF16, SH3, and SBB1.	No	Yes – Wetland 2	Yes – Woodland 1 is dominated in part by White Pine and oak species.	No	Yes
2	7.9	0	Loyalist Township	No	No	Yes – Woodland 2 is within 30 m of the Odessa Lake Swamp Complex.	No	Yes – Odessa Lake Swamp Complex	Unknown	Unknown	Yes
4	0.5	0	Loyalist Township	No	No	No	No	No	No	No	No
5	9.3	0	Loyalist Township	No	No	Yes – Woodland 5 is within 30 m of ABF2, and ABF5.	Yes – Woodland 5 provides a linkage between ABF2 and ABF5.	Yes – Wetland 3 and another wetlands outside of 120 m.	Yes – Woodland 5 is dominated by White Pine and oak species,	No	Yes
7	2.7	0	Loyalist Township	No	No	No	No	No	No	No	No
10	5.3	0	City of Kingston	No	No	No	No	No	No	No	No
12	1.8	0	City of Kingston	No	No	No	No	No	No	No	No
13	79.0	0.4	City of Kingston	Yes	No	Yes – Woodland 13 is within 30 m of ABW16, ABF14, and GS1.	Yes – Woodland 13 provides a linkage between ABW16 and ABF14.	Yes – Wetland 7, 21, and another wetland outside of 120 m	Yes – dominated in part by Sugar Maple and Red Maple,	Yes	Yes
14	34.7	6	City of Kingston	No	No	Yes – Woodland 14 is within 30 m of TOW8, and ABF9	Yes – Woodland 14 provides a linkage between TOW8 and TOW10 and between ABF9, and AMC6.	Yes – Wetland 11	No	No	Yes
15	1.2	0	City of Kingston	No	No	No	No	No	No	No	No
16	0.3	0	City of Kingston	No	No	No	No	No	No	No	No
18	120.8	72	City of Kingston	Yes	Yes	Yes – Woodland 18 is within 30 m of significant features SH39 and ABW12.	Yes – Woodland 18 provides a linkage between SH39 and SH33.	Yes – Wetland 24	Yes – Dominated in part by White Pine and oak species,	No	Yes
19	22.8	3	City of Kingston	No	No	Yes – Woodland 19 is within 30 m of ABF10, ABW9, and MB1.	Yes – Woodland 19 provides a linkage between ABF10 and ABW9.	No	No	No	Yes
22	0.9	0	City of Kingston	No	No	No	No	No	No	No	No
23	3.7	0	City of Kingston	No	No	No	No	No	No	No	No
24	0.3	0	City of Kingston	No	No	No	No	No	No	No	No
25	1.1	0	City of Kingston	No	No	No	No	No	No	No	No
26	0.4	0	City of Kingston	No	No	No	No	No	No	No	No
27	0.3	0	City of Kingston	No	No	No	No	No	No	No	No
29	9.0	0	City of Kingston	No	No	No	No	No	No	No	No

Table 4-2: Evaluation of Significance – Woodlands

Feature No.	Size (ha)	Size 100 m from edge (ha)	Township (Loyalist Township/ City of Kingston)	Woodland Size Criterion[1] (Yes/No)	Ecological Function Criteria					Uncommon Characteristic Criteria[7] (Yes/No)	Significant Woodland[8] (Yes/No)
					Woodland Interior[2] (Yes/No)	Proximity to other Significant Features[3] (Yes/No)	Linkages[4] (Yes/No)	Proximity to Water[5] (Yes/No)	Woodland Diversity Representation[6] (Yes/No)		
30	16.2	0	City of Kingston	No	No	Yes – Woodland 30 is within 30 m of MB1 and ABW9.	No	No	Yes – Woodland 30 is dominated by Sugar Maple.	No	Yes
31	3.4	0	City of Kingston	No	No	Yes – Wetland 18, MB1	No	Yes	No	Unknown	No
33	2.8	0	City of Kingston	No	No	No	No	No	No	Unknown	No
34	2.0	0	City of Kingston	No	No	No	No	No	No	Unknown	No
35	8.0	0	City of Kingston	No	No	No	No	No	No	No	No
36	0.8	0	Loyalist Township	No	No	No	No	No	No	No	No
37	0.9	0	Loyalist Township	No	No	No	No	No	No	No	No
38	0.7	0	Loyalist Township	No	No	No	No	No	No	No	No
39	0.7	0	City of Kingston	No	No	No	No	No	No	No	No
40	1.1	0	City of Kingston	No	No	No	No	No	No	No	No
41	1.1	0	City of Kingston	No	No	No	No	No	No	No	No
42	0.2	0	City of Kingston	No	No	No	No	No	No	No	No
43	0.1	0	City of Kingston	No	No	No	No	No	No	No	No
44	0.3	0	City of Kingston	No	No	No	No	No	No	No	No

1 – Woodlands are considered significant if they encompass a minimum of 50 ha if in the City of Kingston or 20 ha if in the Loyalist Township (these values are based on the total woodland cover in each respective municipality)
2 – Woodlands are considered significant if they have an interior habitat size (habitat more than 100 m away from the edge) of 8 ha if in the City of Kingston or 2 ha if in the Loyalist Township
3 – Woodlands are considered significant if they are within 30 m of a significant natural feature and meet an area threshold of 10 ha if in the City of Kingston or 4 ha if in the Loyalist Township
4 – Woodlands are considered significant if they are located between two other significant features, each within 120 m, and meet an area threshold of 10 ha if in the City of Kingston or 4 ha if in the Loyalist Township
5 – Woodlands are considered significant if they are within 50 m of sensitive groundwater processes, headwaters, or fish habitat and, and meet an area threshold of 4 ha if in the City of Kingston or 2 ha if in the Loyalist Township
6 – Woodlands are considered significant if they are dominated, singly or in combination, by select native, naturally occurring tree species, and meet an area threshold of 10 ha if in the City of Kingston or 4 ha if in the Loyalist Township
7 – Woodlands are considered significant if they have rare or uncommon vegetation communities, vegetation species or have features of an older woodland, and meet an area threshold of 4 ha if in the City of Kingston or 2 ha if in the Loyalist Township
8 – Woodlands that meet the standard for any one of the criteria are considered significant

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
31	13.34	OWES: Thicket Swamp (tS)	Isolated – no inflow or outflow.	Tall shrub (ts), robust emergents (re), narrow leaved emergents (ne)	• The wetland is within 1 km of other wetlands. • 241 m from a wetland occurring outside of 120 m from the Project Location. • No hydrological connection by surface water.	Type 3: Approximately 15% open water in the form of seasonal pools.	• 87 intersections identified in the wetland. • Score range 15 points.	• The isolated nature of the wetland allows for good flood attenuation. • High flood retention capacity due to its large size. • The wetland receives surface overflow from adjacent agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Good watershed improvement factor due to the isolated nature of the wetland. • The 13.34 ha area allows for filtration of large quantity of water from surrounding agricultural lands. • There is good pollution uptake due to the presence of large areas of predominantly narrow and robust emergents (Sedges, Reed-canary Grass, and Cattail). • Soils are predominantly very fine Sandy Clay loam with Less than 50% soil organic content. Soil Classification results were based on field soil surveys.	Not Applicable (the wetland is isolated)	No evidence of groundwater recharge was observed during Site Investigation.	None observed	None	None observed	• Wetland was treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 26 m from the Project Location (fence line). • No development will take place within this wetland area. • Mitigation measures will be taken for any potential minor and major alterations to local topography and overland and surface flow expected. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
32	5.76	OWES: Shallow Marsh (sM)	Riverine – the wetland is associated with a permanent stream (Glenvale Creek).	Deciduous trees (h), narrow leaved emergents (ne), tall shrubs (ts), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 22 m from wetland 18 and a wetland occurring outside of 120 m from the Project Location. • Hydrologically connected by surface water (Glenvale Creek).	Type 3: Approximately 20% open water in the form of seasonal pools.	• 37 intersections identified in the wetland. • Lower score range 6 points.	• The wetland is significant in retaining surface overflow from adjacent agricultural lands. • The small area of the wetland limits flood retention capacity; however, the stream (Glenvale Creek) that flows through the wetland allows for removal of excess flood water. • Catchment area: the wetland is located within Collins Creek Watershed.	• Significant in water quality improvement; the wetland is surrounded by agricultural and residential activities. • Good pollution uptake due to the presence of large areas of predominantly narrow and robust emergents (Sedges, Reed Canary Grass, Cattail).	• The shoreline vegetation is mainly dominated by Reed Canary Grass, occasionally shrubs and rarely trees. • No vegetation will be removed in the wetland or stream bank.	No evidence of groundwater recharge was observed during site investigation; however, the riverine nature of the wetland suggests poor ground water recharge potential.	None observed	None	Known fish habitat	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland within proposed Project Location. • No development will take place directly within this wetland area. • No potential minor and temporary alterations to local topography and overland and surface flow may be expected. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
30	2.4	OWES: Meadow marsh (mM)	Isolated – no inflow or outflow.	Narrow leaved emergents (ne), deciduous trees (h), conifers (c), tall shrubs (ts).	• The wetland is within 1 km of Wetland 25. • No hydrological connection.	Type 3: Approximately 20% open water; occurs as seasonal pools.	• 34 intersections identified in the wetland. • Lower score range 6 points.	• The low topographical position of the area and isolated nature allows for good flood attenuation; however, the small size of the wetland limits flood retention capacity. • The wetland retains overflow from surrounding agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Locally significant due to isolated nature of the wetland. • The wetland receives run-off from surrounding agricultural lands. • High pollution uptake, due to dominance of narrow emergents such as sedges and Reed Canary Grass. • Soils contain less than 50% soil organic content. Soil information was based on field investigation.	Not Applicable (the wetland is isolated)	No evidence of groundwater recharge was observed during Site Investigation.	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 27 m from the Project Location (access road). • No development will take place within this wetland area. • No loss of wetland area. • No loss of wetland vegetation. • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern tip of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected. • Mitigation measures will be taken to avoid changes in wetland characteristics and functions.
7	3.0	OWES: Deciduous Swamp (hS).	Isolated – no inflow or outflow.	Deciduous trees (h), tall shrubs (ts), short shrubs (ls).	• The wetland is within 1 km of other wetlands. • 86 m from wetland Wetland 22. • No hydrological connections.	Type 3: Approximately 20% open water; occurs in various pond sizes.	• 52 intersections identified in the wetland. • Lower score range 9 points.	• The isolated nature of the wetland allows for good flood attenuation; however, the small area of the wetland limits flood retention capacity. • Catchment area: the wetland is located within Collins Creek Watershed.	• The wetland is surrounded by agricultural lands. • Pollution uptake – low due to the dominance of perennial forms (trees and shrubs).	Not Applicable (the wetland is isolated)	No evidence of groundwater recharge was observed during Site Investigations.	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland within 86 m from the Project Location. • No development will take place within this wetland area. • No loss of wetland area. • No loss of wetland vegetation. • No potential minor and temporary alterations to local topography and overland and surface flow may be expected. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
29	0.14	OWES: Deciduous Swamp (hS).	Isolated – no inflow or outflow.	Deciduous trees (h), narrow leaved emergents (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 132 m from feature Wetland 20. • No hydrological connection.	Type 2: approximately 10% open water in the middle of this feature.	• 45 intersections identified in the wetland. • Lower score range 9 points.	• The isolated nature allows for good flood attenuation; however, the small area of the wetland limits flood retention capacity. • Catchment area: the wetland is located within Collins Creek Watershed.	• The wetland is within the upland forest but receives the surface overflow from agricultural field on the west. • Pollution uptake – low, due to dominance of perennial forms.	Not Applicable (the wetland is isolated)	No evidence of groundwater recharge was observed during Site Investigations.	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 82 m from the Project fence line. • Potential minor and temporary alterations to local topography and overland and surface flow may be expected not likely to impact the wetland. The wetlands receives run-off from surrounding forest upland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
26	0.29	OWES: Meadow Marsh (mM)	Isolated – no inflow or outflow.	Narrow leaved emergents (ne), tall shrubs (ts), low shrubs (ls).	• The wetland is within 1 km of other wetlands. • 132 m from feature Wetland 23. • No hydrological connection.	Type 3: Approximately 8% open water in the form of seasonal pools.	• 31 intersections identified in the wetland. • Lower score range 6 points.	• The isolated nature allows for good flood attenuation; however, the small area of the wetland limits flood retention capacity. • Catchment area: the wetland is located within Collins Creek Watershed.	• The wetland is surrounded by agricultural activities. • Pollution uptake – significant, due to dominance of narrow emergent forms (*Carex*).	Not Applicable (the wetland is isolated)	Isolated with predominantly medium sandy loam over coarse sand.	None observed	None	None observed	• Wetland will not treated as provincially significant and full evaluation of the wetland was conducted to determine its significance. • Wetland within proposed Project Location (construction area). • Potential major and minor alterations to local topography and overland and surface flow may be expected.
27	0.44	Marsh	Isolated – no inflow or outflow.	Deciduous treed swamp (hS), narrow-leaved emergents (ne), tall shrubs (ts), low shrubs (ls), ground cover (gc)	22 m	Type 6 – 95% open water. Vegetation occurs in the peripheries.	• 43 intersections identified in the wetland. • Lower score range 9 points.	• Wetland was created from decommissioned quarry land; • Significant flood attenuation role locally - low gradient toward south of the site and isolated nature allows surface inflow from upland communities on the north and agricultural fields on the west into the wetland.	• Short term - isolated nature of the wetland is significant in water quality improvement; • Wetland is surrounded by upland (FODM7, CUM 1 – 1 and disturbed land. Pollution uptake – low, mostly open water with dominance of perennial vegetation type in the peripheries.	Not Applicable	No evidence of groundwater recharge was observed during Site Investigations.	No observed during the site investigation.	None	Provides a fish habitat.	• Wetland is 51 m from the Project fence line. • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the northern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component									
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
28	0.33	OWES: Open Water (M).	Isolated – no inflow or outflow.	Deciduous trees (h), tall shrubs (ts), narrow leaved emergents (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 86 m from feature Wetland 7. • No hydrological connection.	Type 3: Approximately 90% open water with vegetation communities growing in the peripheries.	• 43 intersections identified in the wetland • Lower score range 9 points.	• The isolated nature allows for good flood attenuation; however, the small area of the wetland limits flood retention capacity. • The wetland is significant in holding overflow from adjacent agricultural lands and upland forest. • Catchment area: the wetland is located within Collins Creek Watershed.	• Watershed improvement factor is poor due to the Isolated nature of the wetland; however the wetland is surrounded by upland forest (FODM7, CUM 1 – 1), agricultural lands and residential. Therefore receives overflow from these surrounding features. • Pollution uptake is low due to the perennial nature of the vegetation in the peripheries and sandy soils with less than 50% organic content (source of soil information field investigation). • Catchment area: the wetland is located within Collins Creek Watershed.	Not Applicable (the wetland is isolated)	No evidence of groundwater recharge was observed during Site Investigations	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 102 m from the Project Location (fence line). • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
18	76.82	OWES: Shallow Marsh (sM).	Riverine – the wetland is associated with permanent water course – Glenvale Creek	Deciduous trees (h), narrow leaved emergents (ne), tall shrubs (ts), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 18 m from feature Wetland 17.	Type 3: Approximately 2% open water in the form of seasonal and permanent pools.	• 56 intersections identified in the wetland. • Lower score range 9 points.	• The Glenvale Creek flows within the wetland. • Surface run-off from adjacent agricultural lands. • The low topography and isolated nature allows for good flood attenuation; • Its large area plays a significant role in flood retention capacity within the catchment basin Collins Creek.	• Good quality improvement due to its large area (76.82 ha) presence narrow emergent which trap nutrients from the water. • Good pollution uptake due to the presence of large areas of predominantly narrow and broad emergent (Sedges, Reed Canary Grass, Cattail). • Catchment area: the wetland is located within Collins Creek Watershed.	• The shoreline vegetation is mainly dominated by Reed Canary Grass, occasionally shrubs and a few scattered trees. • No vegetation will be removed in the wetland or stream bank.	No evidence of groundwater recharge was observed during Site Investigations.	None observed	None	Known fish habitat	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • This wetland is a continuation from non-participating properties across North of Unity Rd through property participating properties south of Unity Rd. to HWY 401

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
17	7.9	OWES: Deciduous Swamp (hS).	Isolated – no inflow or outflow.	Deciduous trees (h) tall shrubs, (ts), narrow leaved emergents (ne), ground cover (gc)	• The wetland is within 1 km of other wetlands. • 18 m from feature Wetland 18.	Type 3: approximately 8% open water in the form of the seasonal ponds.	• 44 intersections identified in the wetland. • Lower score range 9 points.	• The wetland receives surface overflow from adjacent agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Short term - isolated nature of the wetland is significant in water quality improvement from surrounding agricultural lands. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable (the wetland is isolated).	No evidence of groundwater recharge was observed during the Site Investigation.	None observed	None	None observed	• Wetland treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 24 m from the Project Location (fence line).
13	0.05	OWES: Deciduous Swamp (hS).	Isolated – no inflow or outflow.	Deciduous tree (h), tall shrub (ts), narrow leaved emergents (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 368 m from feature Wetland 11.	Type 3: Approximately 10% open water in the form of seasonal ponds.	• 33 intersections identified in the wetland • Lower score range 6 points.	• Flood holding capacity is minimal due to the small size of the wetland. The wetland receives surface overflow from adjacent agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Isolated nature of the wetland is significant in water quality improvement from surrounding agricultural lands. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable (the wetland is isolated).	No evidence of groundwater recharge was observed during the Site Investigation.	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
11	32.13	OWES: Deciduous Swamp (hS).	Palustrine – intermittent inflow and outflow which is associated with Glenvale Creek.	Deciduous trees (h), tall shrubs (ts), low shrubs (ls), narrow leaved emergents (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands. • 368 m from feature Wetland 13.	Type 3: Approximately 10% open water ponds in the form of scattered ponds.	• 88 intersections identified in the wetland. • Lower score range 15 points.	• The large area of the wetland allows for high flood retention capacity. • The wetland receives surface run-off from adjacent agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Wetland is important for improving water quality due to surrounding agricultural activities. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable (the wetland is isolated).	No evidence of groundwater recharge was observed during the Site Investigation. The Palustrine nature of the wetland suggests a high groundwater recharge potential.	None observed	None	None observed	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 12 m from the Project Location (fence line). • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
25	0.07	Deciduous Swamp	Palustrine	Deciduous tree (h), tall shrub (ts), narrow emergent (ne), ground cover (gc).	73.1 m	Type 2	• 43 intersections identified in the wetland. • Lower score range 9 points.	• The wetland receives surface overflow from surrounding agricultural lands. • Catchment area: the wetland is located within the Collins Creek Watershed.	• Watershed improvement factor is poor due the Palustrine nature of the wetland. • Wetland is important for improving water quality due to surrounding agricultural activities. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable	No evidence of groundwater recharge was observed during Site Investigations; however, the palustrine nature of the wetland suggests a high groundwater recharge potential.	None observed	None	• None	• Wetland is 19 m from the Project Location (fence line). • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
3	1.0	OWES: Deciduous Swamp (hS).	Palustrine	Deciduous tree (h), tall shrub (ts), narrow emergent (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands (51 m from wetland feature outside of 120 from the Project Location).	Type 3: Approximately 4-5% in the form of seasonal ponds.	• 49 intersections identified in the wetland. • Lower score range 9 points.	• The flood attenuation capacity is limited due to its small area. The wetland plays a significant flood attenuation role locally; receives surface overflow from surrounding agricultural lands. • Catchment area: the wetland is located within Collins Creek Watershed.	• Watershed improvement factor is poor due the Palustrine nature of the wetland. • Wetland is important for improving water quality due to surrounding agricultural activities. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable (the wetland is isolated).	No evidence of groundwater recharge was observed during Site Investigations; however, the palustrine nature of the wetland suggests a high groundwater recharge potential.	None observed	None	None	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 24 m from the Project Location (fence line). • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.
2	12.3	OWES: Deciduous Swamp (hS).	Palustrine-the wetland is associated with intermittent inflow and permanent outflow.	Deciduous tree (h), tall shrub (ts), robust emergent (re), narrow emergent (ne), ground cover (gc).	• The wetland is within 1 km of other wetlands (293 m from a wetland feature outside 120 m from the Project Location.	Type 3: Approximately 15% open water in the form of seasonal pond and a beaver dam.	• 49 intersections identified in the wetland. • Lower score range 9 points.	• The large area of the wetland allows for high water holding capacity. • Catchment area: the wetland is located within Collins Creek Watershed.	• Watershed improvement factor is poor due the Palustrine nature of the wetland. • Significant in improving water quality locally due to surrounding agricultural activities. • Pollution uptake is low due to the perennial nature of the vegetation.	Not Applicable (the wetland is isolated).	No evidence of groundwater recharge was observed during Site Investigations; however, the palustrine nature of the wetland suggests a high groundwater recharge potential.	None observed	None	Known fish habitat	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 25 m from the Project Location (fence line). • Potential minor and temporary alterations to local topography and overland and surface flow may be expected on the southern edge of the wetland. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-3: Site Investigation - Wetlands Characteristics and Ecological Functions

	Biological Component						Hydrological Component								
Feature ID	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to Other Wetlands (approximate)	Open Water Type	Interspersion	Flood Attenuation	Water Quality Improvement (Total)	Shoreline Erosion	Groundwater Recharge (Total)	Rare Species	Significant Features	Fish Habitat	Comments
33	2.12	Cattail mineral shallow marsh.	Riverine – the wetland is associated with a permanent stream (Glenvale Creek).	Deciduous trees (h), tall shrubs (ts), low shrubs (ls), narrow leaved emergents (ne), ground cover (gc).	• The wetland is within 0.5 km from other wetlands (wetlands 11 and 18). • Hydrologically connected by surface water (Glenvale Creek).	Type 3: Approximately 10% open water in the form of seasonal pools.	• 31 intersections identified in the wetland. Lower score range 6 points	• The wetland is significant in retaining surface overflow from adjacent agricultural lands. • The small area of the wetland limits flood retention capacity; however, the stream (Glenvale Creek) that flows through the wetland allows for removal of excess flood water. • Catchment area: the wetland is located within Collins Creek Watershed.	• Significant in water quality improvement; the wetland is surrounded by agricultural and residential activities. • Good pollution uptake due to the presence of large areas of predominantly narrow and robust emergents (Sedges, Reed Canary Grass, Cattail).	• The shoreline vegetation is mainly dominated by Reed Canary Grass, occasionally shrubs and rarely trees. • No vegetation will be removed in the wetland or stream bank.	No evidence of groundwater recharge was observed during site investigation; however, the riverine nature of the wetland suggests poor ground water recharge potential.	None observed	None	None	• Wetland will be treated as provincially significant for the purpose of the Renewable Energy Projects Evaluation. • Wetland is 50 m from the Project Location (fence line). • No development will take place directly within this wetland area. • No potential minor and temporary alterations to local topography and overland and surface flow may be expected. • No permanent changes to the hydrology are expected; no changes to the wetlands water budget or functioning are expected.

Table 4-4: Evaluation of Significance – Raptor Wintering Areas

Natural Feature ID	Winter Raptor Survey Points	Characteristics and Function								Significant Wildlife Habitat (Yes/No)
		Relative Importance	Presence of Species of Special Concern (Yes/No)	Species Diversity	Maximum Abundance	Size >20 ha (Yes/ No)	Level of Disturbance	Habitat Quality	Historical Use	
WR1	WR1	Low – Relatively small patch of habitat compared to other candidate areas.	No	No raptors observed	n/a	Yes 22.0 ha	Moderate – Area occurs in close proximity to rural residences and is adjacent to a horse pasture.	Low – Old field habitat likely provides abundant prey, yet small area is broken up further by multiple hedgerows.	No data of historical use by raptors available.	No – does not meet abundance requirement of significance.
WR2	WR2, WR3, WR4, WR5	Low – Many hedgerows break up the area and may exclude raptor species other than Red-tailed Hawk.	No	Red-tailed Hawk	3	Yes 138.3 ha	Moderate – Area consists of actively harvested hay fields and regularly cut Union Gas corridor	Low – Too many hedgerows for open country raptor species.	No data of historical use by raptors available.	No – does not meet abundance requirement of significance.
WR3	WR3, WR9, WR11	Moderate – Second largest tract of open country overlapping the Project Location. Abundant forest occurs at field edges and many perches are present.	Yes – One Short-eared Owl observed by Stantec during March 2011.	Northern Harrier Red-tailed hawk Rough-legged Hawk	8	Yes 206.2 ha	Moderate/High – Few homes occur adjacent to habitat and land is actively grazed by sheep. Habitat is large but not deep and is in close proximity to Unity Road.	Moderate – Area maintains shorter ground cover which thatch layer. Open country with many perches.	No data of historical use by raptors available.	Yes – presence of 1 Short-eared Owl.
WR4	WR12, WR13, WR14, WR15, WR16	Moderate – Large area of low winter disturbance with diverse ground cover.	No	Northern Harrier Red-tailed Hawk Rough-legged Hawk	3	Yes 95.7 ha	Low/Moderate – Area is adjacent to active sod fields, though set back from Unity Road. Land actively used as pasture for cattle.	Moderate – Ground cover is relatively diverse, providing habitat for prey species.	No data of historical use by raptors available.	No – does not meet abundance requirement of significance.

Table 4-4: Evaluation of Significance – Raptor Wintering Areas

Natural Feature ID	Winter Raptor Survey Points	Characteristics and Function								Significant Wildlife Habitat (Yes/No)
		Relative Importance	Presence of Species of Special Concern (Yes/No)	Species Diversity	Maximum Abundance	Size >20 ha (Yes/ No)	Level of Disturbance	Habitat Quality	Historical Use	
WR5	WR19	Low – Relatively small patch of habitat broken up by wide patch of edge habitat.	No	Red-tailed Hawk	1	Yes 30.8 ha	High – Land actively farmed for hay. Well travelled path passes through feature.	Low – Active hay harvest prevents development of thatch layer and vegetation diversity.	No data of historical use by raptors available.	No – does not meet abundance requirement of significance.
WR6	WR12, WR16, WR17	High – Largest patch of habitat overlapping the Project Location. Extends well away from rural homes and roadways.	No	Northern Harrier Red-tailed Hawk Rough-legged Hawk American Kestrel Snowy Owl	5	Yes 535.2 ha	Low/moderate – Not expected that human disturbance occurs in much of area in winter. Area of active hay fields and pastureland for sheep. Machinery rubble piles present.	Moderate – Area actively harvested for hay	No data of historical use by raptors available..	No – does not meet abundance requirement of significance.

Table 4-5: Evaluation of Significance – Reptile Overwintering Sites

Snake Hibernacula

Feature ID	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
	Relative Importance of Site	Presence of Species of Special Concern (Yes/No)	Presence 5+ Individuals or 2+ Listed Species (Yes/No)	Habitat Quality		Level of Disturbance	
				Presence of Basking Area (Yes/No)	Adjacent to Suitable Habitat or Good Movement Corridors (Yes/No)		
SH1	Undetermined	No	No	No – cultural meadow.	Yes – Occurs close to sizeable naturalized thicket.	Low/Moderate – Occurs adjacent to hay field and active farm path.	No
SH3	Undetermined	No	No One Northern Watersnake observed	Yes - Area of exposed bedrock with many rock fissures located in Red Cedar cultural alvar woodland.	Yes – Occurs within are of low human activity and within proximity to a variety of vegetation communities.	Low/Moderate – Few trails run through habitat.	Yes - Assumed to be significant
SH4	Undetermined	No	No	Yes - Fissures in bedrock and dry-moist old field meadow.	Possible – Hedgerow abuts Red Cedar woodland to the west.	Low/Moderate – Occurs on the edge of inactive hayfield and old field habitat.	Yes - Assumed to be significant
SH7	Undetermined	No	No	Yes - Debris from fallen building and large rocks located within a hay field.	No – Occurs within active hay field.	Moderate/High – Occurs in the middle of an active hay field.	Yes - Assumed to be significant
SH26	Undetermined	No	No	Yes – Short grass nearby	Yes – Occurs within Hydro One corridor.	Moderate/High – Beside Unity Road and adjacent to pastureland.	No
SH27	Undetermined	No	No	Yes - Ridge with many boulders and rocky outcrops.	Yes – Directly adjacent to meadow marsh and meadow corridor.	Low – Situated away from active hay field well away from any roads or rural homes.	No
SH28	Undetermined	No	No	Yes - Ridge with many boulders and rocky outcrops.	Yes – Directly adjacent to meadow marsh and meadow corridor.	Low – Situated away from active hay field well away from any roads or rural homes.	No

Table 4-5: Evaluation of Significance – Reptile Overwintering Sites

Snake Hibernacula

Feature ID	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
	Relative Importance of Site	Presence of Species of Special Concern (Yes/No)	Presence 5+ Individuals or 2+ Listed Species (Yes/No)	Habitat Quality		Level of Disturbance	
				Presence of Basking Area (Yes/No)	Adjacent to Suitable Habitat or Good Movement Corridors (Yes/No)		
SH30	Undetermined	No	No	Yes Bedrock with crevices, fissures and holes, and long extended cracks within a deciduous thicket,	Possible – Adjacent to coniferous woodland which connects to meadow corridor and old field habitat.	Moderate – Rubbish piles present. Adjacent to active hayfield.	Yes - Assumed to be significant
SH33	Undetermined	No	No	Yes - Exposed bedrock in alvar with fissures located in a bedrock cultural meadow.	Yes – Adjacent to meadow marsh and shrubby meadow habitats.	Low – Little agricultural activity in adjacent land.	Yes - Assumed to be significant
SH43	Undetermined	No	No	No - Small mammal burrow within a hedgerow.	Possible – Located within hedgerow and adjacent to inactive hayfield.	Low – Located in hedgerow adjacent to cultural meadow.	No

Table 4-5: Evaluation of Significance – Reptile Overwintering Sites

Turtle Over-wintering Habitat

Natural Feature ID	Characteristics and Function							
	Relative Importance of Site	Presence of Species of Special Concern (Yes/No)	Presence >5 Midland Painted Turtles (Yes/No)	Habitat Quality		Adjacent to Suitable Habitat or Good Movement Corridors (Yes/No)	Level of Disturbance	Significant Wildlife Habitat (Yes/No)
				Adequate Water depth/ Permanency (Yes/No)	Presence of Basking Area (Yes/No)			
TOW6	Undetermined	Undetermined	Undetermined	Yes - Relatively large (100 x 60 m) man-made pond located within a pasture.	No – Edge habitat	Possible – surrounded by intensely grazed pasture, though pond is fed by drainage ditch which crosses Unity Road through a culvert.	Moderate/High – pond occurs within actively used pasture/barnyard area.	No
TOW8	Undetermined	Undetermined	Undetermined	Yes - Relatively large (60 x 30 m) man-made pond of depth greater than 2 m.	No	Yes – contained within deciduous swamp.	Moderate – Man-made pond. Pond apparently used for irrigation purposes.	No
TOW11	Undetermined	Undetermined	Undetermined	Yes - Man-made pond greater than 1 m in depth.	Yes – Edge habitat	High – A drainage channel connects this pond to a Reed-canary Grass mineral meadow marsh.	High – Pond occurs at edge of backyard of rural property.	No
TOW14	Undetermined	One Snapping Turtle reported in nearby sod field by landowner	Undetermined	Yes - Relatively large (150 m x 80 m) man-made pond greater than 1 m in depth in parts.	Yes – Edge habitat and island in the middle of the pond.	Moderate – Man-made pond slightly removed from two active sod fields and a well used farm lane.	Moderate/High – Man-made pond bordered in part by active sod fields and near road.	No

Table 4-6: Evaluation of Significance – Habitat for Area Sensitive Species (Interior Forest Breeding Birds)

Natural Feature ID	Breeding Bird Point Count Station Surveyed	Characteristics and Function									Significant Wildlife Habitat (Yes/No)
		Presence of Rare, Declining or Uncommon Area-sensitive Species or **Presence of ≥3 Area**-Sensitive Species (Yes/No)	Woodland Total Area >30 ha (Yes/No)	Woodland Interior Habitat >10 ha (Yes/No)	Age and Tree Composition	Amount of Vertical Stratification	Contiguous Closed Canopy (Yes/No)	Degree of Disturbance	Relative Importance	Provision of SWH (Yes/No)	
IF4	BB84, BB85	No - Two area-sensitive interior forest breeding bird species, Black-and-white Warbler and Ovenbird, were observed during breeding bird surveys.	Yes –This feature is 120.8 ha in size.	Yes – This feature contains 72.0 ha interior area	Mid-aged - Woodland contains mixed and coniferous forest types. The coniferous forest is Eastern White Cedar and White Spruce dominated. The mixed forest is comprised of White Pine and oak.	High – Subcanopy provides >60% cover while understory has 25-60% cover.	No – Canopy cover of 10%-25%.	Low/Moderate – woodland adjacent to active farmlands.	High – largest woodland overlapping the Project Location. Large area of interior habitat. Woodland considered significant under CRCA and NHAG criteria.	No	No – Significant woodland bird diversity not present

Table 4-7: Evaluation of Significance – Open Country Breeding Bird Habitat

Natural Feature ID	Breeding Bird Point Counts Surveyed	Characteristics and Function							Significant Wildlife Habitat (Yes/No)
		Presence of 2 Listed Species	Total Area >30 ha (Yes/No)	Degree of Disturbance	Relative Importance	Amount of Adjacent Residential Development	Provision of Significant Wildlife Habitat (Yes/No)	Potential for Long-term Protection	
OCBB2	BB13, BB14, BB15, BB16	Yes Grasshopper Sparrow Savannah Sparrow	Yes 34.9	High - Currently farmed hay fields. Hay was cut in the summer of 2011. Indicated pooling of water during wet seasons.	Low – Fragmented habitat that is highly disturbed and agriculturally active.	Moderate – Residential properties at northern edge of feature.	No	Low – Habitat is agricultural land	Yes – Adequate bird diversity met
OCBB3	BB20, BB21, BB24, BB25, BB26, BB27	Yes Grasshopper Sparrow Savannah Sparrow	Yes 33.9	High - Habitat consists of actively farmed hay fields, and cultural meadow separated by hedgerows. Hay was cut during the summer of 2011.	Moderate - Fragmented habitat that is highly disturbed and agriculturally active. Strong presence of indicator grassland bird species	Low – Few adjacent residential properties, though fragmentation feature likely shelters interior grassland areas from disturbance effects of these properties.	No	Low – Habitat is agricultural land	Yes - Adequate bird diversity met
OCBB4	BB42, BB52, BB53, BB54, BB55, BB56, BB57	Yes Upland Sandpiper Grasshopper Sparrow Savannah Sparrow	Yes 77.9	Moderate - Habitat consists of old hay fields and pasturelands. Low intensity grazing and active hayfields occur in the western half of this area.	High – Relatively large grassland area with a strong presence of indicator bird species. Largely agriculturally inactive or low intensity grazing.	Moderate/High – Widespread rural property influence along length of this feature.	Yes ABW1 And other meadow aquatic habitat.	Low – Habitat is agricultural land	Yes - Adequate bird diversity met
OCBB7	BB66, BB73, BB74, BB75, BB76, BB77, BB78	No Savannah Sparrow	Yes 58.4	Moderate/Low - Habitat consists of old hay fields or unused pastureland. Low intensity grazing still occurs.	Low-Moderate.	Low – Habitat feature is not bordered by any residential properties.	Yes TOW10	Low – Habitat is agricultural land	No - Adequate bird diversity not met

Table 4-7: Evaluation of Significance – Open Country Breeding Bird Habitat

Natural Feature ID	Breeding Bird Point Counts Surveyed	Characteristics and Function							Significant Wildlife Habitat (Yes/No)
		Presence of 2 Listed Species	Total Area >30 ha (Yes/No)	Degree of Disturbance	Relative Importance	Amount of Adjacent Residential Development	Provision of Significant Wildlife Habitat (Yes/No)	Potential for Long-term Protection	
OCBB9	BB38, BB39, BB68, BB69, BB70, BB71, BB80, BB81, BB82, BB83	Yes Grasshopper Sparrow Savannah Sparrow	Yes 291.54	Moderate - A large open country habitat consisting of active pasture, used agricultural land and active hayfields.	High - Largest grassland area overlapping the Project Location.	Moderate – Several rural properties along southern portion of feature, though large percentage of feature is well removed from residential development.	Yes SH43	Low – Habitat is agricultural land	Yes - Adequate bird diversity met

Table 4-8: Evaluation of Significance – Amphibian Breeding Habitat (Woodland)

Natural Feature ID	Roadside Amphibian Survey Point Utilized	Characteristics and Function										
		Provision of Significant Wildlife Habitat (Yes/No)	Water Depth and Permanency	Species Diversity and Abundance	Size and Number of Ponds	Presence of Western Chorus Frogs	Diversity of Submergent or Emergent Vegetation (Yes/No)	Presence of Shrubs or Logs at Edge Shoreline Vegetation	Adjacent Closed Forest Canopy (Yes/No)	Degree of Disturbance	Fish Present (Yes/No)	Significant Wildlife Habitat (Yes/No)
ABF1	None	No	• Seasonal flooding of swamp • Ephemeral pool	One Leopard Frog (seen) and one Western Chorus Frog (heard) were observed during area searches.	One vernal pool present including measuring 15 m x 10 m.	Yes	No - submergent or emergent vegetation absent	None	Yes - Middle-aged Green Ash mineral deciduous swamp (SWD2-2)	Moderate – near actively harvested hay field. Close to noisy Highway 401.	No	Yes – Assumed to be significant
ABF2	24	No	• Seasonal flooding within swamp • Permanent pond north of woodland	One Gray Treefrog and Western Chorus Frog were heard during areas searches.	Pond at northern edge of swamp.	Yes	Yes - Emergent vegetation present in pond	Yes - Fallen logs present in pond though rare	Yes - Middle-aged Green Ash mineral deciduous swamp (SWD2-2)	Low – adjacent to inactive hayfield.	No	No
ABF4	None	No	• Ephemeral vernal pools	One Leopard Frog (seen) and one Western Chorus Frog (heard) were observed during area searches.	A wet depression is present in the open canopy hedgerow.	Yes	No - submergent or emergent vegetation absent	None	Yes- fresh-moist ash lowland deciduous forest (FOD7-2) Not for HR depression	Moderate – adjacent to active hay field and fence row that has undergone replacement.	No	No
ABF5	None	No	• Ephemeral vernal pools	Gray Treefrog and Wood Frog heard during night surveys. One Western Chorus Frog was heard during area searches.	Vernal pools present throughout.	Yes	Yes - Emergent vegetation consists of species of broad - leaved sedges.	Yes - Many fallen logs are present.	Yes - Dry-fresh White Pine-oak mixed forest community (FOM2-1)	Low/moderate – adjacent to active hayfields and roadway.	No	Yes – Assumed to be significant
ABF9	None	No other SWH present ABF9 is contained within woodland 14 which is a significant woodland	• Seasonal flooding within swamp • A permanent man-made dugout pond is present.	One Gray Treefrog was observed during area searches.	Man-made dugout pond measures approximately 50 m x 20 m.	No	No - submergent or emergent vegetation absent	Yes - Downed branches are abundant. Occasional fallen logs present.	Yes - Green Ash. ash lowland and Swamp Maple deciduous swamps	Low – contains man-made pond and fencing, yet human activity is rare within this large woodland.	No	No
ABF10	16	No	• Seasonal flooding and pooling	Gray Treefrog was heard during area searches and night call surveys.	Abundant vernal pools present.	No	No - submergent or emergent vegetation absent	Yes - The presence of fallen logs is rare.	Yes - Middle-aged Swamp Maple mineral deciduous swamp (SWD3-3)	Moderate – active hay fields along two sides of woodland.	No	No
ABF14	13, 15	No other SWH present ABF14 is contained within woodland 13 which is a significant woodland	• Seasonal ephemeral flooding • Permanent ponds	Large numbers of Green Frogs observed in ponds during area searches.	Three permanent ponds are present.	No	Yes - Emergent vegetation present in ponds	Woody debris such as branches present. Few fallen logs	Yes - Middle-aged Swamp Maple mineral deciduous swamp (SWD3-3)	Moderate – Adjacent to active sod fields and man-made pond. No further evidence of human disturbance within feature.	No	Yes – Assumed to be significant
ABF15	24	No	• Ephemeral puddling	No amphibians observed.	One small dried pool	No	No - submergent or emergent vegetation absent	Little debris such as branches present	Yes, closed canopy of wide hedgerow.	Low – adjacent to agricultural field.	No	No
ABF16	None	No other SWH present ABF16 is contained within woodland 13 which is a significant woodland	• Seasonal ephemeral flooding	No amphibians observed.	No ponds present	No	Yes - Emergent vegetation present along swamp edges.	Woody debris present	Yes - Middle-aged Green Ash mineral deciduous swamp (SWD3-3)	Moderate – trails pass through woodland. Loud traffic noise from highway 401	No	No

Table 4-9: Evaluation of Significance – Amphibian Breeding Habitat (Wetland)

Natural Feature ID	Roadside Amphibian Survey Point Utilized	Characteristics and Function							Significant Wildlife Habitat – Frogs (Yes/No)
		Species Diversity and Abundance	Wetland Area	Provision of Significant Wildlife Habitat	Water Depth/ Permanency	Emergent or submergent vegetation (Yes/No)	Shoreline Vegetation or Presence of Shrubs or Logs	Level of Disturbance	
ABW1	13	Gray Treefrog (Level 3) recorded during night survey.	1.16 ha	No	Small ephemeral pond is present.	Yes - Bedrock meadow marsh (MAM1) dominated by White Rush with Wool Grass, Fox Sedge, Bebb's Sedge, and Swamp Beggar-ticks.	No	Moderate – Meadow marsh at the centre of pasture land. Near to roadway.	No
ABW6	23	Gray Treefrog (Level 3) and Western Chorus Frog (Level 1*) recorded during night survey.	0.75 ha	No	Open pasture (OAGM4*) with large permanent pond present.	No	Yes	Moderate/High – pond occurs within actively used pasture/ barnyard area.	Yes – Assumed to be significant
ABW7	None	No amphibians observed during area searches.	0.72 ha	No	Yes	Yes - Cattail-dominated mineral shallow marsh (MAS2-1).	No	Low – Marsh well removed from agricultural activity	No
ABW8	None	No amphibians observed during area searches.	0.07 ha	No	Ephemeral pooling occurs seasonally	Yes – Emergent vegetation present	No	Low - Meadow marsh well removed from agricultural activity	Yes – Assumed to be significant

Table 4-9: Evaluation of Significance – Amphibian Breeding Habitat (Wetland)

Natural Feature ID	Roadside Amphibian Survey Point Utilized	Characteristics and Function							Significant Wildlife Habitat – Frogs (Yes/No)
		Species Diversity and Abundance	Wetland Area	Provision of Significant Wildlife Habitat	Water Depth/ Permanency	Emergent or submergent vegetation (Yes/No)	Shoreline Vegetation or Presence of Shrubs or Logs	Level of Disturbance	
ABW9	19	Gray Treefrog (Level 3), Spring Peeper (Level 3*) and Western Chorus Frog (Level 1*) recorded during night surveys. Green Frogs observed during area searches.	94.0 ha	Yes MB1	Permanent standing water approximately 0.5 m at a deepest during summer.	Yes - Meadow marsh (MAM2-2) dominated by Reed-canary Grass, with other wet habitat woody plant species.	Yes – Shrubs, trees and fallen logs along edges.	Moderate – No trails or regular human activities occur within the marsh. Marsh is situated beside a pasture and moderately busy road.	Yes – Assumed to be significant
ABW10	None	No amphibians observed during area searches.	2.52 ha	No	Wetland contains permanent standing water up to 0.5 m in summer.	Yes - Meadow marsh (MAM2-2) dominated by Reed-canary Grass and a shallow marsh (MAS2-1) dominated by Cattails both present.	Yes	Low/Moderate – Wetland occurs adjacent to active hay field.	No
ABW11	None	A single Spring Peeper was heard in an adjacent community.	0.23 ha	No	Permanent man-made open water pond (OAW*) within a disturbed field.	Yes - Wet habitat species present	Yes	High – Pond occurs at edge of backyard of rural property.	No

Table 4-9: Evaluation of Significance – Amphibian Breeding Habitat (Wetland)

Natural Feature ID	Roadside Amphibian Survey Point Utilized	Characteristics and Function							Significant Wildlife Habitat – Frogs (Yes/No)
		Species Diversity and Abundance	Wetland Area	Provision of Significant Wildlife Habitat	Water Depth/ Permanency	Emergent or submergent vegetation (Yes/No)	Shoreline Vegetation or Presence of Shrubs or Logs	Level of Disturbance	
ABW12	None	No amphibians observed during area searches.	2.81 ha	No	No	Yes – Ground cover is dominated by bulrushes and sedges.	Yes -Numerous fallen logs were observed.	Moderate – Wetland occurs adjacent to active hay field.	No
ABW16	15	A single Spring Peeper was heard in adjacent woodland.	0.81 ha	No	Yes - Man-made open water pond (OAW*).	Yes - Wet habitat species such as Reed-canary Grass and bulrushes are present.	Yes	Moderate – Man-made pond slightly removed from two active sod fields and a well used farm lane.	No
ABW17	14	Gray Treefrog (Level 3) recorded during night survey.	0.44 ha	No	Yes	Yes - Small, sparsely-treed meadow marsh (MAM2-6) dominated by Green Bulrush.	No	Moderate/High – Wetland occurs in the middle of an active hay field.	Yes – Assumed to be significant

*Recorded by Stantec during April and May Amphibian Call Surveys.

Table 4-10: Evaluation of Significance – Specialized Woodland Raptor Nesting Habitat

Natural Feature ID	Breeding Bird Point Counts Surveyed	Characteristics and Function					Significant Wildlife Habitat (Yes/No)
		Overall Area of Site >5 ha (Yes/No)	Contiguous Closed Canopy (Yes/No)	Degree of Disturbance	Amount of Adjacent Residential Development	Presence of One or More Active Nests (Yes/No)	
RN1	BB84, BB85	Yes 120.8 ha	No - Canopy cover was 10% - 25%.	Low/Moderate - Active farmlands adjacent to woodland.	Low - One rural home within 100 m, no others closer than 300 m	No	No

Table 4-11: Evaluation of Significance – Marsh Breeding Bird Habitat

Natural Feature ID	Breeding Bird Point Count Stations Surveyed	Characteristics and Function						Significant (Yes/No)
		Rare Community in the Project Area	Presence of 5 or more nesting Marsh or Sedge Wrens (Yes/No)	Presence of one pair of Sandhill Cranes (Yes/No)	Presence of Special Concern species (Yes/No)	Level of Disturbance	Provides Significant Wildlife Habitat	
MB1	BB88, BB91, BB92, BB104, BB103	Yes - This is the only large (>100ha) marsh of its kind occurring within 120 m of the Project Location.	Yes - Marsh Wren observed during breeding bird point counts. At least nine signing males recorded.	No	No	Moderate – No trails or regular human activities occur within the marsh. Marsh is situated beside a pasture and moderately busy road.	Yes ABW9	Yes
MB2	BB75	Yes - This is the large marsh >1 ha of its kind occurring within 120 m of the Project Location.	No	No	No	Low – Situated well beyond the fenceline of old pasturelands and far from human structures. No apparent trails leading to marsh.	No	No

Table 4-12: Evaluation of Significance – Amphibian Movement Corridors

Natural Feature ID	Significant Features Connected by Corridor	Characteristics and Function							Significant Animal Movement Corridor – Frogs (Yes/No)
		Contiguous with Amphibian Breeding Habitat (Yes/No)	Corridor Width <200 m	Continuous (Absence of Gaps >20 m) (Yes/No)	Degree of Naturalization	Amphibian Species	Risk of Mortality within Corridor	Permanency of Water	
AMC-1	ABF-2 ABF-4	Yes	No	No	Low Meadow in early stages of re-naturalization. Formerly cultivated land.	None observed	Low/Moderate Dense grasses provide ground cover, corridor is short	Seasonally flooded	No
AMC-4	ABW-5 ABF-9	Yes	No	No	Low Hedgerow open and dominated by ground cover grasses. Cultural meadow in early stages of re-naturalization.	None observed	Low - Dense grasses and sedges provide ground cover. Corridor partially covered by shrub and tree cover.	Ephemeral	No
AMC-5	ABW-6 ABF-9	Yes	No	No	Low Pasture and meadow in early stages of re-naturalization.	None observed	Moderate - Moderate ground cover provided by grasses. No shrub or tree cover present water level recedes during the summer,	Seasonally flooded	No
AMC-6	ABF-9 ABW-7	Yes	No	No	High	None observed	Low/Moderate Dense grasses provide ground cover, corridor is short	Permanent	No

Table 4-12: Evaluation of Significance – Amphibian Movement Corridors

Natural Feature ID	Significant Features Connected by Corridor	Characteristics and Function							Significant Animal Movement Corridor – Frogs (Yes/No)
		Contiguous with Amphibian Breeding Habitat (Yes/No)	Corridor Width <200 m	Continuous (Absence of Gaps >20 m) (Yes/No)	Degree of Naturalization	Amphibian Species	Risk of Mortality within Corridor	Permanency of Water	
AMC-8	ABW-10 ABW-11	Yes	No	No	Low Fields between which drain runs are frequently cultivated, and un-naturalized.	None observed	Low - Tall, dense, grasses provide ground cover. Corridor is moderate in length.	Seasonally flooded	No

Table 4-13: Evaluation of Significance – Declining Species Habitat (Shrub/Successional Breeding Birds)

Natural Feature ID	Breeding Bird Point Count Stations Surveyed	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
		Total Area >10 ha (Yes/No)	Presence of Species of Special Concern (Yes/No)	Presence of Indicator Species (Yes/No)	Presence of ≥1 Common Species (Yes/No)	Degree of Disturbance	Relative Importance	
SBB1	BB2, BB3, BB4	Yes 13.2 ha	Yes – One male Golden-winged Warbler recorded during breeding bird point counts. Breeding not confirmed.	Yes Brown Thrasher	Yes – Eastern Towhee, Field Sparrow, and Black-billed Cuckoo were recorded during breeding bird point counts.	Moderate – Habitat is found adjacent to active horse paddock and is situated between two busy highways.	Low – Shrub/successional habitat is abundant across the Napanee Plain. It is apparent that large tracts of such habitat occur nearby to, yet greater than 120 m outside of the Project Location.	Yes
SBB2	BB9, BB10, BB11, BB12, BB13, BB14, BB15, BB16, BB17, BB18, BB19	Yes 51.9 ha	No species of Special Concern observed.	Yes Brown Thrasher	Yes – Eastern Towhee, Field Sparrow and Black-billed Cuckoo were recorded during breeding bird point counts.	Moderate/ High – trails have been mowed through the habitat and patches within the area are cut for hay.		Yes
SBB3	BB20, BB21, BB22	Yes 36.5 ha	Possibly – One possible Golden-winged Warbler recorded. Bird was signing Blue-winged Warbler song and identify was not visually confirmed.	Yes Brown Thrasher	Yes – Eastern Towhee and Field Sparrow were recorded during breeding bird point counts.	Moderate/Low – Habitat is surrounded by actively farmed hay fields. Southern edge abuts gravel roads and contains rubbish piles.		Yes
SBB4	BB93, BB94, BB95, BB96	Yes 95.0 ha	No species of Special Concern observed.	Yes Brown Thrasher	Yes – Eastern Towhee, Field Sparrow and Willow Flycatcher were recorded during breeding bird point counts.	Moderate/Low – Habitat area includes a portion of horse pasture and the Hydro One corridor.		Yes
SBB5	BB86, BB87, BB88, BB92	Yes 24.5	No species of Special Concern observed.	Yes Brown Thrasher	Yes – Eastern Towhee and Field Sparrow were recorded during breeding bird point counts.	Moderate/Low – Habitat area includes a portion of horse pasture and the Hydro One corridor.		Yes

Table 4-14: Evaluation of Significance – Short-eared Owl Habitat

Natural Feature ID	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
	Evidence of Use of the Habitat	Size of population at Site	Size (ha)	Representation Within Municipality	Relative Importance	Degree of Disturbance	
SEO1	No	No breeding or overwintering population is known to occur in this natural feature.	60.0	Moderate – High quality Short-eared Owl habitat is known at other locations throughout the Kingston area.	Low – Little high quality breeding and overwintering habitat is present in the Project Location.	High – Habitat consists of actively farmed hay fields, and cultural meadow separated by hedgerows. Hay was cut during the summer of 2011.	No
SEO3	Yes – One Short-eared Owl observed by Stantec during March 2011 surveys. No owls observed during 2012 surveys	One individual recorded by Stantec in March of 2011. This was likely a migrating or transient individual given the date observed.	65.3	Moderate – High quality Short-eared Owl habitat is known at other locations throughout the Kingston area.	Low – Little high quality breeding and overwintering habitat is present in the Project Location.	Moderate – Habitat consists of old hay fields and pasturelands. Low intensity grazing and active hayfields occur in the western half of this area.	Yes
SEO4	No	No breeding or overwintering population is known to occur in this natural feature.	50.9	Moderate – High quality Short-eared Owl habitat is known at other locations throughout the Kingston area.	Low – Little high quality breeding and overwintering habitat is present in the Project Location.	Moderate/Low – Habitat consists of old hay fields or unused pastureland. Low intensity grazing still occurs.	No
SEO5	No	No breeding or overwintering population is known to occur in this natural feature.	107.2	Moderate – High quality Short-eared Owl habitat is known at other locations throughout the Kingston area.	Low – Little high quality breeding and overwintering habitat is present in the Project Location.	Moderate – A large open country habitat consisting of active pasture, used agricultural land and active hayfields.	No
SEO6	No	No breeding or overwintering population is known to occur in this natural feature.	44.3	Moderate – High quality Short-eared Owl habitat is known at other locations throughout the Kingston area.	Low – Little high quality breeding and overwintering habitat is present in the Project Location.	Moderate – Hunting habitat consisting of used agricultural land and active hayfields. No trails or regular human activities occur within the marsh. Marsh is situated beside a pasture and moderately busy road.	No

Table 4-15: Evaluation of Significance – Common Nighthawk Habitat

Natural Feature ID	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
	Evidence of Use of the Habitat	Size of population at Site	Size and Location of Site	Representation Within Municipality	Relative Importance	Degree of Disturbance	
CN1	No	No Common Nighthawks recorded in proximity to the Project Location.	15.3 ha	Low – The Frontenac Axis represents an area of high Common Nighthawk habitat occurrence in Ontario.	Low – Area represents a small patch of suitable breeding habitat within a landscape which provides abundant Common Nighthawk habitat.	Moderate – Habitat is found adjacent to active horse paddock and is situated between two busy highways.	No
CN2	No	No Common Nighthawks recorded in proximity to the Project Location.	31.7 ha	Low – The Frontenac Axis represents an area of high Common Nighthawk habitat occurrence in Ontario.	Low – Area represents a small patch of suitable breeding habitat within a landscape which provides abundant Common Nighthawk habitat.	Moderate– Well-traveled trails have been mowed through the habitat.	No
CN3	No	No Common Nighthawks recorded in proximity to the Project Location.	10.8 ha	Low – The Frontenac Axis represents an area of high Common Nighthawk habitat occurrence in Ontario.	Low – Area represents a small patch of suitable breeding habitat within a landscape which provides abundant Common Nighthawk habitat.	Moderate/Low – Habitat is surrounded by actively farmed hay fields.	No

Table 4-16: Evaluation of Significance – Giant Swallowtail Habitat

Natural Feature ID	Characteristics and Function						Significant Wildlife Habitat (Yes/No)
	Evidence of Use of the Habitat	Size of population at Site	Size and Location of Site	Representation Within Municipality	Relative Importance	Degree of Disturbance	
GS1	Four Giant Swallowtails were observed in close proximity to this natural feature.	The presence of adult butterflies in proximity to feature suggesting that host plants available in feature may be utilized by larvae. No population estimates were made due to the high mobility of adult butterflies	0.7 ha	Unknown – Data on availability of Northern Prickly-ash in general area is not available. Giant Swallowtails are scarce in the region.	Moderate – Few areas containing an abundance of prickly-ash occur within the Project Location. Feature occurred in proximity most Giant Swallowtail observations on site.	Moderate – Habitat is found directly adjacent to active agricultural lands.	Yes
GS2	No Giant Swallowtails were not observed in close proximity to this natural feature	No Giant Swallowtails observed in close proximity to natural feature	17.3 ha	Unknown – Data on availability of Northern Prickly-ash in general area is not available. Giant Swallowtails are scarce in the region.	Moderate – Few areas containing an abundance of prickly-ash occur within the Project Location.	Low – Habitat is situated away from residential properties and roadways.	No

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
Woodland 1 5 13 14 18 19 30	**Fenceline** 0 m 22 m 11 m 8 m 9 m 0 m 13 m **Road** 0 m 24 m 38 m 27 m 21 m 0 m 53 m **Collector Line*** 15 m (O) 0 m (U) 81 m (U) 89 m (U) 94 m (U) 0 m (U) 64 m (O) 110 m (U)	**Disturbance to Habitat and Wildlife –** Approximately 0.9 ha of Woodland 19 will be removed. Approximately 3.4 ha of Woodland 1 will be removed. No vegetation removal is associated with Woodlands 5, 13, 14, 18; however, no 30 m buffer is available for these features. Habitat and sensory disturbance to animal species inhabiting the natural feature (C, O, D).	• Seasonally adjust construction and decommissioning activities to minimize impacts to wildlife. • Avoid clearing vegetation during periods of vulnerability for breeding birds (May 1 to August 1). Construction may occur on cleared lands during this time period provided that no additional vegetation must be cleared. • Where the separation distance between the Project footprint and the natural feature is less than 30 m, woodland boundaries should be well demarcated using clearly visible material (e.g., flagging tape and painted stakes) such that all construction activities and personnel are excluded from these areas. • Delineate construction area with stakes and flagging, and construct silt barrier around periphery of the buildable areas. • Tree removal within woodland areas not scheduled for removal shall not be permitted; pruning may be required for woodland 18 only. • A silt fence will be placed around active construction sites to reduce potential mortality to wildlife moving to foraging areas. Silt fences will apply specifications (i.e. no reinforcement netting) to avoid any potential tangling by other wildlife that may travel along the perimeter of the Project Location. This will temporarily limit access from some areas for wildlife trying to move across fields. • The construction workforce will be made aware that there is a potential for wildlife occurring on the Project Location and instructed to take measures for avoiding wildlife whenever possible. • Noise abatement devices will be utilized on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards and help maintain air quality. • Vehicle speeds will be restricted to 15 km/hr or less on the Project site and speed limit signage posted.	The loss of 0.9 ha from Woodland 19 and 3.4 ha from Woodland 1 will not result in any net residual effects; an area of approximately 22 ha will remain in Woodland 19 and 48 ha will remain in Woodland 1. The functionality and significance of these woodlands will not be compromised as clearing will not extend into the wetland component of each woodland. Additionally, Green Ash swamp communities such as that found within Woodland 19 are abundant within and surrounding the Project Location. Due to the separation distances between the Project Location and the natural features, and avoidance of direct effects, no net adverse effects are anticipated.	Timing restrictions will be in effect to avoid sensitive breeding periods. However, if breeding animals are encountered, appropriate construction buffers would be established. Buffer sizes would vary depending on the species and would be determined in consultation with the OMNR and Environment Canada. Construction crews will be monitored and advised if they have worked beyond the marked boundaries of work areas. If necessary, these sites will be replanted. If species of conservation concern are encountered, work will cease until a trained biologist can state that the species is no longer present in the area.	Construction monitoring and inspection of standard site control measures. Post-construction monitoring will involve the following: ***Methods*** • Breeding bird point count surveys and amphibian call surveys to determine species diversity and species density. ***Location*** • Significant woodlands experiencing some vegetation removal (woodlands 1 and 19), as noted in the post-construction monitoring plan. ***Frequency*** • Seasonally (April through June). ***Reporting*** Yearly (for a minimum of three years).
		Emissions – Air Potential for air emissions from construction vehicles, machinery and equipment and impacts to air quality (C, O, D).	• Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable. • Work shall be carried out in compliance with the Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.	Some emissions will be generated during Project activities with no net adverse effect to significant natural features.	Replace or repair mufflers and emission control system.	Monitoring of emissions during construction and decommissioning will be undertaken under BMPs. No monitoring of dust during operations phase is required as negative effects on natural feature are not anticipated.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Leaks or Spills – Potential for leak or spill of petroleum products and other deleterious substances from vehicles and machinery to contaminate the soil in the natural feature (C, O, D).	• Implement best management practices (BMPs) and establish an emergency spill plan. • Excess material will be removed from the site. • No refuelling or maintenance of vehicles in, or adjacent to the municipal road allowance. • No refuelling or maintenance of vehicles within 30 m of the natural feature. • Ensure that absorbent materials are available on Project Location in the event that a spill of deleterious substances should occur. All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). • Maintain log book of any spills and mitigation measures.	Low potential for residual effect if mitigation measures applied.	Follow-up inspection and monitoring in the event of an accidental spill. Remedial actions will be required if negative effects to natural features are recognized.	General inspection of BMPs will be applied during construction. Monitoring of leaks or spills during operations phase will be undertaken under BMPs. In the event of a reportable spill during operations any monitoring requirements will be specified by MOE.
		Dust – Potential for the release of dust and soil particles into natural feature (C, D).	• Use controlled work procedures in order to eliminate release of dust from construction works. • Minimize activities with potential to release airborne particulates during windy and prolonged dry periods. • Stabilize areas of stockpiled or exposed soils. • Cover or otherwise contain loose materials that have potential to release airborne particulates during their transport, installation or removal e.g. by tarping, mulching, re-vegetating or watering in order to create a crusted surface. • Minimize vehicle traffic on exposed soils and stabilize high traffic areas with clean gravel surface layer or other suitable cover material. • Restore disturbed areas as soon as possible to minimize the duration of soil exposure. • Avoid work involving the movement of soil during weather which is excessively windy. • A crushed stone-tracking pad will be installed at the site access to reduce tracking of sediment onto adjacent roadways during construction activities. Street sweeping and cleaning will be scheduled as necessary, should the adjacent roadway become dirty. • As necessary, suppress releases of dust using approved materials e.g., water mist or non-chloride based materials during construction and decommissioning activities.	Some fugitive dust during preparation from Project activities will be generated. Site preparation activities will be temporary and short (months) duration. No effects from dust are anticipated in operations phase. No adverse effects on natural features are anticipated with implementation of mitigation measures.	Dust controls measures will be implement. If the release of dust and soil particles into a natural feature is observed, then remedial actions will be taken, such as properly covering all loose material which has the potential to release airborne particulates.	General inspection of BMPs will be applied during construction. Visual monitoring of dust generation will occur during the construction phase. No monitoring of dust during operations phase is required as negative effects on natural features are not anticipated during this phase.
		Erosion – Project activities will result in portions of the Project Location and stockpiled material being exposed to erosion processes, including wind and surface run-off (C, D).	• To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Stabilize soil upon completion of work activities to prevent its erosion and transport. • Cover stockpiled material in order to prevent its erosion and transport. • To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Soils from excavations would be reused elsewhere on the property with landowner permission or removed for use as fill material or landfill cover. • The Project also does not require deep excavations for foundations that would involve extensive dewatering. A mitigation plan would be in place to prevent stormwater runoff from entering open excavations.	Erosion effects are not anticipated during operations phase as Project Location will be planted with a permanent vegetation groundcover on all disturbed areas. There is low potential for residual effect if mitigation measures applied.	Any gaps or holes in silt barriers must be repaired. Remove any silt accumulations or backfill eroded areas. Replant or reseed vegetation if necessary.	General inspection of BMPs will be applied during construction. No monitoring of erosion during operations phase is required as negative effects are not anticipated during this phase.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Short-term Hydrological Changes – Potential short term changes to surface water hydrology and drainage to/ from natural feature (C, D). Potential increase in surface water runoff due to grading or ditching associated with access roads, soil compaction and/or the removal of vegetation (C).	• Limits of construction work to be staked in the field. • The proposed preparation activities will be designed and implemented so as not to alter historic drainage patterns and will not significantly alter the elevations throughout the Project Location. • Where possible, and as appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the woodland. • Access roads to be constructed at grade using permeable materials. • Ensure temporary and permanent access and infrastructure roads mimic pre-construction surface flow regimes. • The Project Location will be stabilized with permanent vegetation ground cover which will attenuate run-off. • Install drainage features such as ditching or equalization culverts beneath access roads to ensure that there is no pooling or disruption of surface water flow so as to maintain site drainage. • Flow retention features will be used in ditches to mitigate increases in surface water runoff (e.g. straw bales or rock-fill flow checks). • Plant vegetation buffers alongside the access road. • As appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the wetlands. • Access roads to be constructed at grade using permeable materials to allow groundwater recharge.	Short term measures will avoid any impacts to adjacent natural features or municipal drains. Short-term maintenance of existing local drainage patterns will ensure no offsite changes natural feature or municipal drainage system. Use of gravel roads and planting site with permanent vegetation groundcover to establish a cultural meadow condition will improve attenuation of run-off over existing agricultural land use condition.	Based on site-specific conditions, contingency measures may include installation of additional culverts or planting of vegetation.	Construction monitoring and inspection of standard site control measures. Visual assessment of soil compaction will be made post-construction (noted by rutting left by heavy machinery or flattened areas beneath areas where stockpiling occurred) and restoration efforts implemented, as required, by utilizing soil loosening methods. The land grading of the Project location will be reverted back to its earlier state during the decommissioning stage.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
Wetland 2 3 7 11 13 17 18 25 26 28 29 30 31 33 2 3 11 17 18 19 26 27 30 31 **33**	**Fenceline** 25 m 24 m 86 m 12 m 0 m 24 m 29 m 19 m 0 m 102 m 82 m 27 m 26 m 50 m **Road** 30 m 27 m 36 m 40 m 46 m 31 m 0 m 79 m 30 m 31 m 64 m **Collector Line***	**Disturbance to Habitat and Wildlife –** All of Wetlands 13 and 26 will be removed. Although no vegetation removal is associated with Wetlands 2, 3, 11, 17, 18, 25, 30, and 31, no 30 m buffer is available. There will be no encroachment on any other wetlands. Habitat and sensory disturbance to animal species inhabiting the natural feature (C, O, D). Direct loss of habitat due to solar panel installation (Wetlands 13 and 26). Modification of habitat due to overhead or underground collector line installation (Wetland 17, 20, and 26); however, no loss of habitat is associated with collector lines. The collector lines will be installed along sides of the municipal roads (Unity Road and Westbrook Road).	• Avoid construction and decommissioning activities during the breeding season to minimize impacts on breeding birds and amphibians. • Avoid clearing vegetation during periods of vulnerability for breeding birds (May 1 to August 1). Construction may occur on cleared lands during this time period provided that no additional vegetation must be cleared. • Seasonally adjust construction and decommissioning activities to minimize impacts to amphibians between the months of March through to June. • Where the separation distance between the Project footprint and the natural feature is less than 30 m, wetland boundaries should be well demarcated using clearly visible material (e.g., flagging tape and painted stakes) such that all construction activities and personnel are excluded from these areas • Tree removal in wetland areas shall not be permitted unless approval is granted by MNR. • A silt fence will be placed around active construction sites to reduce potential mortality to wildlife moving to foraging areas with hard mast. Silt fences will apply specifications (i.e. no reinforcement netting) to avoid any potential tangling by other wildlife that may travel along the perimeter of the Project Location. This will temporarily limit access from some areas for wildlife trying to move across fields. • The construction workforce will be made aware that there is a potential for wildlife occurring on the Project Location and instructed to take measures for avoiding wildlife whenever possible. • Noise abatement devices will be utilized on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards and help maintain air quality.	Wetland 13 and 26 are very small isolated wetlands (each <0.3 ha) that occur within agricultural land. Their removal will not have any net adverse effect. Due to the separation distances between the Project Location and the natural features, and avoidance of direct effects, no net adverse effects are anticipated to wetlands other than 13 and 26. Wetland 13 has also been identified as significant amphibian wetland breeding habitat (ABW8 in Figure 4-5). Pre-construction amphibian call surveys will be conducted on ABW8 in April and May, 2013. If ABW8 is deemed to be significant after the 2013 pre-construction surveys then this habitat will be artificially replaced in the immediate vicinity (as close to the original habitat area as possible).	Timing restrictions will be in effect to avoid sensitive breeding periods. However, if breeding animals are encountered, appropriate construction buffers would be established. Buffer sizes would vary depending on the species and would be determined in consultation with the OMNR and Environment Canada. Construction crews will be monitored and advised if they have worked beyond the marked boundaries of work areas. If necessary, these sites will be replanted. If species of conservation concern are encountered, work will cease until a trained biologist can state that the species is no longer present in the area.	Construction monitoring and inspection of standard site control measures. Post-construction monitoring will involve the following: ***Methods*** • Breeding bird point count surveys and amphibian call surveys to determine species diversity and species density. ***Location*** • Significant woodlands experiencing some vegetation removal (wetland 18), as noted in the post-construction monitoring plan. ***Frequency*** • Seasonally (April through June). ***Reporting*** Yearly (for a minimum of three years).
2 11 13 17 18 25 26 27 30 31	53 m (U) 90 m (U) 68 m (U) 54 m (U) 21 m (O) 82 m (U) 102 m (U) 0 m (U) 77 m (U) 106 m (U) 45 m (U)					

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
32 33	0 m (O) 114 m (U)					
		Emissions – Potential for air pollution from dust and emission from construction vehicles and machinery and equipment. Overall impact to air quality (C, O, D).	• All vehicles, machinery and equipment must be maintained and equipped with emission controls, as applicable. • Construction Work shall be carried as according to Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.	Some emissions will be generated during Project activities with no net adverse effect to significant natural features.	Replace or repair mufflers and emission control system.	Monitoring of emissions during construction and decommissioning will be undertaken under BMPs. No monitoring of dust during operations phase is required as negative effects on natural feature are not anticipated.
		Leaks or Spills – Potential for leak or spill of fuel and other deleterious substances from vehicles and machinery that affect wetland wildlife, vegetation, or contaminate water and the soil (C, O, D).	• Implement best management practices (BMPs) and establish an emergency spill plan. • Establish emergency spill action plan and in case of accidental spill contact MOE for assistance. • Ensure that emergency spill kit is available at the Project Location all the time. In the event that a spill of deleterious substances should occur. All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). • Excess material will be removed from the site. • No refuelling or maintenance of vehicles within 30 m of the natural feature. • Maintain log book of any spills and mitigation measures.	Low potential for residual effect if mitigation measures applied.	Follow-up inspection and monitoring in the event of an accidental spill. Remedial actions will be required if negative effects to natural features are recognized.	General inspection of BMPs will be applied during construction. Monitoring of leaks or spills during operations phase will be undertaken under BMPs. In the event of a reportable spill during operations any monitoring requirements will be specified by MOE.
		Dust – Potential for dust releases and soil particles into the wetland (C, D).	• Use controlled work procedures in order to eliminate release of dust from construction works. Mist can be applied to reduce dust releases. • As possible, minimize activities with potential for dust releases especially during windy and prolonged dry periods. • Stabilize areas of stockpiled or exposed soils. • Materials that have potential of releasing dust or airborne particle must be covered during their transport, installation or removal e.g., by trapping, mulching, re-vegetating or watering in order to create a crusted surface. • Minimize vehicle traffic adjacent to wetlands, or exposed soils. All traffic must use designated areas. • Restore disturbed areas as soon as possible to minimize the duration of soil exposure. • Avoid work involving the movement of soil during weather which is excessively windy. • A crushed stone-tracking pad will be installed at the site access to reduce tracking of sediment onto adjacent roadways during construction activities. Street sweeping and cleaning will be scheduled as necessary, should the adjacent roadway become dirty. • As necessary, suppress releases of dust using approved materials e.g., water mist or non-chloride based materials during construction and decommissioning activities.	Some fugitive dust during preparation from Project activities will be generated. Site preparation activities will be temporary and short (months) duration. No effects from dust are anticipated in operations phase. No adverse effects on natural features are anticipated with implementation of mitigation measures.	Dust controls measures will be implement. If the release of dust and soil particles into a natural feature is observed, then remedial actions will be taken, such as properly covering all loose material which has the potential to release airborne particulates.	General inspection of BMPs will be applied during construction. Visual monitoring of dust generation will occur during the construction phase. No monitoring of dust during operations phase is required as negative effects on natural features are not anticipated during this phase.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Erosion – Project activities may result in soil erosion as a result of grading, digging and trenching. Portions of the Project Location and stockpiled material being exposed to erosion processes, including wind and surface run-off (C, D).	• Construction area must be clearly demarcated using flagging tape or painted stakes in order to minimize disturbance to the wetland habitat and wildlife. Co envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan e.g., use silt fence to control any silt movement from the construction zone to the wetlands. • Soil stabilization along with planting as needed to stabilize soil upon completion of work activities to prevent its erosion and transport. • Stockpiled material must be covered in order to prevent its erosion and transport. • A silt fence should be placed around active construction areas to reduce potential movement of silt to the wetlands.	Erosion effects are not anticipated during operations phase as Project Location will be planted with a permanent vegetation groundcover on all disturbed areas. There is low potential for residual effect if mitigation measures applied.	Any gaps or holes in silt barriers must be repaired. Remove any silt accumulations or backfill eroded areas. Replant or reseed vegetation if necessary.	General inspection of BMPs will be applied during construction. No monitoring of erosion during operations phase is required as negative effects are not anticipated during this phase.
		Short-term Hydrological Changes – Potential short term changes to surface water hydrology and drainage to/ from natural feature (C, D). Potential increase in surface water runoff due to grading or ditching associated with access roads, soil compaction and/or the removal of vegetation (C).	• Limits of construction work to be staked in the field. • The proposed preparation activities will be designed and implemented so as not to alter historic drainage patterns and will not significantly alter the elevations throughout the Project Location. • The proposed project activities shall be designed and implemented such that the existing drainage patterns are maintained. • Access roads to be constructed at grade using permeable materials to allow groundwater recharge. • The Project also does not require deep excavations for foundations that would involve extensive dewatering. A mitigation plan would be in place to prevent stormwater runoff from entering open excavations. • Where possible, and as appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the woodland. • Ensure temporary and permanent access and infrastructure roads mimic pre-construction surface flow regimes. • The Project Location will be stabilized with permanent vegetation ground cover which will attenuate run-off. • Flow retention features will be used in ditches to mitigate increases in surface water runoff (e.g., straw bales or rock-fill flow checks). • Plant vegetation buffers alongside the access road. • As appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the wetlands. • Access roads to be constructed at grade using permeable materials to allow groundwater recharge.	Short term measures will avoid any impacts to adjacent natural features or municipal drains. Short-term maintenance of existing local drainage patterns will ensure no offsite changes natural feature or municipal drainage system. Use of gravel roads and planting site with permanent vegetation groundcover to establish a cultural meadow condition will improve attenuation of run-off over existing agricultural land use condition.	Based on site-specific conditions, contingency measures may include installation of additional culverts or planting of vegetation.	Construction monitoring and inspection of standard site control measures. Visual assessment of soil compaction will be made post-construction (noted by rutting left by heavy machinery or flattened areas beneath areas where stockpiling occurred) and restoration efforts implemented, as required, by utilizing soil loosening methods. The land grading of the Project location will be reverted back to its earlier state during the decommissioning stage.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
Significant Reptile Overwintering Habitat SH3 SH4 SH7 SH30 SH33 SH3 SH4 SH7 SH30 SH33 SH3 SH4 SH7 SH30 SH33	**Fenceline** 0 m 0 m 0 m 0 m 0 m **Road** 0 m 3 m 13 m 22 m 0 m **Collector Line*** 0 m (U) 8 m (U) 118 m (O) 12 m (U) 112 m (O) 21 m (U) 0 m (U)	**Disturbance to Habitat and Wildlife –** Habitat and sensory disturbance to animal species inhabiting the natural feature (C, O, D). Direct loss of five snake hibernacula habitat (SH3, SH4, SH7, SH30, and SH33). Mortality of animal species inhabiting the natural feature during seasonal utilization of the feature (C). Modification of habitat due to underground collector line installation (SH4, SH7, SH30); however, no loss of habitat is associated with collector lines.	• Seasonally adjust construction and decommissioning activities to minimize impacts during fall congregations (September – October). • Seasonally adjust construction and decommissioning activities to minimize impacts to overwintering snakes and turtles by avoiding winter months (October 1 to March 31). • Seasonally adjust construction and decommissioning activities to minimize impacts during spring emergence and basking (April - May). • Construct silt barriers around periphery of the buildable areas. • Where the separation distance between the Project footprint and the natural feature is less than 30 m, woodland boundaries should be well demarcated using clearly visible material (e.g., flagging tape and painted stakes) such that all construction activities and personnel are excluded from these areas • A silt fence will be placed around active construction sites to reduce potential mortality to wildlife moving to foraging areas with hard mast. Silt fences will apply specifications (i.e. no reinforcement netting) to avoid any potential tangling by other wildlife that may travel along the perimeter of the Project Location. This will temporarily limit access from some areas for wildlife trying to move across fields. • The construction workforce will be made aware that there is a potential for wildlife occurring on the Project Location and instructed to take measures for avoiding wildlife whenever possible. • Noise abatement devices will be utilized on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards and help maintain air quality. • Known occurrences of mortality will be reported to the MNR and work within the area will be stopped. A trained biologist will conduct an area survey to ensure that no other wildlife is present in the area before work will continue. • Vehicle speeds will be restricted to 15 km/hr or less on the Project site and speed limit signage posted.	Direct loss of five snake hibernacula habitat (SH3, SH4, SH7, SH30, and SH33). . Direct habitat loss of some snake hibernacula will occur; however, due to the presence of alternative suitable habitat, no net effects to the local population are anticipated.	Timing restrictions will be in effect to avoid sensitive congregation and hibernating periods. However, if animals are encountered, appropriate construction buffers would be established. Buffer sizes would vary depending on the species and would be determined in consultation with the OMNR and Environment Canada. Construction crews will be monitored and advised if they have worked beyond the marked boundaries of work areas. If necessary, these sites will be replanted. If species are encountered, work will cease until a trained biologist can state that the species is no longer present in the area.	Pre-construction surveys will also be conducted at all five of the significant snake hibernacula identified in Figure 4-3. These surveys will take place in September and October of 2012 and will consist of visual searches and the placement of snake boards. Construction monitoring and inspection of standard site control measures. Post-construction monitoring will involve the following: ***Methods*** • Reptile emergence surveys to determine species diversity and species density. ***Location*** • Significant reptile hibernacula habitat experiencing some form of direct/indirect disturbance from Project activities. ***Frequency*** • Seasonally (April through May). ***Reporting*** Yearly (for a minimum of three years).
		Emissions – Air Potential for air emissions from construction vehicles, machinery and equipment and impacts to air quality (C, O, D).	• Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable. • Work shall be carried out in compliance with the Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.	Some emissions will be generated during Project activities with no net adverse effect to significant natural features.	Replace or repair mufflers and emission control system.	Monitoring of emissions during construction and decommissioning will be undertaken under BMPs. No monitoring of dust during operations phase is required as negative effects on natural feature are not anticipated.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Leaks or Spills – Potential for leak or spill of petroleum products and other deleterious substances from vehicles and machinery to contaminate the soil in the natural feature (C, O, D).	• Implement BMPs and establish an emergency spill plan. • Excess material will be removed from the site. • No refuelling or maintenance of vehicles in, or adjacent to the municipal road allowance. • No refuelling or maintenance of vehicles within 30 m of the natural feature. • Ensure that absorbent materials are available on Project Location in the event that a spill of deleterious substances should occur. All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). • Maintain log book of any spills and mitigation measures.	Low potential for residual effect if mitigation measures applied.	Follow-up inspection and monitoring in the event of an accidental spill. Remedial actions will be required if negative effects to natural features are recognized.	General inspection of BMPs will be applied during construction. Monitoring of leaks or spills during operations phase will be undertaken under BMPs. In the event of a reportable spill during operations any monitoring requirements will be specified by MOE.
		Dust – Potential for the release of dust and soil particles into natural feature (C, D).	• Use controlled work procedures in order to eliminate release of dust from construction works. • Minimize activities with potential to release airborne particulates during windy and prolonged dry periods. • Stabilize areas of stockpiled or exposed soils. • Cover or otherwise contain loose materials that have potential to release airborne particulates during their transport, installation or removal e.g. by tarping, mulching, re-vegetating or watering in order to create a crusted surface. • Minimize vehicle traffic on exposed soils and stabilize high traffic areas with clean gravel surface layer or other suitable cover material. • Restore disturbed areas as soon as possible to minimize the duration of soil exposure. • Avoid work involving the movement of soil during weather which is excessively windy. • A crushed stone-tracking pad will be installed at the site access to reduce tracking of sediment onto adjacent roadways during construction activities. Street sweeping and cleaning will be scheduled as necessary, should the adjacent roadway become dirty. • As necessary, suppress releases of dust using approved materials e.g., water mist or non-chloride based materials during construction and decommissioning activities.	Some fugitive dust during preparation from Project activities will be generated. Site preparation activities will be temporary and short (months) duration. No effects from dust are anticipated in operations phase. No adverse effects on natural features are anticipated with implementation of mitigation measures.	Dust controls measures will be implement. If the release of dust and soil particles into a natural feature is observed, then remedial actions will be taken, such as properly covering all loose material which has the potential to release airborne particulates.	General inspection of BMPs will be applied during construction. Visual monitoring of dust generation will occur during the construction phase. No monitoring of dust during operations phase is required as negative effects on natural features are not anticipated during this phase.
		Erosion – Project activities will result in portions of the Project Location and stockpiled material being exposed to erosion processes, including wind and surface run-off (C, D).	• To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Stabilize soil upon completion of work activities to prevent its erosion and transport. • Cover stockpiled material in order to prevent its erosion and transport. • To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Soils from excavations would be reused elsewhere on the property with landowner permission or removed for use as fill material or landfill cover. • The Project also does not require deep excavations for foundations that would involve extensive dewatering. A mitigation plan would be in place to prevent stormwater runoff from entering open excavations.	Erosion effects are not anticipated during operations phase as Project Location will be planted with a permanent vegetation groundcover on all disturbed areas. There is low potential for residual effect if mitigation measures applied.	Any gaps or holes in silt barriers must be repaired. Remove any silt accumulations or backfill eroded areas. Replant or reseed vegetation if necessary.	General inspection of BMPs will be applied during construction. No monitoring of erosion during operations phase is required as negative effects are not anticipated during this phase.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Short-term Hydrological Changes – Potential short-term changes to surface water hydrology and drainage to/ from natural feature (C, D). Potential increase in surface water runoff due to grading or ditching associated with access roads, soil compaction and/or the removal of vegetation (C).	• Limits of construction work to be staked in the field. • The proposed preparation activities will be designed and implemented so as not to alter historic drainage patterns and will not significantly alter the elevations throughout the Project Location. • Where possible, and as appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the woodland. • Access roads to be constructed at grade using permeable materials. • Ensure temporary and permanent access and infrastructure roads mimic pre-construction surface flow regimes. • The Project Location will be stabilized with permanent vegetation ground cover which will attenuate run-off. • Install drainage features such as ditching or equalization culverts beneath access roads to ensure that there is no pooling or disruption of surface water flow so as to maintain site drainage. • Flow retention features will be used in ditches to mitigate increases in surface water runoff (e.g., straw bales or rock-fill flow checks). • Plant vegetation buffers alongside the access road. • As appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the wetlands. • Access roads to be constructed at grade using permeable materials to allow groundwater recharge.	Short term measures will avoid any impacts to adjacent natural features or municipal drains. Short-term maintenance of existing local drainage patterns will ensure no offsite changes natural feature or municipal drainage system. Use of gravel roads and planting site with permanent vegetation groundcover to establish a cultural meadow condition will improve attenuation of run-off over existing agricultural land use condition.	Based on site-specific conditions, contingency measures may include installation of additional culverts or planting of vegetation.	Construction monitoring and inspection of standard site control measures Visual assessment of soil compaction will be made post-construction (noted by rutting left by heavy machinery or flattened areas beneath areas where stockpiling occurred) and restoration efforts implemented, as required, by utilizing soil loosening methods. The land grading of the Project location will be reverted back to its earlier state during the decommissioning stage.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
Significant Open Country Breeding Bird Habitat OCBB3 OCBB4 OCBB5 OCBB9 OCBB2 OCBB3 OCBB4 OCBB9 OCBB2 OCBB3 OCBB4 OCBB9	**Fenceline** 0 m 21 m 0 m 0 m **Road** 8 m 0 m 84 m 0 m **Collector Line*** 0 m (O) 16 m (U) 0 m (O) 0 m (U) 0 m (O) 116 m (U) 10 m (O) 0 m (U)	**Disturbance to Habitat and Wildlife –** Habitat and sensory disturbance to animal species inhabiting the natural feature (OCBB2, OCBB3, OCBB4, OCBB9) during C, O, and D. Direct loss of habitat due to solar panel installation (OCBB2, OCBB3, OCBB9). Destruction of active bird nests and the mortality of unfledged bird species inhabiting the natural feature (C).	• Seasonally adjust construction and decommissioning activities to minimize impacts to breeding birds. • Avoid clearing vegetation during periods of vulnerability for open country breeding birds (May 1 to September 1). Construction may occur on cleared lands during this time period provided that no additional vegetation must be cleared. • Delineate construction area with stakes and flagging, and construct silt barriers around periphery of the buildable areas. • The construction workforce will be made aware that there is a potential for wildlife occurring on the Project Location and instructed to take measures for avoiding wildlife whenever possible. • Noise abatement devices will be utilized on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards and help maintain air quality. • Known occurrences of mortality will be reported to the MNR and work within the area will be stopped. A trained biologist will conduct an area survey to ensure that no other wildlife are present in the area before work will continue. • Vehicle speeds to be restricted to 15 km/hr or less on the Project site and speed limit signage posted.	Direct habitat loss will occur totalling 73.5 ha. At minimum, a total of 463 ha of Open Country Breeding Bird Habitat remains in close proximity to the Project Location. Aerial photographs of nearby areas indicate even more habitat located in other areas not surveyed for the purposes of this Project. Due to the presence of alternative suitable habitat (463 ha nearby), no net effects to the local population are anticipated.	Timing restrictions will be in effect to avoid sensitive breeding periods. However, if breeding animals are encountered, appropriate construction buffers would be established. Buffer sizes would vary depending on the species and would be determined in consultation with the OMNR and Environment Canada. Construction crews will be monitored and advised if they have worked beyond the marked boundaries of work areas. If necessary, these sites will be replanted. If species of conservation concern are encountered, work will cease until a trained biologist can state that the species is no longer present in the area.	Construction monitoring and inspection of standard site control measures. Post-construction monitoring will involve the following: ***Methods*** • Point count surveys to determine species diversity and species density. ***Location*** • Significant open country breeding bird habitats experiencing vegetation removal. ***Frequency*** • Seasonally (May through June). ***Reporting*** • Yearly (for a minimum of three years).
		Emissions – Air Potential for air emissions from construction vehicles, machinery and equipment and impacts to air quality (C, O, D).	• Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable. • Work shall be carried out in compliance with the Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.	Some emissions will be generated during Project activities with no net adverse effect to significant natural features.	Replace or repair mufflers and emission control system.	Monitoring of emissions during construction and decommissioning will be undertaken under BMPs. No monitoring of dust during operations phase is required as negative effects on natural feature are not anticipated.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Leaks or Spills – Potential for leak or spill of petroleum products and other deleterious substances from vehicles and machinery to contaminate the soil in the natural feature (C, O, D).	• Implement BMPs and establish an emergency spill plan. • Excess material will be removed from the site. • No refuelling or maintenance of vehicles in, or adjacent to the municipal road allowance. • No refuelling or maintenance of vehicles within 30 m of the natural feature. • Ensure that absorbent materials are available on Project Location in the event that a spill of deleterious substances should occur. All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). • Maintain log book of any spills and mitigation measures.	Low potential for residual effect if mitigation measures applied.	Follow-up inspection and monitoring in the event of an accidental spill. Remedial actions will be required if negative effects to natural features are recognized.	General inspection of BMPs will be applied during construction. Monitoring of leaks or spills during operations phase will be undertaken under BMPs. In the event of a reportable spill during operations any monitoring requirements will be specified by MOE.
		Dust – Potential for the release of dust and soil particles into natural feature (C, D).	• Use controlled work procedures in order to eliminate release of dust from construction works. • Minimize activities with potential to release airborne particulates during windy and prolonged dry periods. • Stabilize areas of stockpiled or exposed soils. • Cover or otherwise contain loose materials that have potential to release airborne particulates during their transport, installation or removal e.g., by tarping, mulching, re-vegetating or watering in order to create a crusted surface. • Minimize vehicle traffic on exposed soils and stabilize high traffic areas with clean gravel surface layer or other suitable cover material. • Restore disturbed areas as soon as possible to minimize the duration of soil exposure. • Avoid work involving the movement of soil during weather which is excessively windy. • A crushed stone-tracking pad will be installed at the site access to reduce tracking of sediment onto adjacent roadways during construction activities. Street sweeping and cleaning will be scheduled as necessary, should the adjacent roadway become dirty. • As necessary, suppress releases of dust using approved materials e.g., water mist or non-chloride based materials during construction and decommissioning activities.	Some fugitive dust during preparation from Project activities will be generated. Site preparation activities will be temporary and short (months) duration. No effects from dust are anticipated in operations phase. No adverse effects on natural features are anticipated with implementation of mitigation measures.	Dust controls measures will be implement. If the release of dust and soil particles into a natural feature is observed, then remedial actions will be taken, such as properly covering all loose material which has the potential to release airborne particulates.	General inspection of BMPs will be applied during construction. Visual monitoring of dust generation will occur during the construction phase. No monitoring of dust during operations phase is required as negative effects on natural features are not anticipated during this phase.
		Erosion – Project activities will result in portions of the Project Location and stockpiled material being exposed to erosion processes, including wind and surface run-off (C, D).	• To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Stabilize soil upon completion of work activities to prevent its erosion and transport. • Cover stockpiled material in order to prevent its erosion and transport. • To minimize land disturbance, the construction envelope will be clearly demarcated and kept as small as possible. • Develop and implement an erosion control plan. • Soils from excavations would be reused elsewhere on the property with landowner permission or removed for use as fill material or landfill cover. • The Project also does not require deep excavations for foundations that would involve extensive dewatering. A mitigation plan would be in place to prevent stormwater runoff from entering open excavations.	Erosion effects are not anticipated during operations phase as Project Location will be planted with a permanent vegetation groundcover on all disturbed areas. There is low potential for residual effect if mitigation measures applied.	Any gaps or holes in silt barriers must be repaired. Remove any silt accumulations or backfill eroded areas. Replant or reseed vegetation if necessary.	General inspection of BMPs will be applied during construction. No monitoring of erosion during operations phase is required as negative effects are not anticipated during this phase.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Short-term Hydrological Changes – Potential short term changes to surface water hydrology and drainage to/ from natural feature (C, D). Potential increase in surface water runoff due to grading or ditching associated with access roads, soil compaction and/or the removal of vegetation (C).	• Limits of construction work to be staked in the field. • The proposed preparation activities will be designed and implemented so as not to alter historic drainage patterns and will not significantly alter the elevations throughout the Project Location. • Where possible, and as appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the woodland. • Access roads to be constructed at grade using permeable materials. • Ensure temporary and permanent access and infrastructure roads mimic pre-construction surface flow regimes. • The Project Location will be stabilized with permanent vegetation ground cover which will attenuate run-off. • Install drainage features such as ditching or equalization culverts beneath access roads to ensure that there is no pooling or disruption of surface water flow so as to maintain site drainage. • Flow retention features will be used in ditches to mitigate increases in surface water runoff (e.g., straw bales or rock-fill flow checks). • Plant vegetation buffers alongside the access road. • As appropriate, access roads should be constructed at or near existing grade to maintain surface flow contributions to the wetlands. • Access roads to be constructed at grade using permeable materials to allow groundwater recharge.	Short term measures will avoid any impacts to adjacent natural features or municipal drains. Short-term maintenance of existing local drainage patterns will ensure no offsite changes natural feature or municipal drainage system. Use of gravel roads and planting site with permanent vegetation groundcover to establish a cultural meadow condition will improve attenuation of run-off over existing agricultural land use condition.	Based on site-specific conditions, contingency measures may include installation of additional culverts or planting of vegetation.	Construction monitoring and inspection of standard site control measures . Visual assessment of soil compaction will be made post-construction (noted by rutting left by heavy machinery or flattened areas beneath areas where stockpiling occurred) and restoration efforts implemented, as required, by utilizing soil loosening methods. The land grading of the Project location will be reverted back to its earlier state during the decommissioning stage.

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
Significant Amphibian Woodland Breeding Habitat ABF1 ABF5 ABF14 ABF1 ABF14 ABF1 ABF5	**Fenceline** 0 m 10 m 96 m **Road** 22 m 5 m **Collector Line*** 21 m (U) 39 m (U)	**Disturbance to Habitat and Wildlife –** Approximately 0.4 ha of ABF1 will be removed. No vegetation removal is associated with ABF5; however, no 30 m buffer is available. There will be no encroachment on ABF14 of significant features. Habitat and sensory disturbance to animal species inhabiting the natural feature (C, O, D). Modification of habitat due to overhead or underground collector line installation (OCBB1); however, no loss of habitat is associated with collector lines.	• Seasonally adjust construction and decommissioning activities to minimize impacts to amphibians between the months of March through to June. • Pre-construction surveys will be undertaken to confirm habitat use by amphibians within the natural features. • Where the separation distance between the Project footprint and the natural feature is less than 30 m, woodland boundaries should be well demarcated using clearly visible material (e.g., flagging tape and painted stakes) such that all construction activities and personnel are excluded from these areas. • Tree removal within woodland areas shall not be permitted; however, pruning may be required. • Construct silt barriers around periphery of the buildable areas. • The construction workforce will be made aware that there is a potential for wildlife occurring on the Project Location and instructed to take measures for avoiding wildlife whenever possible. • Noise abatement devices will be utilized on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards and help maintain air quality. • Vehicle speeds will be restricted to 15 km/hr or less on the Project site and speed limit signage posted.	The loss of 0.4 ha from ABF1 will not result in any net residual effects; an area of approximately 20 ha will remain in the natural feature. The functionality and significance will not be compromised. Due to the separation distances between the Project Location and the natural features, and avoidance of direct effects, no net adverse effects are anticipated. No net adverse effects are anticipated as a result of collector line installation.	Timing restrictions will be in effect to avoid sensitive breeding periods (March through June). If breeding animals are encountered, appropriate construction buffers would be established. Buffer sizes would vary depending on the species and would be determined in consultation with the OMNR. Construction crews will be monitored and advised if they have worked beyond the marked boundaries of work areas. If necessary, these sites will be replanted.	Because feature-specific amphibian call surveys could not be completed during the evaluation of significance, pre-construction amphibian surveys will be conducted in all candidate amphibian woodland breeding habitat identified in Figure 3-6. These surveys will take place in April and May of 2013. Approximately 0.4 ha of ABF1 will be removed. If this feature is deemed to be significant after the 2013 pre-construction surveys then this habitat will be artificially replaced in the immediate vicinity (as close to the original habitat area as possible). Construction monitoring and inspection of standard site control measures. Post-construction monitoring will involve the following: ***Methods*** • Surveys to determine species diversity and species density. ***Location*** • All significant amphibian woodland breeding habitat identified. ***Frequency*** • Seasonally (April through June). ***Reporting*** • Yearly (for a minimum of three years).

Table 5-1: Environmental Impact Study - Summary of Effects and Mitigation Measures

Significant Natural Feature	Distance to:	Potential Negative Effect by Project Phase*	Mitigation Measures	Net Residual Effects	Contingency Measures	Further Study or Post-Construction Monitoring
		Emissions – Air Potential for air emissions from construction vehicles, machinery and equipment and impacts to air quality (C, O, D).	• Maintain vehicles, machinery and equipment in good repair, equipped with emission controls, as applicable. • Work shall be carried out in compliance with the Canadian Environmental Protection Act (CEPA), and applicable air emission regulations and by-laws.	Some emissions will be generated during Project activities with no net adverse effect to significant natural features.	Replace or repair mufflers and emission control system.	Monitoring of emissions during construction and decommissioning will be undertaken under BMPs. No monitoring of dust during operations phase is required as negative effects on natural feature are not anticipated.
		Leaks or Spills – Potential for leak or spill of petroleum products and other deleterious substances from vehicles and machinery to contaminate the soil in the natural feature (C, O, D).	• Implement BMPs and establish an emergency spill plan. • Excess material will be removed from the site. • No refuelling or maintenance of vehicles in, or adjacent to the municipal road allowance. • No refuelling or maintenance of vehicles within 30 m of the natural feature. • Ensure that absorbent materials are available on Project Location in the event that a spill of deleterious substances should occur. All spills and leaks of deleterious substances must be immediately contained and cleaned up in accordance with Provincial regulatory requirements and reported immediately to the Ontario Spills Action Centre (1-800-268-6060). • Maintain log book of any spills and mitigation measures.	Low potential for residual effect if mitigation measures applied.	Follow-up inspection and monitoring in the event of an accidental spill. Remedial actions will be required if negative effects to natural features are recognized.	General inspection of BMPs will be applied during construction. Monitoring of leaks or spills during operations phase will be undertaken under BMPs. In the event of a reportable spill during operations any monitoring requirements will be specified by MOE.
		Dust – Potential for the release of dust and soil particles into natural feature (C, D).	• Use controlled work procedures in order to eliminate release of dust from construction works. • Minimize activities with potential to release airborne particulates during windy and prolonged dry periods. • Stabilize areas of stockpiled or exposed soils. • Cover or otherwise contain loose materials that have potential to release airborne particulates during their transport, installation or removal e.g. by tarping, mulching, re-vegetating or watering in order to create a crusted surface. • Minimize vehicle traffic on exposed soils and stabilize high traffic areas with clean gravel surface layer or other suitable cover material. • Restore disturbed areas as soon as possible to minimize the duration of soil exposure. • Avoid work involving the movement of soil during weather which is excessively windy. • A crushed stone-tracking pad will be installed at the site access to reduce tracking of sediment onto adjacent roadways during construction activities. Street sweeping and cleaning will be scheduled as necessary, should the adjacent roadway become dirty. • As necessary, suppress releases of dust using approved materials e.g., water mist or non-chloride based materials during construction and decommissioning activities.	Some fugitive dust during preparation from Project activities will be generated. Site preparation activities will be temporary and short (months) duration. No effects from dust are anticipated in operations phase. No adverse effects on natural features are anticipated with implementation of mitigation measures.	Dust controls measures will be implement. If the release of dust and soil particles into a natural feature is observed, then remedial actions will be taken, such as properly covering all loose material which has the potential to release airborne particulates.	General inspection of BMPs will be applied during construction. Visual monitoring of dust generation will occur during the construction phase. No monitoring of dust during operations phase is required as negative effects on natural features are not anticipated during this phase.