

APPENDIX E

Terrestrial Habitat



Appendix E: Terrestrial Habitat

Table E-1: Wildlife Habitat Assessment for the Enbridge London Lines Replacement Project (Ecoregion 7E)

Wildlife Habitat Type	Criteria	Methods	Results of Desktop Habitat Assessment	Results of Field Investigations
SEASONAL CONCENTRATION AREAS				
Waterfowl Stopover and Staging Area (Terrestrial and Aquatic)	Field with evidence of annual spring flooding from meltwater or runoff; aquatic habitats such as ponds, marshes, lakes, bays, and watercourses used during migration, including large marshy wetlands.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features within the Study Area that may support waterfowl stopover and staging areas.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Shorebird Migratory Stopover Area	Beaches and un-vegetated shorelines of lakes, rivers, and wetlands.	ELC surveys and air photo interpretation will be used to assess features within the Study Area that may support migratory shorebirds.	Absent. Natural unvegetated shoreline habitat was absent from the Study Area.	n/a
Raptor Wintering Area	Combination of fields and woodland (>20 ha).	ELC surveys and air photo interpretation will be used to assess features within the Study Area that may support wintering raptors.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features within the Study Area that may support bat hibernacula.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in forested ecosites.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features within the Study Area that may support bat maternity colonies.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Turtle Wintering Areas	Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. Water has to be deep enough not to freeze and have soft mud substrate.	ELC surveys, wildlife habitat assessments and air photo interpretation will be used to assess features within the Study Area that may support areas of permanent standing water but not deep enough to freeze.	To be determined during field investigations prior to construction.	To be determined during field investigations
Reptile Hibernaculum	Rock piles or slopes, stone fences, crumbling foundations.	ELC surveys and wildlife habitat assessments will be used to document features that may support snake hibernacula.	To be determined during field investigations prior to construction.	To be determined during field investigations
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features within the Study Area that may support colonial bird breeding habitat.	To be determined during field investigations prior to construction.	To be determined during field investigations
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	Dead trees in large marshes and lakes, flooded timber, and shrubs, with nests of colonially nesting heron species.	ELC surveys and wildlife habitat assessments will be used to assess features within the Study Area that may support colonial bird breeding habitat (Trees/Shrubs).	To be determined during field investigations prior to construction.	To be determined during field investigations
Colonial-Nesting Bird Breeding Habitat (Ground)	Rock islands and peninsulas in a lake or large river.	ELC surveys and air photo interpretation will be used to assess features within the Study Area that may support colonial bird breeding habitat (Ground).	Absent. Large lakes or rivers are absent from the Study Area.	n/a
Migratory Butterfly Stopover Areas	Meadows and forests that are a minimum of 10 ha and are located within 5 km of Lake Erie.	GIS analysis will be used to measure distance from the Lake Erie shoreline.	Absent. Study Area is not within 5 km of Lake Erie.	n/a
Landbird Migratory Stopover Areas	Woodlands of a minimum size located within 5 km of Lake Ontario.	GIS analysis will be used to measure distance from the Lake Erie shoreline.	Absent. Study Area is not within 5 km of Lake Erie.	n/a
Deer Winter Congregation Areas	Deer winter congregation's areas are mapped by MNRF and species use surveys are not required.	The LIO database and MNRF consultation were used to identify deer winter congregation areas.	Present. Records of deer winter congregation areas were identified by MNRF in the Study Area.	Present

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Table E-1: Wildlife Habitat Assessment for the Enbridge London Lines Replacement Project (Ecoregion 7E)

Wildlife Habitat Type	Criteria	Methods	Results of Desktop Habitat Assessment	Results of Field Investigations
RARE VEGETATION COMMUNITIES				
Sand Barren, Alvar, Cliffs and Talus Slopes	Sand barren, Alvar, Cliff and Talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble.	ELC surveys and air photo interpretation will be used to assess vegetation communities in the Study Area.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Old-growth Forest	Relatively undisturbed, structurally complex; dominant trees >100 years' old.	ELC surveys and air photo interpretation will be used to assess vegetation communities in the Study Area.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Tallgrass Prairie and Savannah	Open canopy habitats (tree cover < 60%) dominated by prairie species.	ELC surveys and air photo interpretation will be used to assess vegetation communities in the Study Area.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Other Rare Vegetation Communities	Provincially Rare S1, S2 and S3 vegetation communities listed by the NHIC.	ELC surveys and air photo interpretation will be used to assess vegetation communities in the Study Area.	To be determined during field investigations prior to construction.	To be determined during field investigations.
SPECIALIZED HABITAT FOR WILDLIFE				
Waterfowl Nesting Area	Upland habitats adjacent to wetlands (within 120 m).	ELC surveys, wildlife habitat assessment, and air photo interpretation will be used to assess features within the Study Area that may support nesting waterfowl.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	Treed communities adjacent to rivers, lakes, ponds, and other wetlands with stick nests of Bald Eagle or Osprey.	ELC surveys, air photo interpretation and wildlife habitat assessment will be used to assess features within the Study Area that may support nesting, foraging and perching habitat for large raptors.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Woodland Raptor Nesting Habitat	Forested ELC communities >30 ha with 10 ha of interior habitat.	ELC surveys, wildlife habitat assessment, and GIS analysis will be used to assess features within the Study Area that may support nesting habitat for woodland raptors.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Turtle Nesting Areas	Exposed soil, including sand and gravel in open sunny areas near wetlands.	ELC surveys, wildlife habitat assessment and air photo interpretation will be used to assess features within the Study Area that may support turtle nesting areas.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Seeps and Springs	Any forested area with groundwater at surface within the headwaters of a stream or river system.	Evidence of groundwater upwelling, including seeps and springs, will be recorded during ELC surveys.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Amphibian Breeding Habitat (Woodland and Wetland)	Treed uplands with vernal pools, and wetland ecosites.	ELC surveys will be used to assess features within the Study Area that may support breeding amphibians.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Woodland Area-sensitive Bird Breeding Habitat	Large mature forest stands, woodlots >30 ha and >200 m from the forest edge.	ELC surveys, air photo interpretation, and GIS analysis will be used to determine whether woodlots that occurred within the Study Area that Were >30 ha with interior habitat present (>200 m from edge).	To be determined during field investigations prior to construction.	To be determined during field investigations.
HABITAT FOR SPECIES OF CONSERVATION CONCERN				
Marsh Bird Breeding Habitat	Wetlands with shallow water and emergent aquatic vegetation.	ELC surveys and air photo interpretation will be used to identify marshes with shallow water and emergent vegetation that may support marsh breeding birds.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Open Country Bird Breeding Habitat	Large grasslands and fields (>30 ha).	ELC surveys, air photo interpretation, and GIS analysis will be used to identify grassland communities within the Study Area that may support area-sensitive breeding birds.	To be determined during field investigations prior to construction.	To be determined during field investigations.
Shrub/Early Successional Bird Breeding Habitat	Large shrub and thicket habitats (>10 ha).	ELC surveys, air photo interpretation and GIS analysis will be used to identify large communities that may support shrub/early successional breeding birds.	To be determined during field investigations prior to construction.	To be determined during field investigations.

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Table E-1: Wildlife Habitat Assessment for the Enbridge London Lines Replacement Project (Ecoregion 7E)

Wildlife Habitat Type	Criteria	Methods	Results of Desktop Habitat Assessment	Results of Field Investigations
Terrestrial Crayfish	Wet meadows and edges of shallow marshes.	ELC surveys will be used to identify shallow marsh and meadow marsh communities that occurred within the Study Area; searches for crayfish chimneys were conducted during wildlife habitat assessments.	To be determined during field investigations prior to construction.	To be determined during field investigations.
SPECIES OF CONSERVATION CONCERN				
Birds				
Common Nighthawk (Special Concern)	The Common Nighthawk is an aerial insectivore and forages at dawn and dusk. This species nests on the ground in open habitats with rocky or graveled substrate and will even nest on gravel roofs in the city (Cadman et al. 2007). The regeneration or succession of forest clearings and the destruction of grassland habitats appear to play a major role in this species' decline along with the non-selective spraying for mosquitoes (Cadman et al. 2007).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Eastern Wood-Pewee (Special Concern)	Eastern Wood-pewee is found in the mid-canopy layer of deciduous and mixed wood forests with open understories and is commonly associated with edges and clearings (MECP 2019a).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Golden-winged Warbler (Special Concern)	The Golden-winged Warbler is found in early-successional shrubby areas surrounded by mature forest, including field edges, hydro or utility Right-of-Ways or logged areas (COSEWIC 2006). It can also be found in dry uplands, swamp forests and marshes (COSEWIC 2006).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Grasshopper Sparrow (Special Concern)	The Grasshopper Sparrow is found in large (>5 ha) sparsely vegetated grasslands, hay fields, pastures, prairies and alvars with well-drained, sandy soil (COSEWIC 2013). The nests are typically well hidden in grasses (COSEWIC 2013).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Red-headed Woodpecker (Special Concern)	The Red-headed Woodpecker prefers open woodlands and forest edges and is often found in disturbed areas such as cemeteries, parks and golf courses (MECP 2019b). This species shows a preference for dead or dying trees and at least a few snags or large dead limbs are necessary for its presence in more open habitats (MECP 2019b).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Wood Thrush (Special Concern)	Mature deciduous and mixed forest (MECP 2019c). Well-developed undergrowth and tall trees to sing from (MECP 2019c).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Insects				
Monarch (Special Concern)	Adult Monarchs feed on nectar from wildflowers in a variety of habitats, while larvae are confined to meadows and open areas with Milkweed plants (MECP 2019d).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Monarch habitat will be recorded if observed during field investigations.	To be determined during field investigations.
Mammals				
Woodland Vole (Special Concern)	The Woodland Vole is primarily found in mature Carolinian forest with a dense leaf litter layer (COSEWIC 2010), however it may also be found in sand dunes, swamps and orchards (COSEWIC 2010). The most important factor in habitat selection is a dense herbaceous layer and friable soils with low saturation (COSEWIC 2010).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. To be determined during field investigations prior to construction.	To be determined during field investigations.

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Wildlife Habitat Type	Criteria	Methods	Results of Desktop Habitat Assessment	Results of Field Investigations
Reptiles				
Eastern Ribbonsnake (Special Concern)	The eastern ribbon snake is usually found close to water and is particularly characteristic of wetlands that have an abundance of small fish and frogs (MECP 2019e). It hibernates in communal underground burrows over winter (MECP 2019e).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. To be determined during field investigations prior to construction.	To be determined during field investigations.
Eastern Milksnake	The Eastern milksnake can be found in a variety of habitats, but prefer open areas such as pastures, meadows, prairies, rock outcrops, right-of-ways, and agricultural land (COSEWIC 2014). They commonly hunt around old buildings and barns, where rodent populations are high (COSEWIC 2014). At the landscape scale, Milksnakes are most abundant in areas of Ontario with high overall forest cover (COSEWIC 2014).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. To be determined during field investigations prior to construction.	To be determined during field investigations.
Northern Map Turtle (Special Concern)	The Northern Map Turtle inhabits rivers and lakes with suitable basking sites such as deadheads, rocks and emergent vegetation (COSEWIC 2002). It requires high-quality water with abundant mollusc populations, which are the preferred prey source. The map turtle overwinters in slow-moving, deep sections of river (COSEWIC 2002).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. The Sydenham River is likely to provide habitat for the Map Turtle.	To be determined during field investigations.
Snapping Turtle (Special Concern)	Ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms. Females show strong nest site fidelity and nest in sand or gravel banks at waterway edges in late May or early June (MECP 2019f).	ELC surveys, wildlife habitat assessment, botanical inventory and breeding bird surveys will be used to assess features within the Study Area that may support species of conservation concern.	Suitable habitat for the species may be present in the Study Area. Watercourses proposed for crossing may provide habitat for the Snapping Turtle.	To be determined during field investigations.
ANIMAL MOVEMENT CORRIDORS				
Amphibian Movement Corridor	Corridors may be found in all ecosites associated with water. Determined based on identifying significant amphibian breeding habitat (wetland).	Identified after Amphibian Breeding Habitat - Wetland is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat (Wetland).	Suitable habitat for the species may be present in the Study Area. To be determined during field investigations prior to construction.	To be determined during field investigations.

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Table E-2: Habitat Potential in the Study Area for Threatened or Endangered Species Identified During Background Review

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	Source	Habitat Preference	Desktop Assessment of Habitat Potential	Results from Habitat and Species Surveys
Birds							
Acadian Flycatcher	<i>Empidonax virescens</i>	S2S3B	END	MNRF	The Acadian Flycatcher typically breeds in mature deciduous forest with a dense canopy closure and ravines, or in forested swamps with maple and beech trees. This species is sensitive to disturbance and is generally found in large, undisturbed forest tracts (COSEWIC 2010a).	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	MNRF, OBBA	The Bank Swallow breeds on a variety of sites with vertical banks, including riverbanks, bluffs, aggregate pits and stockpiles of sand and soil (COSEWIC 2013a). Sand-silt substrates are preferred (COSEWIC 2013a). Nesting sites are often near open habitats used for aerial foraging (COSEWIC 2013a). Large wetlands are used as communal roosts during post-breeding, migration, and wintering periods (COSEWIC 2013a).	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Barn Owl	<i>Tyto alba</i>	S1	END	MNRF	The Barn Owl range is extremely limited in Canada, where it is found only within 50 km of the Great Lakes (COSEWIC 2010b). It lives year-round at its nest site, which can be constructed in old barns, abandoned buildings, tree cavities or holes in cliff faces (COSEWIC 2010b) The Barn Owl hunts small mammals over open areas such as fields and meadows (COSEWIC 2010b).	Suitable habitat is unlikely to be present in the Study Area due to the limited range of the species in Ontario and the requirement of 50 km distance to a Great Lake, which the project does not encounter. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	OBBA	The Barn Swallow commonly nests on walls or ledges of barns, bridges, culverts or other man-made structures (COSEWIC 2011). Where suitable nesting structures occur, Barn Swallow often form small colonies, sometimes mixed with other swallow species (COSEWIC 2011). The Barn Swallow feeds on aerial insects while foraging over a variety of open habitats such as pastures, lawns, meadows and fields (COSEWIC 2011). It will also frequently forage in woodland clearings, over wetland habitats or open water where insect prey are abundant (COSEWIC 2011).	Suitable habitat may be present for this species along the proposed pipeline route. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	MNRF, OBBA	The Bobolink is generally referred to as a “grassland species”. It nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures. Preferred ground cover species include grasses such as Timothy and Kentucky bluegrass and forbs such as clover and dandelion (COSEWIC 2010). Bobolink is an area-sensitive species, with reported lower reproductive success in small habitat fragments (COSEWIC 2010).	Suitable habitat may be present in the Study Area and where the pipeline passes through pasture, hay or meadow habitat. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Cerulean Warbler	<i>Setophaga cerulea</i>	S3B	THR	MNRF	The Cerulean Warbler is found in mature deciduous forest with large trees and an open understory (COSEWIC 2010). They can be found in moist lowland forest or drier upland forest (COSEWIC 2010).	Suitable habitat may be present along the pipeline route. The pipeline route passes through known Cerulean Warbler range in Ontario. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	OBBA	Chimney Swift uses chimneys for roosting and breeding, and less commonly, nest in large hollow trees. Nesting sites typically have a constant ambient temperature (COSEWIC 2007). It is an aerial insectivore, and often forages near water (COSEWIC 2007).	Suitable habitat may be present in the Study Area and where the pipeline passes through deciduous forest. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.

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Table E-2: Habitat Potential in the Study Area for Threatened or Endangered Species Identified During Background Review

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	Source	Habitat Preference	Desktop Assessment of Habitat Potential	Results from Habitat and Species Surveys
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	MNRF, OBBA	The Eastern Meadowlark is typically found in fields, meadows, golf courses, pastures, alfalfa fields, roadsides and other open areas. Older sites with moderately tall grass, a substantial litter layer, low forb and shrub cover and dense grass are preferred (COSEWIC 2011). Larger patch sizes (>5 ha) are also generally preferred (COSEWIC 2011).	Suitable habitat may be present in the Study Area and where the pipeline passes through pasture or meadow habitat. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Henslow's Sparrow	<i>Ammodramus henslowii</i>	SHB	END	MNRF	Henslow's Sparrow prefers open grasslands such as old fields, meadows and lightly grazed pastures but may occasionally be found on marsh edges, rights-of-way, roadsides and utility corridors (COSEWIC 2011a). They show a strong preference for large contiguous tracts of suitable habitat (COSEWIC 2011a). Nests are constructed on the ground, well concealed by tall vegetation (COSEWIC 2011a).	Suitable habitat may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	OBBA	The Least Bittern prefers cattail marshes but may be found in a variety of wetland habitats with stable water levels and dense vegetation interspersed with open water areas (COSEWIC 2009b). Nests are built in dense vegetation near open water for foraging (COSEWIC 2009b).	Suitable habitat for the species may be present along the pipeline route. The pipeline route passes through or in close proximity to eight different provincially significant wetlands. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Louisiana Waterthrush	<i>Parkesia motacilla</i>	S3B	THR	MNRF, OBBA	The Louisiana Waterthrush prefers headwater streams and wetlands in large tracts of mature forest (COSEWIC 2015) but may also be found in deciduous swamps with open water (MNRF 2017). It nests under fallen logs, in root masses or in niches in stream banks (MNRF 2017; COSEWIC 2015).	Suitable habitat for the species may be present along the pipeline route and in the Study Area. The pipeline route passes through the mapped range in Ontario for the Louisiana Waterthrush. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Northern Bobwhite	<i>Colinus virginianus</i>	S1	END	MNRF	The Northern Bobwhite breeds in a variety of habitat early successional habitat types, including grasslands, croplands and brushy areas (COSEWIC 2003a). Nesting occurs in grasslands in the summer (COSEWIC 2003a). Croplands are required in summer and fall for feeding, dusting, loafing and roosting, and brushy habitat is required for roosting, feeding and escape during the fall and winter (COSEWIC 2003a).	Suitable habitat for the species may be present in the Study Area. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.
Yellow-breasted Chat	<i>Icteria virens</i>	S1B	END	MNRF	The Yellow-breasted Chat requires dense, low shrubby vegetation and is usually associated with early successional shrub thickets (COSEWIC 2011b). It is typically found in abandoned agricultural fields, hydro lines, Right-of-ways, wetlands and pond edges (COSEWIC 2011b).	Suitable habitat for the species may be present along the pipeline route and in the Study Area. The pipeline route passes through the mapped range in Ontario for the Yellow-breasted Chat. Breeding bird surveys will occur prior to construction.	To be determined during field investigations.

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Table E-2: Habitat Potential in the Study Area for Threatened or Endangered Species Identified During Background Review

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	Source	Habitat Preference	Desktop Assessment of Habitat Potential	Results from Habitat and Species Surveys
Mammals							
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	OMA	The Little Brown Myotis roosts in tree cavities and abandoned buildings, and often forms roosting colonies in barns, attics and abandoned buildings (COSEWIC 2013b). They have been found in a wide variety of deciduous and coniferous tree stands (COSEWIC 2013b). Hibernation typically occurs in caves and mines(COSEWIC 2013b).	Suitable habitat exists for this species along the pipeline route within any deciduous or mixed woodlands or buildings. Bat habitat surveys will be completed prior to construction.	To be determined during field investigations.
Small-footed Myotis	<i>Myotis leibii</i>	S2S3	END	OMA	The Eastern Small-footed Myotis roosts in a variety of habitats, including hollow trees, under rocks or in rock outcrops, in buildings, caves, mines and under bridges (MNRF 2017). Different roosting sites may be selected each day (MNRF 2017). Hibernation occurs in abandoned mines and caves (MNRF 2017).	Suitable habitat exists for this species along the pipeline route within any deciduous or mixed woodlands or buildings. Bat habitat surveys will be completed prior to construction.	To be determined during field investigations.
Northern Myotis	<i>Myotis septentrionalis</i>	S3?	END	OMA	The Northern Myotis roosts in colonies in tree cavities (COSEWIC 2013b) in a wide variety of deciduous and coniferous forest stands. Little is known about the effect of tree density on maternity roost selection for this species, but bats tend to avoid large open areas (COSEWIC 2013b). Small forest gaps, such as over streams or ponds, are used for foraging (COSEWIC 2013b).	Suitable habitat exists for this species along the pipeline route within any deciduous or mixed woodlands or buildings. Bat habitat surveys will be completed prior to construction.	To be determined during field investigations.
Tri-colored Bat	<i>Perimyotis subflavus</i>	S3?	END	OMA	The Tri-coloured Bat roosts in colonies in tree cavities (COSEWIC 2013b) in a wide variety of deciduous and coniferous forest stands. Little is known about the effect of stand composition on maternity roost selection for this species, but it is strongly associated with forest watercourses and streamside vegetation (COSEWIC 2013b).	Suitable habitat exists for this species along the pipeline route within any deciduous or mixed woodlands or buildings. Bat habitat surveys will be completed prior to construction.	To be determined during field investigations.
Plants							
American Chestnut	<i>Castanea dentata</i>	S1S2	END	MNRF	The American Chestnut prefers dry upland deciduous forest with sandy, acidic to neutral soils and is often associated with Red Oak, Black Cherry, Sugar Maple and American Beech (COSEWIC 2004). It is only found in the Carolinian zone within Ontario (COSEWIC 2004).	Suitable habitat exists for this species along the proposed pipeline route within any deciduous or mixed woodlands. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Blue Ash	<i>Fraxinus quadrangulata</i>	S2?	THR	MNRF	Blue Ash grows in three habitat types: deciduous floodplain forests and river valleys; on sandy beaches in Point Pelee Island and Point Pelee National Park, and on limestone outcrops along the shores of Lake Erie (COSEWIC 2014).	Suitable habitat exists for this species along the proposed pipeline route. Blue Ash is known to be found along the Sydenham River. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Butternut	<i>Juglans cinerea</i>	S2?	END	MNRF	The Butternut is a medium-sized tree that is commonly found in a variety of habitats including woodlands and hedgerows (COSEWIC 2017). Butternut is intolerant of shade and occurs singly or in small groups with a variety of associates (COSEWIC 2017).	Suitable habitat exists for this species along the proposed pipeline route within any deciduous or mixed woodlands and hedgerows. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Drooping Trillium	<i>Trillium flexipes</i>	S1	END	MNRF	Drooping Trillium grows on damp sandy soils in mature deciduous Carolinian forest, usually close to streams and rivers (COSEWIC 2009a). It is commonly associated with maple, White Ash, American Basswood, Hackberry, White Elm, Blue Ash; and grows alongside Ostrich Fern, Wild Ginger and Jack-in-the-Pulpit (COSEWIC 2009a).	Suitable habitat may be present for this species along the proposed pipeline route. Only two populations occur in Ontario, one of which is along the Sydenham River. A botanical inventory will be completed prior to construction.	To be determined during field investigations.

Appendix E: Terrestrial Habitat

Table E-2: Habitat Potential in the Study Area for Threatened or Endangered Species Identified During Background Review

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	Source	Habitat Preference	Desktop Assessment of Habitat Potential	Results from Habitat and Species Surveys
Eastern Flowering Dogwood	<i>Cornus florida</i>	S2?	END	MNRF	Eastern Flowering Dogwood is most often found on sandy soils under tall trees in intermediate to mature deciduous forest, but is also found on floodplains, ravines, fencerows and roadsides (COSEWIC 2007a).	Suitable habitat for the species may be present along the proposed pipeline route. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Heart-leaved Plantain	<i>Plantago cordata</i>	S1	END	MNRF	Heart-leaved Plantain is a semi-aquatic plant that typically grows in undisturbed wet forests, often along gravelly or rocky limestone beds of forest streams (COSEWIC 2000a). Common associate species are maple, Blue-beech, ash, Shagbark Hickory and Basswood (COSEWIC 2000a).	Suitable habitat for the species may be present in the Study Area. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Large Whorled Pogonia	<i>Isotria verticillata</i>	SH	END	MNRF	Large Whorled Pogonia grows on sandy soils with a dense layer of leaf litter in deciduous and mixed forests with an open canopy (COSEWIC 2000b).	Suitable habitat for the species may be present in the Study Area. The proposed pipeline route passes through the known range for the species in Ontario. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Willow-leaved Aster	<i>Symphotrichum praealtum</i>	S2	THR	MNRF	Willowleaf Aster is found on Walpole Island and near Windsor in Ontario (COSEWIC 2003b). It grows in tallgrass prairies, oak savannahs, thickets, meadows (COSEWIC 2003b) and occasionally along roadsides, trails, rights-of-way and railways (COSEWIC 2003b).	Suitable habitat for the species may be present in the Study Area. A botanical inventory will be completed prior to construction.	To be determined during field investigations.
Reptiles							
Blanding's Turtle	<i>Emydoidea blandingi</i>	S3	THR	ORAA	The Blanding's Turtle prefers shallow water in heavily vegetated, large wetlands and lakes (COSEWIC 2016a). In Ontario it also commonly uses clear watered habitats such as streams, rivers and ponds (COSEWIC 2016a). Nests occur in a variety of loose substrates such as sand, gravel and cobblestone (COSEWIC 2016a). Blanding's Turtles can often be found hundreds of metres from the nearest aquatic habitat during the active season, as they search for mates or nest sites (COSEWIC 2016a). Overwintering sites are permanent pools approximately 1 m in depth (COSEWIC 2016a).	Suitable habitat for the species may be present in the Study Area. A reptile survey will be completed prior to construction.	To be determined during field investigations.
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	S3	THR	ORAA	Eastern Hog-nosed snakes inhabit areas with loose, dry, sandy soil; open vegetation cover and proximity to a water source (COSEWIC 2007b). Common habitats include open woods, forest edges, sand dunes if they have adequate cover (COSEWIC 2007b). Their primary prey is toads (COSEWIC 2007b).	Suitable habitat for the species may be present in the Study Area. A reptile survey will be completed prior to construction.	To be determined during field investigations.
Massasauga (Carolinian population)	<i>Sistrurus catenatus pop. 2</i>	S1	END	MNRF	The Massasauga requires semi-open habitats for cover and basking, including prairies, bogs, marshes, alvars, shorelines and open forests (COSEWIC 2012). Pregnant females tend to prefer dry open habitats for thermoregulation, while non-pregnant snakes favour lowland habitats for hunting (COSEWIC 2012). Hibernation occurs in rock crevices, root masses, burrows and sphagnum mats where the snakes are below the frost line but above the water table (COSEWIC 2012).	Populations of this species are extremely fragmented in Southern Ontario and only known from a few locations: Wainfleet Bog in Niagara Region, Ojibway Prairie Wetland Complex in Windsor and the Bruce Peninsula.	To be determined during field investigations.
Queensnake	<i>Regina septemvittata</i>	S2	END	ORAA	The Queensnake is an aquatic snake that is seldom found more than 3 m from streams, rivers and lakes with gravelly/rocky bottoms and an abundance of crayfish (COSEWIC 2010c). Hibernacula are generally found in bridge abutments and bedrock crevices (COSEWIC 2010c).	Suitable habitat for the species may be present in the Study Area. A reptile survey will be completed prior to construction.	To be determined during field investigations.

Appendix E: Terrestrial Habitat

Table E-2: Habitat Potential in the Study Area for Threatened or Endangered Species Identified During Background Review

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	Source	Habitat Preference	Desktop Assessment of Habitat Potential	Results from Habitat and Species Surveys
Spiny Softshell	<i>Apalone spinifera</i>	S2	END	MNRF	The Spiny Softshell is usually found in rivers and lakes, but occasionally inhabits smaller waterbodies such as streams and roadside ditches (COSEWIC 2016b). The primary habitat requirement is access to open terrestrial sand or gravel sites for nesting, soft mud substrate for burrowing, basking sites and an abundance of crayfish and other prey items (COSEWIC 2016b). The Spiny Softshell rarely travels far from aquatic habitats (COSEWIC 2016b).	Suitable habitat exists in the Study Area. The species is known to inhabit the Sydenham River.	To be determined during field investigations.

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