



North Halton Coordinated EA - James Snow Parkway Improvements

Natural Environment Report

Prepared for:

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NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

North Halton Coordinated EA - James Snow Parkway Improvements

Natural Environment Report

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by HDR, on behalf of Halton Region, to complete a Natural Environment Report (NER) to inform the Municipal Class Environmental Assessment (MCEA) and Preliminary Design for improvements to James Snow Parkway between Britannia Road and just south of Highway 401 in the Town of Milton. This work was completed as part of the larger North Halton Coordinated MCEA for transportation corridor improvements for three regional road corridors. In order to support future travel demand and a transportation system that is safe, continuous, connected, and coordinated for all users and all abilities, improvements to James Snow Parkway are required to improve facilities for pedestrian, cyclists, mobility device users and other non-vehicular travel to create a safe and accessible network, to improve traffic operations at intersections through physical and operational modifications, and road widening to six lanes to provide additional travel lanes and transit priority corridor infrastructure.

For the purposes of this work, a “study area” was defined as the lands within 120m of the James Snow Parkway right-of-way (ROW) between Britannia Road to just south of the Highway 401 interchange; however, a focus of this work has been on the lands and features immediately adjacent to the ROW that have potential to be impacted by the proposed undertaking (Map 1). This report refers to James Snow Parkway as following a north-south orientation; therefore, true northeast = “east”, true southwest = “west”, etc.

The study area falls within a rapidly developing part of Milton that until recently represented the eastern urban expanse of the town. Lands to the west of the ROW are almost entirely developed, or in the process of developing, primarily with residential subdivision lands. Lands to the east of the ROW largely comprise newly-built or under-construction warehouse and other commercial/industrial developments, along with some interspersed residual agricultural lands. Natural feature coverage is relatively sparse and fragmented within these lands, but includes some woodland and wetland features that abut the ROW. Lands to the east of the ROW contribute headwater drainage toward the broader East Sixteen Mile Creek subwatershed further to the east and southeast. Only one watercourse crossing of the ROW, a tributary to Middle Sixteen Mile Creek, occurs within the study area. Several of these woodland, wetland and watercourse natural features form parts of the Regional Natural Heritage System as mapped in the Regional Official Plan (OP) (Halton Region 2024).

This report summarizes background information on natural heritage features within the study area as well as the results of field surveys completed to accurately characterize the existing natural environment conditions. The detailed characterization was used to undertake an analysis of natural feature significance and sensitivity for the study area natural features. This analysis was completed with consideration for applicable Town, Regional and Provincial policies and legislation. An impact assessment has been completed based on details of the selected Preliminary Design for the road improvements. The impact assessment incorporates an analysis of direct impacts (i.e., impacts within the footprint of the planned undertaking), as well as indirect impacts (e.g., due to road runoff/stormwater management and water quality mitigation). General recommendations pertaining to ecological restoration and enhancement opportunities and monitoring have also been provided. These recommendations are to be reviewed and refined as required based on the subsequent Detailed Design of the road improvements.

This NER study has been completed in conjunction with a Preliminary Tree Inventory Report, which is presented under a separate cover (NRSI 2025). Pertinent results from the Tree Inventory Report have been summarized in this report.

2.0 Background Information Review and Significant Habitat Screening

2.1 Background Information Secondary Sources

In order to determine a study approach for the NHA, existing natural heritage information was first gathered and reviewed to identify key natural heritage features and species that are known or have potential to occur within the study area. Existing background information was requested from Conservation Halton and the Ontario Ministry of Natural Resources (OMNR). A written response was received from the OMNR on September 15, 2023 and from Conservation Halton on August 2, 2023. Information received from Conservation Halton included a geospatial dataset of wildlife species observations for the study area (Conservation Halton 2023). However, it is NRSI's understanding that the plotted wildlife observation points do not necessarily accurately represent where the species observation was actually made and may represent a point within a large generalized area. Due to this, and the age of certain observation data (some >40 years old), these geospatial data have been used as additional background on species that may occur within the study area, subject to suitable habitat availability.

Background information on the natural environment features within the study area vicinity (within up to 10km) was also gathered from the OMNR Natural Heritage Information Centre online database of provincially-tracked species (OMNR 2025a), the OMNR's Land Information Ontario mapping, and relevant taxa-specific databases, as listed below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the study area (within 10x10km survey squares (17NJ92 and 17NJ91) containing the study area) using various atlases including the, the Ontario Breeding Bird Atlas (BSC et al. 2008), the Ontario Reptile and Amphibian Atlas (Ontario Nature 2019), and the Ontario Butterfly Atlas (Macnaughton et al. 2023). The Ontario Mammal Atlas (Dobbyn 1994) was reviewed within the 100x100km survey square (NU82). Ontario Odonata Atlas Database (OOAD 2023) species occurrence records was received from NHIC for the atlas squares containing the study area.

Other information sources that were reviewed to inform project scoping included the following:

- Conservation Halton Web Maps Data and Online Mapping (2024);
- Halton Region Official Plan (2024);
- Town of Milton Official Plan (2024);

- *Sixteen Mile Creek, Areas 2 & 7 Subwatershed Update Study (SUS), Town of Milton Draft Report* (AMEC et al. 2015);
- *Phase 1: Background Review and Subwatershed Characterization, South Milton Urban Expansion Area, Town of Milton* (AFW et al. 2017);
- eBird (eBird 2023); and,
- iNaturalist (iNaturalist 2023).

2.2 Significant Species and Habitat Screening

Species at Risk (SAR) are those listed on the Protected Species in Ontario List (MECP 2026). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered or Threatened. Species listed as Endangered or Threatened are protected under the *Species Conservation Act* (SCA), which includes protection of their defined habitat. SAR also include those species that are listed under Schedule 1 of the federal *Species at Risk Act* (SARA). Since the study area does not include federal lands, only migratory birds and aquatic species that are listed under Schedule 1 of the SARA receive protection within the study area. For the purposes of this report, the term “SAR” will refer to provincially or federally Threatened and Endangered species regulated under the SCA or SARA.

Based on NRSI’s examination of background sources and federally or provincially significant species with occurrence records in the study area vicinity (within 10km), an assessment of SAR suitable habitat presence within the study area was completed. Assessments of habitat suitability in the study area were made by cross-referencing each species’ known habitat preferences or requirements (e.g., OMNR 2000) with habitat availability based on satellite imagery and available mapping.

A preliminary screening for the presence of SWH was also completed for the study area. The Significant Wildlife Habitat Technical Guide (SWHTG) is a guideline document that outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats (OMNR 2000, MNRF 2015a). The SWHTG groups SWH into four broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of Species of Conservation Concern (SCC), and animal movement corridors. This screening involved the comparison of MNR criteria outlined for Ecoregion 7E, in which the study area is located, against habitats known to occur in the study area.

The definition of SCC includes the following:

- species that are listed as Special Concern in Ontario by COSSARO,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre (MNR 2021), and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species may be protected by the federal SARA if they are listed as Threatened or Endangered on Schedule 1 of the SARA.

Habitat for SCC is considered Significant Wildlife Habitat (SWH) (OMNR 2010), which is afforded protection under the Provincial Planning Statement (OMMAH 2024) and municipal natural heritage protection policies.

The results of the significant species habitat screenings were used to inform the fieldwork program and to facilitate identification of potentially significant habitats within the study area. See Sections 6.4 and 6.5 for the results of the SAR/SCC habitat assessment and SWH assessment, respectively, for the study area based on the results of background information review and field surveys.

3.0 Relevant Policies, Legislation, and Planning Studies

Table 1 provides an overview of natural heritage-based policies and legislation that were considered and informed the NER. To help inform the road preliminary design, identify areas to be protected and inform mitigation strategies, inventoried natural features were evaluated against relevant policies and legislation outlined in the following sections. The specific implications of these policies to the proposed undertaking are discussed in further in Section 6.0.

Table 1. Relevant Policies, Legislation and Planning Studies

Policy/Legislation	Description	Project Relevance
Provincial Planning Statement (OMMAH 2024).	• Issued under the authority of Section 3 of the Planning Act and came into effect on October 20, 2024, replacing the 2020 Provincial Policy Statement. • Section 4.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as ‘significant’. • The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000, MNRF 2015a) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.	• Natural features that occur or may occur within the study area, and which receive protection under the PPS, include: • Fish Habitat, • Significant Woodlands, • Potential Significant Wildlife Habitat, and • Potential habitat for Endangered and Threatened species. • Section 4.1.5 of the PPS states that development or site alteration shall not be permitted in Significant Woodlands or Significant Wildlife Habitat unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions. • Section 4.1.8 of the PPS states that development and site alteration shall not be permitted on adjacent lands to the natural features described above unless it is demonstrated that there will be no negative impacts to the natural features or their ecological functions. • Section 4.1.6 of the PPS states that development or site alteration shall not be permitted in fish habitat except in accordance with provincial or federal requirements. • Section 4.1.7 of the PPS states that development or site alteration shall not be permitted in habitat of Endangered or Threatened species except in accordance with provincial or federal requirements. • Section 4.1.2 of the PPS states that the connectivity of natural features in an area should be maintained, restored, or where possible, improved.
<i>Species Conservation Act</i>	• The SCA came into force in April 2026, replacing the earlier Endangered Species Act	• Based on a preliminary assessment, multiple SAR were identified as having the potential to occur within the study area based on presence of suitable habitat.

Policy/Legislation	Description	Project Relevance
	- The SCA prohibits killing or harming of SAR and protects their defined habitats from damage and destruction. - Species that are subject to protections under the SCA are listed in the Protected Species in Ontario list (Ontario Regulation 60/26).	
<i>Species at Risk Act</i>	- The SARA is a federal piece of legislation that protects species listed as Endangered, Threatened or Special Concern on Schedule 1 of the <i>Act</i>. - SARA prohibits killing, harming, harassing, capturing, or taking of individuals. - Under SARA, prohibitions regarding individuals and residences for migratory birds and aquatic species at risk apply wherever they occur in Canada (including private lands). - For terrestrial species at risk, these prohibitions only apply on federal lands. - In the case of a migratory bird species listed under the <i>Migratory Birds Convention Act</i>, certain SARA prohibitions protecting individuals and residences (e.g., nests or dens) of endangered, threatened and extirpated species apply automatically. Additionally, Critical Habitat for these species, where identified, is protected. - In the case of aquatic species at risk, SARA prohibitions protect individuals, residence (e.g., fish spawning areas, mussel beds or burrows) and identified critical habitat.	- Species at risk protected by the SARA were identified as occurring or potentially occurring in the vicinity of the study area. - If species at risk protected by the SARA, their residences and/or their Critical Habitat are confirmed within the study area a mitigation plan or permit from Environment and Climate Change Canada (ECCC) may be required. - For projects that may affect aquatic SAR, their residences, or Critical Habitat, a Fisheries and Oceans Canada (DFO) Request for Review is required. - The required authorization from DFO typically falls under one or more of the following legal instruments: SARA permit, Letter of Advice or Fisheries Act Authorization
<i>Migratory Birds Convention Act, 1994</i> and <i>Migratory Birds Regulations (2022)</i>	The <i>Migratory Birds Convention Act</i> (MBCA) protects migratory game birds, insectivorous birds, and several other migratory non-game birds from persecution in the form of harassment.	Any vegetation removal required for construction of the proposed development must have regard for this legislation in the form of timing window restrictions or other suitable mitigation measures.

Policy/Legislation	Description	Project Relevance
	• The schedule of on-site work must consider MBCA windows, with timing of breeding bird season typically occurring between April 1 and August 31; however, this is a guideline, since the MBCA applies anytime a migratory bird is nesting. • “Incidental take” (unintentional harming, killing, disturbance, or destruction of migratory birds, their nests, or eggs as a result of an activity that is not specifically targeting the bird or nest) is considered illegal, with the exception of a permit obtained by the Canadian Wildlife Service. • Schedule 1 of the MBR 2022 provides year-round nest protection for 18 species that are known to re-use nests annually.	
Halton Region Official Plan (2024)	• The Halton Region OP identifies the natural features, ecological functions and potential linkages and corridors that comprise the Natural Heritage System (NHS). • The NHS consists of both the Greenbelt Natural Heritage System and the Regional Natural Heritage System. Within the NHS, Key Features are to be protected and maintained for conservation purposes.	• Regional NHS features that occur or may occur within the study area include: • Key Features, which include: ▪ Potential Significant Wildlife Habitat, ▪ Potential habitat for Endangered and Threatened species, ▪ Fish habitat, ▪ Significant wetlands, and ▪ Significant Woodlands. • Watercourses • Linkages • According to Map 1 of the Region OP, the study area is within the NHS. • According to Map 1G, the study area contains Key Features and Enhancement Areas, Linkages, and/or Buffers. • Section 117.1 of the Region OP states that, subject to other applicable provincial policies (e.g., NEP, Greenbelt Plan), that “essential transportation and utility facilities” may be permitted within the Regional NHS.

Policy/Legislation	Description	Project Relevance
		Section 118.2(a) of the Regional OP states that development and site alteration within Significant Wetlands, Significant Coastal Wetlands, significant habitat of Endangered and Threatened species and fish habitat is prohibited except in accordance with Provincial and Federal legislation or regulations.
Town of Milton Official Plan (2024)	- The Town of Milton OP identifies a Natural Heritage System (NHS) in its rural and urban systems, as mapped on Schedules A and B of the OP, respectively. - The focus of the NHS is to protect and enhance natural features and areas and their ecological functions. - The Milton NHS consists of the Halton Regional NHS and the Greenbelt Plan NHS.	- In accordance with the Regional OP, the Town of Milton OP Schedule M identifies Key Features of the Regional NHS and the Greenbelt Plan NHS, as well as lands mapped as “Enhancement Areas, Linkages and Buffers”. - Portions of the Town’s mapped NHS fall within the study area as shown on Schedule B. - Schedule M illustrates the presence of NHS Key Features within the study area, associated with wooded natural features, riparian corridors, and wetlands. - Schedule M shows buffers surrounding the small wetland features at the south end of the study area.
Ontario Regulation 41/24 (Prohibited Activities, Exemptions and Permits)	- Regulation issued under <i>Conservation Authorities Act</i>, R.S.O. 1990. Effective date April 1, 2024. - Interim policy guidelines are provided for this regulation while preceding regulations are updated - CH has the responsibility to regulate activities in and adjacent to hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes).	- Wetlands and a watercourse (Middle Sixteen Mile Creek Tributary) are present within the study area. - Wetlands and watercourses are regulated as hazard features by CH. Development and site alteration is prohibited in regulated areas unless permitted by CH.
<i>Fish and Wildlife Conservation Act, 1997</i>	The <i>Fish and Wildlife Conservation Act</i> (FWCA) provides protection for certain bird species not protected under the MBCA (e.g., raptors), as well as furbearing mammals and their dens or habitual dwellings, aside from the Red Fox (<i>Vulpes vulpes</i>) and Striped Skunk (<i>Mephitis mephitis</i>)	- The timing of construction activities, especially vegetation clearing and site grading must have consideration for bird nesting and den sites for furbearing mammals. - Wildlife sweeps by a qualified biologist are recommended in advance of any vegetation clearing and site grubbing during the bird active season to ensure that no active nests/dens are present.

Policy/Legislation	Description	Project Relevance
<i>Fisheries Act, 1985</i>	- Manages threats to the sustainability and productivity of Canada's commercial, recreational and Aboriginal fisheries. - The Act prohibits "serious harm to fish" including destruction of habitat.	- The Middle Sixteen Mile Creek Tributary, where it crosses the James Snow Parkway ROW within the study area, provides permanent fish habitat. - If alteration or removal of direct or indirect fish habitat is proposed, the DFO must be consulted through their Request for Review process to determine if a permit under the <i>Fisheries Act</i> may be required.
Sixteen Mile Creek, Areas 2 & 7 Subwatershed Study Update (AMEC et al. 2015)	- This study was completed to update, and in some cases supersede, the earlier 2000 Sixteen Mile Creek Areas 2 & 7 Subwatershed Study. - As a component of this study, an updated assessment of natural feature constraints were identified within developing areas of south and east Milton, including the majority of the James Snow Parkway study area located east of the road (part of the Derry Green neighbourhood referenced in the study).	- The Middle Sixteen Mile Creek Tributary, which crosses the James Snow Parkway ROW, was identified as a permanent watercourse with restoration potential. - Terrestrial natural features that fall within the study area east of the ROW were characterized as heavily degraded by agricultural and residential land uses, and therefore provided opportunity for restoration and enhancement. - Natural feature coverage is isolated and would benefit from increased connectivity via linkages. - The Union Gas pipeline corridor, which crosses the ROW, was identified as being conducive to linkage purposes. - Unevaluated wetlands in the study area were characterized as small and isolated. - A NHS was recommended for the Derry Green area, connecting the natural feature via linkages and riparian corridors.
Phase 1: Background Review and Subwatershed Characterization. South Milton Urban Expansion Area (Amec Foster Wheeler et al. 2017)	- This study was used to characterize and refine the mapped Regional NHS to inform future land use planning and development opportunities in south and southwest Milton. - A Management Strategy for the refined NHS was identified, to be implemented through the Secondary Plans and site-specific studies.	- Only a small portion of the James Snow Parkway study area was captured within this study, comprising the far southeastern extent south of Louis St. Laurent Avenue and east of the ROW. - Watercourses and wetlands that fall within the James Snow Parkway study area were characterized as part of this study, and recommendations were made for the protection and management of these features as part of future land use planning.

4.0 Field Methods

Terrestrial and aquatic field surveys were completed across 18 site visits between the period of April 2023-May 2024 to characterize and map the existing natural features present within the study area. Table 2 provides a summary of field surveys undertaken within the subject property. Details of the survey methodologies are presented below.

4.1 Vegetation Community Mapping and Vascular Flora Inventory

Vegetation communities were described and mapped according to the ELC system for southern Ontario (Lee et al. 1998). Detailed mapping of natural features was completed where site access was granted. For properties where access was not granted, assessments were completed from roadsides or property lines, informed by available aerial imagery and background mapping (topography and mapped wetlands). Vegetation community mapping completed during Spring and Summer 2023 (May 11, May 15, September 1, 2023) was completed from the James Snow Parkway ROW. During late Spring 2024 (May 22, 2024), supplementary work was completed to update and refine vegetation community mapping where Permission to Enter had been granted to specific private properties (see Map 2).

NRSI biologists completed a comprehensive two-season (Spring and Summer 2023) inventory of vascular flora for each of the mapped vegetation communities based on what could be observed from roadside. The vascular plant list was compiled by ELC polygon with an abundance code assigned (dominant, abundant, occasional, rare) in one or more strata (canopy, sub-canopy, shrub layer, groundcover). This inventory also recorded any federally, provincially, or regionally significant vegetation species. Additional vegetation species were documented to inform the refinement of ELC vegetation community mapping within participating properties during the supplementary 2024 site investigations.

NRSI biologists flagged woodland dripline and wetland boundaries where they occurred within or along the boundaries of the ROW. Woodland dripline delineation focused on woodlands that were considered Significant Woodlands in Halton Region (see Section 6.1). The confirmed woodland dripline and wetland boundaries were surveyed by Tham Surveying at the time of the agency site meeting.

Table 2. Field survey summary.

Survey Type	Survey Protocol	Dates	Time	Approx. Person Hours	Weather Conditions				
					Air Temp. (°C)	Precip.	Cloud Cover (%)	Wind (Beaufort Scale)	Staff
Vegetation community mapping and inventory	Lee et al. 1998 Comprehensive area search by ELC polygon	May 11, 2023	12:05-15:35	7	-	-	-	-	P. Deacon S. Munoz
		May 15, 2023	09:05-15:20	12.5	11-12	0	0-10	2-3	S. Munoz J. Mennen
		September 1, 2023	-	-	15	0	20	0	S. Munoz S. Deweerd
		May 22, 2024	10:45-16:30	9.5	-	-	-	-	J. Weber J. Mennen
Woodland dripline and wetland boundary delineation and agency confirmation	MNRF 2022 (wetland boundaries)	September 29, 2023	-	-	-	-	-	-	S. Deweerd S. Munoz
Bat habitat assessments (trees and built structures)	MECP 2022a, 2022b	May 10, 2023	14:30-16:50	4.5	20	0	0	1	S. Deweerd J. Mennen
Breeding bird surveys	Birds Canada et al. 2021	June 6, 2023	08:35-09:50	1.25	16-17	0	10-25	2-3	M. Alexandrou
		June 21, 2023	06:50-08:15	1.5	15-17	0	0	1-2	E. Gosnell
Tree Inventory	N/A	June 1, 2023	-	-	-	-	-	-	S. Munoz S. Hofstetter
		June 14, 2023	-	-	-	-	-	-	P. Hammer S. Hofstetter J. Bannon
Aquatic habitat assessments	MTO 2009	June 7, 2023	-	-	17-22	-	-	-	G. MacVeigh A. Cantwell
Ambystoma habitat assessments	N/A	May 11, 2023	12:05-15:35	7	-	-	-	-	P. Deacon S. Munoz
		May 15, 2023	09:05-15:20	12.5	11-12	0	0-10	2-3	S. Munoz J. Mennen
		May 22, 2024	10:45-16:30	11.5	-	-	-	-	J. Weber J. Mennen

Survey Type	Survey Protocol	Dates	Time	Approx. Person Hours	Weather Conditions				
					Air Temp. (°C)	Precip.	Cloud Cover (%)	Wind (Beaufort Scale)	Staff
Anuran call surveys	BSC 2009	April 21, 2023	20:55-22:35	1.5	11-12	0	100	1-2	S. Gilmour
		May 23, 2023	21:30-23:00	1.5	13-14	0	0-25	1	S. Gilmour
		June 20, 2023	20:10-23:00	3.5	19-20	0	0	1-2	S. Gilmour T. Sieg
Turtle basking surveys	MNRF 2015b	May 6, 2023	14:00 – 14:30	0.5	18	None	25	1	S. Gilmour
		May 8, 2023	12:30 – 13:00	0.5	18	None	15	3	T. Sieg
		May 10, 2023	12:55 – 13:45	0.75	21	None	0	1	J. Mennen
		May 23, 2023	12:15 – 12:45	0.5	19	None	0	1	S. Gilmour
		May 30, 2023	11:10 – 11:40	0.5	2	None	10	2	M. Alexandrou

4.2 Tree Inventory

A comprehensive inventory of trees $\geq 10\text{cm}$ in Diameter at Breast Height (DBH) along James Snow Parkway, between Britannia Road and just south of Highway 401, was completed by NRSI Certified Arborists and Registered Professional Foresters on June 1 and 14, 2023. As ROW survey data was not yet available, the tree inventory effort included all trees within 6m of the existing road edge. Trees located on private properties, with the potential to be impacted by the development, were assessed from the property boundary. This inventory will be updated at the Detailed Design stage based on the refined proposed grading and development limits.

Individual trees $\geq 10\text{cm}$ in DBH were assigned an alphanumeric identifier. Tree ownership was determined conservatively through desktop analysis based on the ROW limit provided by HDR Inc. The location of all inventoried trees was surveyed using an SXBlue II GNSS GPS unit. The following information was recorded for inventoried trees:

- Tree location;
- Tag number/alphanumeric identifier;
- Species (common and scientific name);
- DBH (cm);
- Number of stems;
- Crown radius (metres);
- General health (excellent, good, fair, poor, very poor, snag);
- Potential for structural failure (Improbable, Possible, Probable, Imminent); and
- General comments (i.e., disease, aesthetic quality, development constraints, prune to reduce structural failure, sensitivity to development, etc.).

4.3 Breeding Bird Surveys

Two rounds of early morning breeding bird surveys were conducted on June 6 and 21, 2023, in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Birds Canada et al. 2021). Surveys were completed between a half-hour before sunrise and 10:00am and were timed to occur at least 10 days apart. Surveys were completed through the completion of 10-minute point counts with additional species recorded between point counts when encountered. Standard breeding evidence codes were recorded based on OBBA protocol. Surveys were

completed from six point count stations as shown on Map 2. These stations were positioned to survey a variety of natural habitats that are present within the study area.

4.4 Anuran Call Surveys

Three rounds of nighttime anuran call surveys were completed on April 21, May 23 and June 20, 2023, in accordance with the Marsh Monitoring Program amphibian survey protocol (BSC 2009). Surveys comprised three-minute passive-listening point counts at seven roadside survey station locations (Map 2). Surveys were conducted when the air temperatures were at least 5°C, 10°C, and 17°C during each survey, respectively, and between one-half hour after sunset and midnight. Species were recorded according to their three-level calling code categories of calling intensity. Code 1 was recorded when calls from a species were not overlapping and the number of individuals could be estimated), Code 2 was recorded when calls were overlapping but the number of individuals could still be estimated, and Code 3 was recorded when a species was calling at full chorus and the number of individuals could not be estimated. The estimated number of calling individuals was also recorded for Calling Codes 1 and 2.

4.5 Turtle Basking Surveys

Five turtle basking surveys were conducted during May 2023 within the study area. These surveys primarily consisted of visually searching for basking turtles, following the *Survey Protocol for Blanding's Turtle (Emydoidea blandingii) in Ontario* (MNRF 2015b). In accordance with the protocol, the surveys were completed during the early April – early June timing window, and under suitable weather conditions. NRSI biologists recorded the number of individuals, species, behaviour and UTM coordinates of all observed turtles. Three survey stations were established within the study area (TB-003, -004, -005; Map 2a), which surveyed three stormwater management ponds located adjacent to the west side of the ROW along the study area extent. The focus of this survey was to assess the presence of turtle species and habitat use within the study area.

4.6 Ambystoma Salamander Habitat Assessment

As part of site visits completed on May 11 and 15, 2023, NRSI biologists identified and mapped the presence of suitable *Ambystoma* salamander breeding habitat within the study area, based on the known habitat preferences of these species (Jefferson Salamander Recovery Team 2013). This habitat assessment was undertaken due past records of the SAR Unisexual *Ambystoma* salamanders (Jefferson Salamander-dependent population) (*Ambystoma laterale* - (2) *jeffersonianum*) within approximately 10km of the study area (Ontario Nature 2019). Factors

such as a potentially suitable hydroperiod for larval development, abundance and quality of egg attachment sites, the absence of predatory fish and the presence of other breeding amphibians were noted in the assessment of habitat suitability. An initial assessment of the study area natural features was completed from roadside on May 11 and 15, 2023, and was based on what could be observed from the ROW limits and supplemented through aerial photo interpretation. Following issuance of Permission to Enter for certain private properties (see Map 2), a supplementary habitat assessment was completed for the natural features on those properties on May 22, 2024, which allowed for a more detailed investigation of habitat suitability.

4.7 Bat Habitat Assessment

A leaf-off bat habitat assessment for treed communities and individual trees was completed on May 10, 2023. Surveys were completed from roadside based on what could be observed from the ROW limits. Woodland edges, hedgerows and isolated trees with the potential to be removed through future road improvement activities were assessed. Standing live or dead trees with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark that could provide suitable roosting habitat for the SAR Little Brown Myotis (*Myotis lucifugus*) and/or Northern Myotis (*Myotis septentrionalis*) were documented in accordance with provincial guidelines (MECP 2022a, b). Trees producing leaf clusters that were potentially suitable for Tri-colored Bat (*Perimyotis subflavus*) were also documented. Tree species, DBH, decay class according to Watt and Caceres (1999), and the number, height, and type (e.g., cavity, crevice, sloughing bark, etc.) of suitable roost sites was documented for each candidate roost tree.

The bat habitat assessment methodology completed for this study was targeted to assess the SAR that were listed on the Species at Risk in Ontario (SARO) list (MECP 2025) at the time of the 2023 fieldwork that have potentially suitable habitat within the study area (i.e., Little Brown Myotis, Northern Myotis, and Tri-colored Bat). On January 27, 2025, the provincial SARO list was amended to list the following bat species as Endangered in Ontario: Silver-haired Bat (*Lasionycteris noctivagans*), Hoary Bat (*Lasiurus cinereus*), and Eastern Red Bat (*Lasiurus borealis*). These species, as well as the other bat SAR that were previously listed on the SARO list prior to 2025, are now included on the Protected Species in Ontario list that is subject to the SCA (MECP 2026). All three of these newly-listed bat species include population ranges that cover all of southern Ontario, and all have habitat preferences that coincide with wooded natural features within the study area (COSEWIC 2023). Silver-haired Bat uses similar roosting habitat features as Little Brown Myotis and Northern Myotis (e.g., trees with suitable cavities and hollows). As such, the completed habitat assessment is considered suitable to address the

potential presence of Silver-haired Bat within roadside areas. However, roosting habitat features for Hoary Bat and Eastern Red Bat differ from the other bat SAR (e.g., use of supercanopy trees within forest communities), and were not fully assessed within this scope of work. See Section 6.4.2 for discussion about how potential habitat for these species was identified within the study area.

4.8 Aquatic Habitat Assessments

NRSI biologists completed aquatic habitat assessments following the Ministry of Transportation (MTO) Environmental Guide for Fish and Fish Habitat (2009) and mapping within the watercourse crossing of the James Snow Parkway ROW on June 7, 2023. The habitat assessment informed the overall significance and sensitivity of the feature, and to identify potentially suitable habitat for any SAR/SCC fish species documented from the vicinity of the study area. The following physical parameters were recorded as part of the assessments, where feasible:

- Substrate composition and abundances,
- General characteristics and channel morphology (i.e., channel depth, width, etc.),
- Water temperature,
- Water chemistry parameters (i.e., dissolved oxygen concentrations, pH, conductivity, and total dissolved solids),
- Bank stability,
- Evidence of groundwater discharge,
- Aquatic vegetation cover,
- Critical life stage areas (i.e., spawning, nursery habitat, etc.), and;
- Potential barriers to fish passage and availability of fish habitat.

4.9 Wildlife Habitat Assessment and Incidental Wildlife Observations

All incidental observations of wildlife (e.g., mammals, butterflies, odonates (dragonflies and damselflies)) were documented during all field visits. This included both direct and indirect (e.g., tracks, scat, dens, nests, etc.) observations of wildlife presence. Features and species that may be indicative of SWH, as informed by the results of the SWH screening were documented during the course of all site investigations.

5.0 Existing Conditions

5.1 Soil, Terrain and Drainage

The study area falls within the Peel Plain physiographic region, which is characterized by relatively flat lands and predominantly clay soils. The topography of the study area follows a gradual downward sloping from northwest to southeast, following the drainage pattern of the larger Sixteen Mile Creek watershed and ultimately on to Lake Ontario (Thurber Engineering 2025).

The surficial soils primarily comprise fine-textured glaciolacustrine deposits of silt and clay. Till consisting of clay to silt-textured till is found within the central portion of the study area south of Derry Road. Modern alluvial deposits of clay, silt, sand and gravel are found along the study area watercourses (Thurber Engineering 2025).

The study area falls within the Middle Sixteen Mile Creek subwatershed, which drains into the larger Sixteen Mile Creek watershed. Drainage within the study area is dominated by a tributary to Sixteen Mile Creek, which predominantly parallels the west side of James Snow Parkway with southerly flow until it crosses under the road and flows in a meandering easterly direction toward Middle Sixteen Mile Creek. Lands to the immediate east of James Snow Parkway represent upper catchments of smaller tributaries that also flow easterly and away from the ROW into Middle Sixteen Mile Creek to the southeast.

Regional groundwater flows in a southeasterly direction toward Lake Ontario. Groundwater level monitoring completed between October and December 2023 within the study area found the groundwater elevations to range between a high of 1.8m and a low of 3.0m below ground surface (Thurber Engineering 2025), although higher groundwater elevations may occur through seasonal fluctuations, such as during the spring.

5.2 Vegetation

5.2.1 Vegetation Communities

The James Snow Parkway study area coincides with the eastern boundary of urban Milton, and represents a transportation corridor that is rapidly urbanizing. Lands along the west side of the road are entirely developed for residential land use between Louis St. Laurent Avenue and Highway 401. Residential development is also under construction on the west wide of the ROW between Louis St. Laurent Avenue and Britannia Road. The majority of lands to the east of the James Snow Parkway ROW comprise recently developed or under-construction warehouse and

commercial facilities, with smaller residual areas of agriculture still remaining. Note that some of these new developments along the east side of the ROW are not shown on the air photos depicted on report mapping.

The James Snow Parkway study area contains a number of isolated forests and cultural woodlands. The lands that separate the natural features are existing or future development lands and the potential for ecological connectivity between these features is quite low.

The southern extent of the study area (Map 2a) includes a series of small meadow marsh (MAM2-2, MAM2) and thicket swamp (SWT2) features located in low-lying areas of agricultural field. These features may have been cultivated in the past and currently exist as low quality habitats that are isolated from any watercourse corridors or larger natural features.

A relatively large Swamp Maple Mineral Deciduous Swamp (SWD3-3), approximately 3ha in size and located south of Louis St. Laurent Avenue, is bisected by the Middle Sixteen Mile Creek Tributary (Map 2b). Although the tree canopy in this swamp has been greatly affected by Emerald Ash Borer and Dutch Elm Disease, the feature has good structure and habitat for wildlife. A vegetated corridor extends along the watercourse from the western edge of the swamp, and the recent creation of a large naturalized stormwater management pond to the west of the ROW is somewhat complimentary to the natural cover within this feature.

Multiple relatively diverse deciduous forest features occur to the south of Derry Road (e.g., Dry-Fresh Deciduous Forest (FOD4); Dry-Fresh Sugar Maple-Hickory Deciduous Forest (FOD5-5); Fresh-Moist Shagbark Hickory Deciduous Forest (FOD9-4); Fresh-Moist Oak-Maple-Hickory Deciduous Forest (FOD9)) (Maps 2c, 2d). Each feature contains a diverse mixture of hardwoods and a groundcover of ephemeral wildflowers, sedges and grasses. These features are the most notable natural communities along the central portion of the study area and are somewhat sensitive to disturbance based on their overall quality. The features adjacent to residential areas have some evidence of yard waste dumping and unauthorized trails and mowing, but the edges facing the James Snow Parkway ROW are generally intact and the proliferation of invasive shrubs along the edges has been minimal. A large Mineral Cultural Woodland (CUW1) is also present to the south of Derry Road on the east side of the ROW, and a second smaller CUW1 feature is present north of Derry Road (Maps 2d, 2e). Both CUW1 features are comprised of native species, but appear to be early to mid-successional stands that

have regenerated from more open, sparsely-treed conditions as observed in 1954 historical aerial imagery (McMaster University 2024).

5.2.2 Vascular Flora

In total, 169 vegetation species were inventoried within the James Snow Parkway study area. See Appendix I for a complete list of the inventoried species.

Two federally and provincially significant vegetation species, Butternut (*Juglans cinerea*) and Kentucky Coffee-tree (*Gymnocladus dioica*), were inventoried within the study area. Two Butternut trees were observed within the FOD4 woodland, immediately adjacent to each other, at the location shown on Map 2c. These trees had been previously flagged as part of a previous environmental study; the specific study is not known to NRSI. Each of these trees is located approximately 24m from the ROW. Both trees appeared to be healthy, as could be observed from roadside.

The Kentucky Coffee-tree was observed within the stormwater management block that contains the pond on the northwest corner of James Snow Parkway and Derry Road (Map 2d). These young trees were introduced as part of the stormwater management block landscape plantings; as such, the Kentucky Coffee-tree is not a natural occurrence, and in this context is not considered to be significant.

Seven species that are considered significant in Halton Region (Varga 2000) were documented, as summarized in Table 3. Several additional species that are considered regionally significant occur as part of naturalization projects and are not naturally occurring, and therefore are not considered significant in this context. These species include Red Pine (*Pinus resinosa*) which occurs as row-planted trees; Fragrant Sumac (*Rhus aromatica*), Big Bluestem (*Andropogon gerardi*) and Little Bluestem (*Schizachyrium scoparium*) all of which occur as part of landscape plantings and do not represent a natural tallgrass prairie remnant; and Sandbar Willow (*Salix interior*) and Shining Willow (*Salix lucida*), which are planted individuals within the restored Middle Sixteen Mile Creek Tributary riparian corridor. These species are excluded from Table 3.

Table 3. Regionally significant species inventoried within the James Snow Parkway study area.

Common Name	Latin Name	Halton Region Status (Varga 2000)	Observation Locations
Cut-leaved Coneflower	<i>Rudbeckia laciniata</i>	Uncommon	CUW1, CUM1
Spotted Geranium	<i>Geranium maculatum</i>	Uncommon	SWD3-3
Pale Smartweed	<i>Persicaria lapathifolia</i>	Uncommon	Naturalized Feature

Common Name	Latin Name	Halton Region Status (Varga 2000)	Observation Locations
Narrow-leaved Spring Beauty	<i>Claytonia virginica</i>	Uncommon	SWD3-3, FOD5-5
Eastern Cottonwood	<i>Populus deltoides</i>	Uncommon	CUS1, FOD9
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Rare	CUW1
Jointed Rush	<i>Juncus articulatus</i>	Uncommon	MAM2

The coefficient of conservatism (CC) is a value ranging from 0 (low) to 10 (high), which is based on a species' tolerance of disturbance and fidelity to a specific habitat integrity (Oldham et al. 1995). Higher values are assigned to species that have specific environmental growing requirements and are less tolerant of disturbance. Of the 169 inventoried species, and excluding planted species, six had CC values of ≥ 7 (see Appendix I), which are species that are considered very ecologically conservative and are sensitive to disturbance. These were collectively documented in the CUW1, CUM1, and FOD5-5 vegetation communities. Of the 169 species inventoried within the study area, 69 (41%) are non-native to Ontario.

5.2.3 Tree Inventory

In total, 182 trees were inventoried, comprising 28 species. Of the trees inventoried, 144 (79%) are native species and 38 (21%) are non-native species. The most common species is White Spruce (*Picea glauca*), comprising 33.5% of all inventoried trees. The majority of trees are in fair or good condition and have an improbable likelihood of failure.

See the Preliminary Tree Inventory Report (NRSI 2025) for more information and details of trees inventoried within the study area.

5.3 Wildlife

5.3.1 Birds

In total, 37 bird species were recorded during site investigations. Of these, 31 species exhibited some form of breeding evidence within the study area. See Appendix II for the complete list of bird species recorded within the James Snow Parkway study area.

One significant bird species, Barn Swallow (*Hirundo rustica*) was observed within the study area. Barn Swallow is listed as Threatened on Schedule 1 of the SARA (Government of Canada 2026). This species and its nesting habitat are protected under the SARA. Two Barn Swallows were observed foraging over the stormwater management pond on the west side of the ROW, adjacent to the FOD9 woodland, as shown on Map 2d. No nesting habitat was identified within the study area; therefore, no impacts to SARA-protected Barn Swallow habitat

are anticipated as a result of the road improvement activities. Barn Swallow was only recorded during one of the breeding bird surveys, and was not recorded elsewhere within the study area.

5.3.2 Herpetofauna

Five herpetofauna species were recorded within the study area, comprising three anuran species (Gray Treefrog (*Dryophytes versicolor*), Northern Leopard Frog (*Lithobates pipiens*) and Green Frog (*Lithobates clamitans*)) and two turtle species (Snapping Turtle (*Chelydra serpentina serpentina*) and Midland Painted Turtle (*Chrysemys picta marginata*)). Of these species, Snapping Turtle is listed as a species of Special Concern by COSSARO (MECP 2026). It is therefore considered a SCC in Ontario whose habitat may be considered a form of SWH. A single Snapping Turtle was observed during the May 6 survey swimming in the stormwater management pond located at the northwest corner of the James Snow Parkway/Main Street intersection as shown on Map 2g. However, since the stormwater management pond represents constructed infrastructure, it is not identified as a form of SWH. A single Midland Painted Turtle was observed during the May 23 survey within the same stormwater management pond shown on Map 2g.

Very little anuran calling activity was recorded within the study area, indicating that good quality anuran breeding habitat is generally absent. No anuran calling activity was recorded during the April survey. Only a single Gray Treefrog was recorded during the May survey, which was located within the FOD9-4 woodland feature shown on Map 2c. Calling activity was slightly more widespread during the June survey. During that survey, three Green Frogs were recorded within the restored riparian corridor on the west side of the ROW, shown on Map 2b. In addition, a single Green Frog was recorded within the Willow Mineral Thicket Swamp (SWT2-2) that comprises part of the restored riparian channel on the west side of the ROW on Map 2g, while a single Gray Treefrog was recorded calling from the stormwater management pond on the northwest corner of the James Snow/Main intersection on Map 2d.

See Appendix III for a complete list of herpetofauna species recorded within the study area.

Based on the completion of more detailed investigations within participating properties (see Map 2) in May 2024 to augment 2023 roadside-based investigations, it was determined that suitable habitat for *Ambystoma* salamanders, including Jefferson Salamander, is absent in the study area. For example, it was determined that suitable breeding ponds within deciduous forest

habitats, and that would provide an appropriate hydroperiod, are not present within the study area.

5.3.3 Mammals

Bats

Seven potential bat roost trees were observed within natural features abutting the ROW, as could be viewed from roadside, and additional suitable roosting trees may also exist within the interior portions of these features. See Map 3 for the locations of these potential bat roost trees. These trees therefore represent potential roosting habitat for the SAR Little Brown Myotis, Northern Myotis and/or Silver-haired Bat.

No other suitable roosting habitat trees were observed within the wooded natural feature edges that face the road ROW and could be inspected. However, the roadside wooded natural features that could not be fully explored must be considered potential habitat for all six bat SAR that have potential to occur in the study area (see Appendix IV).

Other Mammal Species

Fourteen (14) mammal species were observed within the study area during site investigations. The majority of these species are that are common and ubiquitous within developed urban landscapes. Some, such as American Mink (*Neovision vison*), Red Fox (*Vulpes vulpes*), Coyote (*Canis latrans*), White-tailed Deer (*Odocoileus virginianus*) and Woodchuck (*Marmota monax*) are less common in urbanized settings and are associated with remnant naturalized habitats, such as to the east of James Snow Parkway or associated with naturalized stormwater management blocks. All of the mammal species that were observed during site investigations are common species with secure populations in Ontario (MNRF 2021). See Appendix V for the complete list of mammal species recorded within the James Snow Parkway study area.

5.3.4 Insects

In total, 66 butterfly species are known from within approximately 10km of the study area (Macnaughton et al. 2023). One butterfly species, Cabbage White (*Pieris rapae*), was incidentally observed during site investigations. All butterfly species that were observed during site investigations are common species with secure populations in Ontario (MNRF 2021).

In total, 57 odonate species are known from within approximately 10km of the study area (OOAD 2023). No odonate species were incidentally documented during site investigations.

See Appendices VI and VII for the complete list of butterfly and odonate species, respectively, recorded within the James Snow Parkway study area.

5.4 Aquatic Features

5.4.1 Middle Sixteen Mile Creek Tributary

A tributary to Middle Sixteen Mile Creek represents the largest and most significant watercourse within the study area, originating on the west side of James Snow Parkway North immediately north of the study area (Map 2h). The Middle Sixteen Mile Creek Tributary was assessed at two general locations (AHP-002 and AHP-009). Within the study area, this watercourse is characterized as a permanent, warmwater feature providing direct fish habitat (OMNR 2025b). The watercourse flows generally south along the west side of James Snow Parkway until it crosses due east south of Louis St. Laurent Avenue (Map 2b).

Within the northern extent of the study area the channel is characterized as ephemeral, observed to be a dry channel lined with cattail and Common Reed (*Phragmites australis*). Downstream, at the Main Street crossing, standing water was observed with no flow, passing under the roadway through an open bottom box culvert approximately 2m wide characterized by soft, muck substrates. The watercourse develops into a more intermittent feature progressing downstream, containing permanent flow at the railway crossing. The wetted width within the tributary ranged from approximately 0.7-8.7m at the time of survey. Substrates within the watercourse were characterized by detritus, muck, clay, silt, gravel, and cobble, with limited in-stream cover. Aquatic vegetation within the channel consisted of cattails, filamentous algae, pondweed (*Potamogeton* sp.), and Slender Naiad (*Najas flexilis*).

The northern extent of the study area contains a substantial creek realignment project at the upstream reach of the tributary. The plantings within the restored watercourse floodplain appear to be relatively new. This feature will provide functional benefits such as stormwater retention and water quality improvement as the catchment of the feature includes a portion of lands adjacent to Highway 401 where salt and runoff are likely issues to downstream water quality. Similarly, the downstream extent crossing under James Snow Parkway has been recently rehabilitated with a natural channel design consisting of riffle, run, and pool habitats. In-stream cover is limited primarily to aquatic vegetation. The embankment leading down to the riparian channel from the road is comprised of recently seeded cool-season grasses and is predominantly comprised of non-native or early successional species. Shallow pooled water could be observed within the riparian channel from the roadside.

Based on background information review, a total of 19 species of fish have been identified within this section of the Middle Sixteen Mile Creek Tributary (OMNR 2025a, b, DFO 2024). All fish species are common with stable populations within Ontario (MNRF 2021). No fish community sampling was completed within the watercourse as a result of recent survey data availability; however, small-bodied fish, including fry (i.e., young fish) were observed within several locations within the downstream extent and therefore represents direct fish habitat. The upper extent of the tributary is intermittent to ephemeral in nature and likely provides seasonally accessible habitat during significant rainfall events and the spring freshet. As such, the upper extent provides indirect fish habitat. A full list of fish species reported from the study area is provided in Appendix VIII.

6.0 Natural Environment Significance and Sensitivity

Analysis of the significance of existing natural features was used to identify those features and habitats that are sensitive to disturbance based on the rarity or sensitivity of the feature or the functions/processes that contribute toward their significance. This assessment also considered the policies and legislation that apply to the study area natural features which must be considered in the evaluation of the road ROW preliminary design. The following summarizes significant and sensitive natural features and habitats present within the study area which may represent development constraints and were considered as part of the selection of a preferred alternative design for the proposed undertaking. Policy-based constraints were identified in accordance with the applicable Provincial land use plans, and the Halton Region and Town of Milton OPs, as summarized in Section 3.0. This assessment incorporates background information review results as well as NRSI field survey results.

6.1 Significant Woodland

Significant Woodlands represent a type of “Key Feature” within Halton Region’s NHS (Halton Region 2024). The Town of Milton OP (2024) refers to the Regional NHS in its identification and mapping of significant natural heritage features. Significant Woodlands are not specifically mapped within the Regional and Town Official Plans (OP), but are mapped as components of the Regional NHS (ROP Map 1) and Key Features of the NHS (ROP Map 1G). Section 277 of the Regional OP defines Significant Woodlands according to the following criteria:

- A woodland that is 0.5ha in size or larger and meets at least one of the following criteria:
 - The woodland contains forest patches over 99 years old;
 - The patch size of the woodland is 2ha or larger if it is located in the Urban Area, or 4ha or larger if it is located outside of the Urban Area but below the Escarpment Brow, or 10ha or larger if it is located outside the Urban Area but above the Escarpment Brow;
 - The woodland has an interior core area of 4ha or larger, measured 100m from the edge; or,
 - The woodland is wholly or partly within 50m of a major creek or certain headwater creek or within 150m of the Escarpment Brow (Halton Region 2024).

The Town of Milton OP also uses the same criteria to define Significant Woodlands. Based on Schedule B of the Town's OP, the James Snow Parkway study area falls within Milton's Urban Area.

See Maps 3b-3d for the locations of Significant Woodlands within the study area that were identified based on the Regional criteria. These Significant Woodlands were identified based on their contiguous size and/or because they were located adjacent to a watercourse. The dripline boundaries of Significant Woodlands, where they face the ROW, were field-delineated by NRSI biologists and surveyed by Tham Surveying where shown on Map 2.

As a type of Key Feature within the Regional NHS, development and site alteration is generally prohibited within Significant Woodlands, subject to certain exclusions and permitted activities as described in the Regional OP. Among these exclusions, Section 117.1 of the Regional OP states that "essential transportation and utility facilities" may be permitted within the Regional NHS. However, infrastructure development is still subject to Section 118.2 (b) of the Regional OP, which states that alteration of Regional NHS components are not permitted unless it has been demonstrated that there will be no negative impacts on the natural features and areas or their ecological functions. Similarly, Section 4.9.2.1 of the Town's OP states that "essential transportation and utility facilities" are a permitted use within the Regional NHS features, which include Significant Woodlands. However, there must be regard for the significant natural features insofar as all efforts are made to avoid, or otherwise minimize and sufficiently mitigate impacts to the natural features.

6.2 Wetlands

Provincial LIO mapping identifies the presence of unevaluated wetlands associated with riparian corridors within the study area. Some of these wetlands represent headwater features that provide hydrological inputs to downstream aquatic resources within the Middle Sixteen Mile Creek watershed to the east of the study area. Wetland mapping was undertaken by NRSI biologists based on ELC (Lee et al. 1998) (Map 3). Wetland boundaries, where they faced the ROW, were delineated by NRSI biologists using the Ontario Wetland Evaluation System methodology (MNRF 2022), and these boundaries were surveyed by Tham Surveying. Conservation Halton staff indicated that they had previously undertaken a wetland boundary staking exercise in this area on September 21, 2022 as part of the Britannia Secondary Plan development. The wetland mapping undertaken by NRSI biologists is consistent with, and in certain locations updates (due to recent land developments), earlier 2017 wetland mapping

provided by OMNR in response to a background information request (S. Varga, pers. comm., September 2023).

The study area contains wetlands that are mapped and regulated by Conservation Halton. In some cases, revisions to the limits of Conservation Halton-mapped wetlands were made based on the site investigations, and certain Conservation Halton-mapped roadside wetlands were not identified or mapped as wetlands through completion of this study. See Map 4 for a comparison of wetlands that are currently regulated by Conservation Halton, along with Conservation Halton regulation limits, and wetlands identified during this study. Map 4 also illustrates the currently-regulated wetlands as they are shown on Conservation Halton mapping; these are shown to compare with refined wetland limits identified during the study through ELC and roadside wetland boundary confirmations.

Section 118.2(a) of the Regional OP states that development and site alteration is prohibited within Significant Wetlands; no exception for essential transportation infrastructure is included. The Region's definition of Significant Wetland varies depending on whether or not the wetland falls within a Provincial plan area. As per Section 276.5 of the Regional OP, Significant Wetlands are defined as the following:

- Within the NEP area: PSWs and wetlands as defined in the NEP area that make an important ecological contribution to the Regional NHS.
 - This category does not apply to the study area.
- Within the Greenbelt Plan area but outside of the NEP area: PSWs and wetlands as defined in the Greenbelt Plan.
 - This category does not apply to the study area.
- Within the Regional NHS but outside of the Greenbelt Plan area: PSWs and wetlands that make an important ecological contribution to the Regional NHS.
 - Within the study area, this comprises the SWD3-3 (Map 3b), SWD with MAM2-2 inclusion (Map 3c), MAM2 riparian wetlands (Maps 3c-d), and the wetlands associated with the restored extent of the Middle Sixteen Mile Creek Tributary corridor shown on Maps 3f-h.
- Outside of the Regional NHS: PSWs.
 - This category does not apply to the study area.

Key Features of the Regional NHS include Significant Wetlands as well as non-significant wetlands. See Map 3 for the location of Significant Wetlands. The majority of wetlands identified within the study area are considered Significant Wetlands, such as due to their size, because they occur along a riparian corridor and/or have been created or enhanced as part of a floodplain/wetland restoration project. Certain small, isolated and lower quality wetland features, such as those at the southeastern extent of the study area, are not considered to be Significant Wetlands. These non-significant wetlands are nonetheless still considered Key Features within the Regional NHS.

Wetlands are also regulated as hazard features by Conservation Halton, in accordance with Ontario Regulation 41/24 pursuant to the *Conservation Authorities Act*. Development and site alteration is prohibited in regulated areas unless permitted by Conservation Halton.

6.3 Watercourses and Fish Habitat

The study area contains multiple headwater tributaries that flow into the Middle Sixteen Mile Creek subwatershed, although the majority of these tributaries originate within lands to the east of James Snow Parkway and flow in a general easterly direction. Only one watercourse crossing of James Snow Parkway was documented within the study area (AHP-002 and AHP-009). This section of the Middle Sixteen Mile Creek Tributary where it crosses the ROW, as well as the adjacent channel along the western side of James Snow Parkway, has been recently restored to a more natural channel design. This watercourse provides permanent, direct fish habitat and is characterized by a warmwater thermal regime. No aquatic SAR have been identified as occupying this watercourse. Several headwater features originating to the east of James Snow Parkway have been mapped as potentially containing habitat for Silver Shiner (*Notropis photogenis*) (DFO 2023), but Fisheries and Oceans Canada (DFO) does not identify critical habitat for the species. Based on a preliminary review of these features, they are generally ephemeral in nature and do not provide suitable habitat for Silver Shiner.

Section 118.2(a) of the Regional OP states that development and site alteration is prohibited within fish habitat, except in accordance with Provincial or Federal legislation or regulations.

Fish habitat is also regulated under the federal *Fisheries Act*, as administered by DFO. Any activities that may cause the “harmful alteration, disruption or destruction” (HADD) of fish habitat will require review by DFO staff to determine if an authorization under the *Fisheries Act* is required.

Watercourses, regardless of the presence of fish habitat, are also regulated as hazard features by Conservation Halton, in accordance with Ontario Regulation 41/24. Development and site alteration within watercourses, such as at road crossing locations, is prohibited unless permitted by Conservation Halton.

6.4 Species at Risk

An assessment of SAR presence/absence was completed based on the results of background information review and field surveys. Based on these results, one SAR, Butternut, was confirmed to occur within the study area. Potential habitat for the SAR bats Little Brown Myotis, Northern Myotis, Tri-colored Bat, Silver-haired Bat, Hoary Bat, and Eastern Red Bat was identified for wooded natural features in the study area.

See Appendix IV for a summary of the SAR/SCC habitat assessment that was completed for the study area, including whether the species has been confirmed or has potential to occur within the study area.

6.4.1 Confirmed Habitats

Butternut

Butternut can tolerate a wide range of soil types, and may be found in habitats ranging from stream banks to well-drained gravelly sites. They require sun-exposed areas and are typically found in relatively low abundance and scattered distribution within forest and woodland communities and their edges (Environment Canada 2010). Two side-by-side Butternut trees were documented within the FOD4 woodland as shown on Map 3c (represented as one point due to their immediate proximities). Since these Butternuts are located approximately 24m from the ROW, no direct impacts to these trees are anticipated. However, the potential for impact to these trees should be reviewed at the Detailed Design stage. If impacts may occur, additional actions may be required pursuant to the SCA (e.g., registration of the activity that would cause the impact under the provincial Species Conservation Registry).

If feasible during the Detailed Design stage, it is recommended that arrangements be made for biologists to access the private property containing the Butternuts to accurately survey their locations. Alternatively, if these Butternuts were documented as part of a previous environmental study, efforts may be taken to obtain the precise locational data and health condition (e.g., results of a Butternut Health Assessment) for these trees from that study, in consultation with the landowner. Butternuts that are assessed to be Category 1 trees ('non-

retainable') by a qualified Butternut Assessor, such as due to the presence of Butternut Canker, are not protected under the SCA.

6.4.2 Potential Habitats

Species at Risk Bats

Seven potential bat roost trees were observed within natural features abutting the ROW, as could be viewed from roadside, and additional suitable roosting trees may also exist within the interior portions of these features. See Map 3 for the locations of these potential bat roost trees. Little Brown Myotis, Northern Myotis, and Silver-haired Bat are known to utilize trees that contain suitable cracks, crevices and loose/peeling bark for maternity colony and roosting habitat (Humphrey and Fotherby 2019, COSEWIC 2023). These trees therefore represent potential habitat for these SAR bats. Removal of these trees must be avoided unless it is determined that their removals would not negatively impact SAR bats. Furthermore, measures must be taken in removing the trees to confirm that individual SAR bats (or other non-SAR bats) are not killed, harmed or harassed during construction of the road works (see Section 7.3.2).

Although the ROW-facing edges of the wooded natural features were investigated for the presence of suitable bat roosting habitat trees (for Little Brown Myotis, Northern Myotis, Tri-colored Bat and Silver-haired Bat), the majority of the study area wooded features could not be fully investigated as part of this study. The adjacent wooded natural features (i.e., the forest (FO), treed swamp (SWD) and cultural woodland (CUW) ELC classifications) must therefore be assumed to represent potential habitat for these SAR bats. Furthermore, as described in Section 4.7, the bat habitat assessment fieldwork pre-dated the listing of Hoary Bat and Eastern Red Bat to the SARO list, and the subsequent Protected Species in Ontario list (MECP 2026), which have differing roosting habitat preferences. For example, Hoary Bat and Eastern Red Bat roost alone or with their pups, and often make use of supercanopy trees or sun-exposed woodland edges with a south-facing aspect (COSEWIC 2023). Since these potential roosting characteristics were not specifically documented during site investigations, the forest, treed swamp and cultural woodland vegetation communities must also be considered potential habitat for the SAR Hoary Bat and Eastern Red Bat (Map 3).

Road infrastructure development and grading into these adjacent wooded natural features should therefore be avoided to avoid impacts to bat SAR and their habitats. Where encroachment into these features is required and where impacts may occur, additional actions (e.g., registration of the activity that would cause the impact under the provincial Species

Conservation Registry) may be required pursuant to the SCA, to be determined during the Detailed Design stage. Measures must also be taken in removing trees to ensure that individual SAR bats (or other non-SAR bats) are not killed, harmed or harassed during construction of the road works (see Section 7.3.2).

6.4.3 Other Species at Risk Records

Appendix IV lists SAR that have occurrence records in the study area vicinity (up to 10km) based on review of background information sources. An assessment of habitat suitability was completed for these species based on a review of each species' habitat requirements (e.g., OMNR 2000) versus habitat availability within the study area as confirmed through site investigations. Of species that have suitable or potentially suitable habitats within the study area, an assessment was made of their likelihood of occurrence based on the completion of field surveys in the study area. Based on this assessment, other SAR that were identified with records in the study area vicinity are considered unlikely to occupy habitats in the James Snow Parkway study area, or at least in the habitats that could be impacted adjacent to the ROW. Suitable habitats for these other SAR are therefore considered absent in the study area.

Based on the results of the field-based *Ambystoma* salamander habitat assessment completed for the study area, suitable *Ambystoma* salamander habitat was determined to be absent based on what could be observed from property-level investigations (participating properties; see Map 2) and from roadside. This includes an absence of suitable breeding ponds within deciduous forest habitats, which are required by the species. *Ambystoma* salamanders, including Jefferson Salamander, are therefore considered unlikely to be using habitats within the James Snow Parkway study area.

6.5 Significant Wildlife Habitat

A SWH assessment was completed based on the results of background information review and field surveys. Based on these results, one form of SWH was confirmed to occur within the study area:

- Terrestrial Crayfish

Candidate/possible SWH types were also identified, due to the presence of confirmed or potential suitable habitat and because they could not be ruled out based on the field surveys completed. These included the following:

- Bat Maternity Colonies

- Habitat for multiple Special Concern and Rare Species

See Appendix IX for a summary of the SWH assessment that was completed for the study area, including rationale describing whether a SWH category is considered confirmed, candidate, possible, or not present within the study area.

In accordance with Section 117.1 of the Regional OP, “essential transportation and utility facilities” are permitted within the Regional NHS, including Key Features such as SWH. However, infrastructure development is still subject to Section 118.2 (b) of the Regional OP, which states that alteration of Regional NHS components are not permitted unless it has been demonstrated that there will be no negative impacts on the natural features and areas or their ecological functions.

6.5.1 Confirmed Significant Wildlife Habitat

Terrestrial Crayfish

Two species of terrestrial crayfish occur in Ontario that are primary or secondary burrowers. Of these, only one occurs in the study area vicinity: Chimney Crayfish (*Fallicambarus fodiens*). Chimney Crayfish is considered to be a SCC in Ontario; accordingly, its habitat is considered SWH and is afforded protection under the PPS (OMMAH 2020). This species maintains colonies of underground tunnels of up to 0.4ha in size, and is usually associated with marshy fields, drainage ditches, marshes and ponds (MNR 2014).

During supplementary site investigations completed within accessible private properties on May 22, 2024, a single terrestrial crayfish chimney was observed within the Swamp Maple Mineral Deciduous Swamp (SWD3-3) community located west of the ROW and south of Louis St. Laurent Avenue (Map 3b). Although the specific crayfish chimney location falls outside of the study area limits, following a precautionary approach it is assumed that other terrestrial crayfish habitat may occur elsewhere within the swamp community, including the portion that extends to within the study area. Confirmed habitat for Terrestrial Crayfish SWH is therefore considered present within the study area.

6.5.2 Candidate/Possible Significant Wildlife Habitat

Bat Maternity Colonies

Woodlands within the study area were not investigated for their potential to provide bat maternity colony habitat as part of this study. Woodlands may be identified as Candidate SWH

when they meet a threshold of >10 large-diameter (>25cm DBH) trees/ha (MNRF 2015). There is potential that certain more mature woodlands within the study area may meet that threshold. However, since this SWH category was not evaluated as part of the study scope, all forest (FO) and treed swamp (SWD) communities, as defined by ELC, are considered potential SWH for Bat Maternity Colonies following a precautionary approach.

Special Concern and Rare Wildlife Species

Multiple other Special Concern or provincially rare (i.e., NHIC S1-S3 ranked species; MNRF 2021) were identified for the study area as having potential to occur in the study area as described in Appendix IV. These mainly comprise butterfly and odonate species that have records of occurrence in the study area vicinity (Macnaughton et al. 2023, OOAD 2023) but for which targeted surveys were not completed. Collectively, these species may occur across the majority of the study area's natural features, but particularly woodland and riparian habitats for multiple species.

6.6 Regionally Significant Vegetation Species

As listed in Section 5.2.2, seven regionally uncommon or rare vegetation species (Varga 2000) were inventoried during field surveys. The majority of these individuals were identified close to the road and will therefore require consideration within the impact assessment and associated avoidance or mitigation measures. These species collectively occurred across a wide variety of the study area's natural vegetation communities, including forest, woodland, swamp, and meadow marsh habitat communities.

While regionally rare vegetation species in and of themselves do not represent policy-based constraints to road design or construction, their presence renders additional significance to the features in which they are located. Measures should be taken to avoid impacts to regionally significant vegetation and to protect individual plants during construction where necessary. If impacts cannot be avoided, the individual plants should be relocated to an appropriate site when feasible.

6.7 Ecological Linkages

Maintaining the interconnectedness of Key Features and their ecological functions via continuous natural corridors is identified as an objective of the Regional NHS (Halton Region 2024). This recognizes the systems-based approach to protecting the natural features and functions of NHS, and is also reflected in the goals and policies of the Milton OP (Town of Milton

2024) and in refining the NHS for the Derry Green lands east of James Snow Parkway (AMEC et al. 2015). Linkages are critical to the effective movement of wildlife across the landscape accessing different habitats, in the exchange of genetic material (e.g., dispersal of plant seeds), and in promoting dispersal and recruitment among subpopulations (e.g., amphibians) among other functions. Linkages are therefore important to maintaining the ecological integrity and health of a broader NHS, such as in protecting biodiversity. In recognition of these benefits, the Regional OP identifies Linkages as a component of the Regional NHS.

The Region and Town map the presence of “Enhancement Areas, Linkages and Buffers” as part of the Regional NHS (Map 1G of the Regional OP (2024) and Schedule M of the Town OP (2024)). However, the Regional and Town OPs do not map the presence of a Linkage within the James Snow Parkway study area. Although portions of the Regional NHS are mapped as spanning both sides of the ROW (e.g., south of Derry Road, south of Louis St. Laurent Avenue), James Snow Parkway and its vehicular traffic represents a significant barrier to land-based wildlife movements without mitigative strategies, nor does it allow for effective dispersal of vegetative seed between lands east and west of the ROW.

Despite these limitations, opportunities for ecological connectivity between lands west and east of James Snow Parkway were identified in the Sixteen Mile Creek, Areas 2 & 7 Subwatershed Update Study (AMEC et al. 2015). Of the potential identified corridors, the restored riparian channel that conveys the Middle Sixteen Mile Creek Tributary (Map 3b) represents the most functionally valuable ecological corridor within the study area. The terrestrial and aquatic quality of this corridor has been improved through the recently implemented restoration measures, as noted above, which provide enhanced functionality to this regional-scale linkage feature. Linear open lands that convey underground pipeline infrastructure north of Clark Boulevard (Map 3c) and which connect to adjacent natural features east of the ROW may provide a secondary ecological corridor within the study area. However, the dearth of natural features within the mowed linear natural gas pipeline corridor limits its potential use to White-tailed Deer (*Odocoileus virginianus*) and other smaller urban-tolerant wildlife.

Although wildlife crossings of the ROW may occur along these corridors, specific data to quantify their use by wildlife (e.g., via road mortality surveys or vehicle collision reports) are not known for these locations. Wildlife use of these crossings is therefore speculative, but it can be inferred that the highly developed lands west of the ROW, and the rapidly developing lands east of the ROW, would funnel wildlife movement through these corridors. Additionally, since the

Middle Sixteen Mile Creek Tributary represents direct fish habitat, its crossing is understood to represent an important aquatic habitat connection. Measures to maintain ecological connectivity via wildlife movement function, and to mitigate impacts to this connectivity including reduction in vehicle-wildlife collision hazards, are therefore warranted within the study area.

As a result of the locally limited ecological connectivity and wildlife movement opportunities across the James Snow Parkway study area, the crossing locations along the Middle Sixteen Mile Creek Tributary and at the linear natural gas pipeline corridor are considered locally important Wildlife Movement Corridors as part of the broader Regional NHS linkages that have been mapped to span the ROW (Map 3).

7.0 Impact Assessment

7.1 Description of Proposed Works

The Preliminary Design for improvements to James Snow Parkway was differentiated into three segments, each of which contain their own particular constraints and design considerations: Britannia Road to south of Louis St. Laurent Avenue (i.e., 'south segment'); south of Louis St. Laurent Avenue to north of Derry Road (i.e., 'central segment'); and north of Derry Road to the Highway 401 interchange (i.e., 'north segment').

A preferred Preliminary Design was selected that generally included the following design strategy:

- South Segment: Widen about the road centreline
 - This design minimizes encroachment into wetlands on the east side, balances impacts at the watercourse crossing structure, and requires less property acquisition while accommodating future development of adjacent lands.
- Central Segment: Widen to the east
 - This design avoids impacts to residential properties to the west, minimizes encroachment into natural features to the west and accommodates future development of adjacent lands.
- North Segment: Widen about the road centreline
 - This design avoids encroachment into wetlands on the west side, requires less property acquisition, and minimizes impacts to the CKPC railway overpass structure and Highway 401 interchange.

The Preliminary Design includes the installation of separated cycle tracks and sidewalks on both sides of the road. The majority of the study area ROW will incorporate three northbound and three southbound travel lanes separated by a 2-5m wide median that will comprise a two-way left-turn lane in specific locations. Landscaped boulevards (1.5-3m wide) will separate the road travel lanes from the 1.8m wide cycle tracks, which will in turn be separated by the outer 1.8m wide sidewalks with 0.3m buffers. The existing bridge structure that spans the Middle Sixteen Mile Creek Tributary where it crosses the ROW will not require alteration or replacement, and the existing structure will be left in place as part of the road improvements.

The proposed undertaking will require localized widening of the permanent road footprint in various locations along the study area length of the ROW to accommodate the planned improvements. Roadside grading will also be required in certain locations to account for refinements in vertical road elevations and to match existing grades along roadside.

See Appendix X for the James Snow Parkway Preliminary Design (HDR 2024). Map 5 illustrates the Preliminary Design as overlaid on to the existing natural features.

7.2 Approach to Impact Assessment

The assessment of potential impacts was determined by comparing the details of the preferred Preliminary Design with the characteristics of the existing natural features and their functions. The outcome of this process was based primarily on the resilience of the identified natural features and functions to withstand predicted disturbances caused by design, construction and operation of the transportation infrastructure. In this manner, both the significance and sensitivity of the affected natural features and functions to disturbance were considered. The following is a description of the types of impacts which will be discussed.

- Direct Impacts – associated with the disruption or displacement of natural features, caused by the actual “footprint” of the undertaking;
- Indirect Impacts – associated with changes in site conditions such as drainage and water quantity/quality, and construction-stage disturbances to the adjacent features; and,
- Induced Impacts – associated with human-induced disturbances imposed on the existing study area natural features and ecological functions during post-construction operation of the infrastructure.

7.3 Direct Impacts

7.3.1 Vegetation Removal and Site Grading

Characterization of natural feature significance and sensitivity, and delineation of feature boundaries, informed the Preliminary Design such that impacts to these features were avoided or minimized while balancing other design considerations (e.g., socio-economic; transportation service). Road widening and associated roadside grading limits are expected to extend into the outer edges of various study area natural features along the east side of the ROW. These will include non-significant Reed Canary Grass Mineral Meadow Marsh (MAM2-2) and Mineral Meadow Marsh (MAM2) features at the south end of the study area (Maps 5a-5b), the Dry-Fresh Deciduous Forest (FOD4) Significant Woodland located north of Louis St. Laurent

Avenue, east of the road (Maps 5d-5e), the Fresh-Moist Shagbark Hickory Deciduous Forest (FOD9-4) Significant Woodland north of Clark Boulevard, east of the road (Map 5f), and Mineral Cultural Woodland (CUW1) Significant Woodland with associated roadside non-significant MAM2 inclusion south of Derry Road, east of the road (Maps 5f-5g). Road widening infrastructure encroachment into the natural feature edges represents a permanent direct impact to the features, and will include portions of the proposed 1.5m wide sidewalk, 1.5m wide cycle track, 1.5m wide landscaped boulevard, and outer edges of the widened road vehicular travel lanes in certain locations.

The maximum width of natural feature encroachment is 16.5m, located at the MAM2 meadow marsh as shown on Map 5a, followed by a 16.4m encroachment that is anticipated for the FOD9-4 forest community (Map 5f). Other maximum grading encroachment extents include 14.3m into the CUW1 cultural woodland (Maps 5f-5g), and 12.1m into the FOD4 forest (Map 5d). When considering only the extents of permanent ROW infrastructure that excludes post-construction restored graded slopes (i.e., areas of permanent natural feature removal), the maximum encroachment extents are proposed for the FOD9-4 forest (11.7m), the CUW1 cultural woodland (11.0m), and the complete removal of a small roadside MAM2 wetland feature and roadside hedgerow (Map 5f). By comparison, among natural features to the west of the ROW, maximum grading encroachment will only extend 2.5m (into the Dry-Fresh Sugar Maple-Hickory Deciduous Forest (FOD5-5)) (Map 5e). At the level of individual vegetation communities, with the exception of the aforementioned MAM2 and hedgerow features that will require complete removal, development encroachments as a proportion of total vegetation community area range up to 29% for the MAM2-2 meadow marsh shown on Map 5a (12% of which is permanent removal) and 23% for the FOD4 forest community (19% of which is permanent removal) (Map 5d).

It is recommended that efforts be made during the Detailed Design phase to limit the extent of road widening encroachment into these natural features, with a focus on the Significant Woodland features as identified on Maps 5d-5g. This may be accomplished by narrowing the road footprint in one or more of these areas through consolidation of the sidewalk and cycle track into a single multi-use trail, and elimination of the landscaped boulevard adjacent to these natural features.

By contrast, the preliminary road improvement design largely avoids direct impact to the natural features located to the west of the James Snow Parkway ROW. Negligible road widening

incursions into very small extents of Significant Woodland edge are identified, with relatively few woodland edge tree removals required (NRSI 2025). None of the wetland features located west of the road, including the regionally significant Swamp Maple Mineral Deciduous Swamp (SWD3-3; Maps 5c-5d) or the restored riparian channel communities (Maps 5j-5l) will be directly impacted.

Significant Vegetation Species Impacts

The Preliminary Design will require road widening encroachment into the FOD4 woodland feature that contains the two side-by-side SAR Butternut trees (Map 5d). The limit of permanent road infrastructure footprint will extend to within approximately 14m of the Butternuts, while the grading limit for this expansion will extended nominally further, to within approximately 12m of the Butternuts. As described in Section 6.4.1, direct impacts to these Butternuts are not anticipated. However, this should be confirmed at the Detailed Design stage.

To inform the requirement for potential additional actions under the SCA, if it is determined that impacts to the mapped Butternuts may occur, it is recommended that information on the existing Butternuts be obtained, either through information sharing with the subject property owner or through arrangements that will allow direct biologist access to the Butternuts during the Detailed Design stage. If the Butternuts are determined to represent Category 1 (“non-retainable”) trees, such as due to the extent of Butternut canker, the trees will not be subject to the requirements of the SCA, and no further action with respect to these trees will be required. Pending receipt of additional information on these Butternuts, they should be assumed to represent protected individuals under the SCA. As stated above, it is generally recommended that road widening encroachment area into the FOD4 woodland be minimized through design revisions at the Detailed Design stage.

Various other regionally significant vegetation species were inventoried within the study area, including within natural features for which some minor grading encroachment is anticipated (see Section 5.2.2). Measures should be taken to avoid impacts to regionally significant vegetation and to protect individual plants during construction where necessary. If impacts cannot be avoided, the individual plants should be relocated to an appropriate site when feasible. Alternately, seed can be collected from the plants to be impacted and re-distributed within areas of suitable habitat outside of anticipated future construction zones.

Tree Removal

A preliminary tree removal and retention assessment was completed as described in the Preliminary Tree Inventory Report for James Snow Parkway (NRSI 2025). As summarized in that report, of the 182 inventoried trees, 76 are recommended for removal to accommodate the road improvement Preliminary Design. Many of these trees are in direct conflict with the proposed road construction, or are situated in close proximity to the grading limit and would incur severe root damage as a result of grading. Of these 76 trees to be removed, 33 are assumed to be boundary or off-property trees. The removal of these trees will require the permission of all owners involved. Additional trees less than 10cm DBH may require removal due to conflicts with the proposed undertaking, but these smaller trees were outside the scope of the inventory. See the Preliminary Tree Inventory Report for a more detailed breakdown of anticipated tree retention and removal requirements.

Of the 76 trees to be removed, three are dead and are therefore excluded from tree compensation calculations following Regional criteria. Based on the preliminary estimate of 73 live trees to be removed, a total of 192 compensation tree plantings will be required based on application of the Region's Tree Canopy Replacement Policy on Regionally-Owned Lands (Halton Region 2008). See the Preliminary Tree Inventory Report for a more detailed summary of tree compensation requirements. The tree compensation total will be updated and finalized upon completion of the supplementary tree inventory, and updated tree removal/retention analysis, to be completed during the Detailed Design stage.

7.3.2 Impacts to Terrestrial Wildlife and Their Habitats

Potential Species at Risk Bat Habitat and Possible Bat Maternity Colonies Significant Wildlife Habitat

Of the seven potential bat roosting habitat trees that were documented along roadside areas, up to five of these are expected to require removal to accommodate the planned road improvement works. However, all of the treed natural features are considered potential habitat for SAR bats since they were not fully investigated for habitat suitability. Furthermore and for the same reason, the forest and treed swamp ELC communities of the study area are considered possible SWH for Bat Maternity Colonies in accordance with MNRF criteria (MNRF 2015).

The anticipated grading encroachments into some of these features will be restricted to the road-facing edges of the communities and will not result in the fragmentation of potential bat

maternity colony habitat, nor will it create any barriers to movement by bats. As the majority of the treed vegetation communities will remain intact, it is not anticipated that the proposed undertaking will negatively impact the SAR bat habitat functions provided by the wooded features. Additionally, it is expected that a roost tree density required to meet the criteria for Candidate Bat Maternity Colonies SWH designation (MNRF 2015) can be maintained despite some edge tree removal. The edge habitat encroachments that are proposed are therefore not anticipated to adversely impact SAR bat habitat, nor the SWH and/or its ecological functions.

In order to avoid negative impacts to individual bats, tree removals must be undertaken outside of the bat active period of April 1-November 30. If tree removals are required to occur within the bat active season, additional studies (e.g., bat passive acoustic monitoring) will be required, and pending the results of the additional studies, additional actions may be required in conformance with the SCA. This may include registration of the activities that would impact SAR or their habitats via the provincial Species Conservation Registry, and preparation of a Conservation Plan to mitigate impacts to SAR bats and to monitor the effectiveness of implemented measures.

Provided the above recommendation is implemented, negative impacts to SAR bats or their habitat are not expected. However, since portions of woodlands that provide potential habitat to SAR bats will require removal, it is recommended that an updated assessment of impact be completed at the Detailed Design stage and that the need for any additional actions or field surveys be determined at that time to ensure compliance with the SCA. It is further recommended that a supplementary bat habitat assessment be completed at the Detailed Design stage to more fully characterize potential habitat for the newly-listed SAR Hoary Bat and Eastern Red Bat.

Terrestrial Crayfish Significant Wildlife Habitat

Confirmed SWH for Terrestrial Crayfish was identified for the SWD3-3 swamp community (Maps 5c-5d). Although no terrestrial crayfish chimneys were identified within the study area portion of the SWD3-3 community, following a precautionary approach it is assumed that terrestrial crayfish may use portions of the habitat closer to the ROW due to the similar habitat conditions as where the chimney was observed. However, as shown on Map 5, since no roadside encroachment into the SWD3-3 feature is proposed, no direct impacts to Terrestrial Crayfish SWH will occur.

Special Concern and Rare Species Candidate Significant Wildlife Habitat

The majority of SCC species that could not be ruled out through completion of field surveys are butterfly and odonate species that do/may have suitable habitat in the study area and have been documented within 10km of the study area. These include Sleepy Duskywing (*Erynnis brizo*), Black Dash (*Euphyes conspicua*), Purplish Copper (*Lycaena helloides*), Tawny Emperor (*Asterocampa clyton*), River Bluet (*Enallagma anna*), and Arrowhead Spiketail (*Cordulegaster obliqua*). Any direct impacts to suitable habitat for these species would be restricted to natural feature edges facing the road ROW that likely do not provide high quality habitat for these species. Therefore, negative impacts to these SCC habitat functions are not expected. Nonetheless, since natural habitat coverage is already limited and fragmented within the study area and surrounding vicinity, it is generally recommended that direct habitat impacts through road infrastructure encroachment be avoided or minimized to the extent possible.

Other Wildlife Species

Most other wildlife species that occur within the study area are common and ubiquitous on the landscape, and are adapted to or have been habituated to urban environments. The planned undertaking will not negatively impact these local wildlife species or populations.

Certain other observed species are more specialized in their preferences for the woodland, riparian and swamp habitats that are present in the study area (e.g., Common Yellowthroat (*Geothlypis trichas*), Warbling Vireo (*Vireo gilvas*), Northern Flicker (*Colaptes auratus*), Swamp Sparrow (*Melospiza georgiana*), Northern Leopard Frog (*Lithobates pipiens*), Gray Treefrog (*Dryophytes versicolor*), and Muskrat (*Ondatra zibethicus*)). The road improvement works will require grading limits that extend into some of the adjacent natural features that provide habitats for these species. However, construction footprint impacts within woodland and wetland features will be negligible in terms of their overall sizes, and the road infrastructure widening itself is not anticipated to render these habitat areas unsuitable to the woodland- and wetland-dependent species. Short-term disturbances to these species may occur during construction. See Section 7.4.1 for further discussion and appropriate mitigations associated with this.

Midland Painted Turtle and the SCC Snapping Turtle were observed within the study area. However, habitats for these species within the study area are limited to the stormwater management ponds, which do not represent significant habitats for these species. No negative impacts to these stormwater pond habitats will occur as a result of the planned road works.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults.

Vegetation clearing should therefore occur outside the bird nesting season of April 1-August 31 so as to limit disturbances to nesting activities of birds and to avoid destruction of active nests. For tree removals specifically, this window should be extended to April 1-November 30 (see above). The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act*.

Ecological Linkage and Wildlife Movement

As described above, the restored riparian channel conveying the ROW crossing of the Middle Sixteen Mile Creek Tributary is considered the primary functional ecological linkage within the study area. This crossing location currently contains a 20m span bridge structure, and with an estimated height clearance above the ground of 1.5m, is suitable to convey up to medium-sized wildlife (e.g., foxes, skunks, and raccoons) including all herpetofauna species such as Snapping Turtle and Midland Painted Turtle (Conservation Halton 2018). This is relevant given the creation of pond features of varying sizes as part of the broader ecological restoration and enhancements that have been implemented within the engineered floodplain. Subject to species access, it is anticipated that turtles, anurans and other small-medium mammal species will be attracted to these created pond features and will cross under James Snow Parkway via the existing bridge structure. However, the height clearance of the bridge structure is too low to allow White-tailed Deer to pass under, and any deer following the riparian corridor would need to cross over the road. NRSI is not aware of data that indicate the occurrence of deer-vehicle collisions at the riparian crossing location.

The enhanced habitat value and wildlife use of the restored floodplain features may increase the potential for wildlife crossings of the ROW road surface. Substrates under the bridge should be confirmed as suitable to facilitate target wildlife movement (e.g., turtles). This would include use of native soils and an avoidance of large rocks and rip rap within the structure (Conservation Halton 2018). If considered necessary based on additional site investigation to be completed during Detailed Design, natural cover features, such as low-growing shrubs, brush piles and/or rock piles, should be placed under or near the bridge structure to encourage wildlife use and to mitigate the effects of predation on wildlife using the structure.

Other wildlife road crossing mitigation measures may be considered at the Middle Sixteen Mile Creek Tributary crossing during the Detailed Design stage, if warranted based on availability of

road mortality or vehicle-wildlife collision data and/or in consultation with agency staff. This may include the installation of wildlife road crossing signage ahead of the northbound and southbound approaches to the riparian crossing location, or installation of directional fencing to encourage small-medium sized wildlife crossing under the bridge and to mitigate crossings along the road surface.

Potential open habitat movement corridors exist for urban-adapted mammal species, including White-tailed Deer, at the ROW crossings of the buried natural gas pipeline infrastructure. Wildlife usage of this corridor has not been confirmed but can be inferred given the developed nature of the surrounding landscape to the west of the ROW. It is recommended that consultation be held with Regional and/or City staff during the Detailed Design stage to obtain further information, if available, on vehicle-wildlife collisions along this portion of James Snow Parkway. If warranted, it is recommended that the installation of wildlife crossing signage be explored with municipal staff as a means of warning motorists of the potential hazard and to encourage drivers to slow down and be observant of wildlife at the side of the road.

7.3.3 Impacts to Fish and Aquatic Habitats

As described in Section 6.3, the Middle Sixteen Mile Creek Tributary provides direct fish habitat within the study area and is classified as a warmwater thermal regime. Under its current state, a 20m span bridge facilitates flow of water and nutrients from upstream (west) to downstream (east). The existing bridge structure will remain unchanged following construction. Based on the extent of the proposed work and the current condition of the watercourse, it is expected that the harmful alteration, disruption and/or destruction of fish and fish habitat can be avoided, provided that recommended mitigation measures are employed. Submission of a Request for Review to the DFO in support of the works is not anticipated to be required, provided that the works can maintain a footprint above the high-water mark and adhere to the DFO's Measures to Protect Fish and Fish Habitat (DFO 2025).

Standard construction mitigation measures should be employed to limit the potential impacts to fish and fish habitat, including sediment and erosion control, prevention of the entry of deleterious substances into the watercourse, and work-site isolation. Sediment and erosion control measures must be implemented prior to the commencement of work, and will be monitored and maintained throughout construction to prevent erosion and subsequent sedimentation downstream within the Middle Sixteen Mile Creek Tributary. These are further described in Section 7.4.2.

Additionally, the road Preliminary Design requires the grading and removal of the upper most extent of a headwater drainage feature providing inputs to the east within the Middle Sixteen Mile Creek subwatershed (Map 5g). This feature does not provide direct fish habitat, as it was observed to be ephemeral in nature, but would provide indirect habitat in the form of nutrients and surface-water inputs to downstream habitats. Though this feature does not contain fish at any time during a given year, it is connected to waterbodies containing fish habitat, and therefore would be subject to a DFO RfR requirement. To limit the long-term direct habitat impacts, grading and stormwater management design should maintain surface water inputs to this feature. Additionally, efforts should be made to reduce the salinity of salt-laden surface water runoff and may include the use of salt-tolerant riparian and in-stream vegetation and/or developing drainage systems to capture road surface water runoff and employing filtration techniques before outletting to the feature. Standard measures to protect fish and fish habitat should be employed during the expansion of the roadway adjacent to this feature, including erosion and sediment control, completing the works in the dry, and preventing the entry of deleterious substances into the watercourse.

Opportunities for enhancement of the watercourse channel and adjacent riparian habitat should be explored during the Detailed Design stage to improve their functionality and improve fish habitat.

7.4 Indirect Impacts

7.4.1 Construction Disturbance to Adjacent Natural Features and Habitats

Actions should be taken to avoid unnecessary or inadvertent damage or destruction of vegetation adjacent to project construction limits. Clearly defined construction limits in the form of tree protection fencing should be established to avoid unnecessary vegetation removal where tree protection measures have been recommended in the Tree Inventory Report. Silt fencing may be combined with the tree protection fencing where both of these functions are required, in accordance with applicable guidelines and standards (Halton Region 2018). Where silt fencing for ESC measures is required but not tree protection fencing, silt fencing may be used as a form of construction limit demarcation. Tree protection fencing locational details will be determined and mapped during the Detailed Design phase.

Prior to any construction activities (rough grading, vegetation and tree removal), the tree protection fencing should be installed where directed in the Tree Inventory Report to accommodate tree protection zones. Based on Regional guidelines, the tree protection fencing

should be installed at minimum 0.9m outside the dripline for trees to be protected in order that wooden support stakes can be placed at or outside the dripline (Halton Region 2018). This distance may not be feasible for many trees because the preference to retain trees will result in cases where the proposed construction activities will extend to within the tree driplines. See the Preliminary Tree Inventory Report (NRSI 2025) for further details about the recommended tree protection measures.

When construction equipment is moved from one site to another, it has the potential of inadvertently transporting seeds and other vegetative material of non-native and invasive plant species. This may therefore lead to the introduction and colonization of a site's natural features with invasive plants. Construction vehicles and machinery should therefore be properly cleaned of soils, mud and water to ensure that invasive plant species are not transported to the study area roadside construction zones where they can establish within the adjacent natural features. The following general steps should be taken:

- Vehicles and equipment should be inspected before leaving the site, or if moving from one part of the site to another where one area is known to contain a concentration of invasive plant species;
- Vehicles and equipment should be inspected after having transported soil that has the potential to contain invasive plant species;
 - Vehicles and equipment should be inspected for dirt, plant material and seeds that may be lodged in or adhered to surfaces;
- Based on the above inspections, vehicles and equipment should be thoroughly cleaned in an area where there is no risk of spreading invasive species. The interior and exterior of vehicles and equipment should be cleaned to remove mud and debris, including along undersides and around wheels.

See the *Clean Equipment Protocol for Industry* (Halloran et al. 2016) for additional details of methods that should be followed to mitigate the spread of invasive plant species between natural areas.

Potential indirect impacts to natural features and wildlife may also arise from noise, vibrations, human presence, dust and artificial lighting associated with construction activities.

During construction activities such as vegetation clearing and grubbing, dust can potentially result in the following:

- Changes in vegetation due to increased heat absorption and decreased transpiration,
- Immediate visual impacts.

Impacts due to dust should be mitigated for by moistening areas of bare, dry soil with water as needed during construction activities to reduce the amount of dust produced.

Wildlife impacts resulting from dust, noise, and vibrations are expected to be temporary, minimal and localized during the road construction works. Significant effects on wildlife are not anticipated and it is expected that displaced wildlife species will return to the vicinity of the roadside features following construction. Nonetheless, construction disturbances can be mitigated by restricting the daily timing of construction activities to between 7:00hr and 19:00hr. Any artificial lighting used for construction purposes should be turned off or directed away from the adjacent natural features following the completion of daily construction activities.

7.4.2 Sedimentation and Erosion

During vegetation removal and site grading activities, areas of bare soil will be exposed along roadside areas which have the potential to erode during rainfall events and impact adjacent lands and vegetation. Reduced vegetation cover along the roadsides in combination with the presence of exposed soils during construction activities may also increase the potential for stormwater flow to down-slope areas, such as into the adjacent woodland, wetland and watercourse features if not appropriately mitigated. Increased stormwater surface flow and erosion processes may cause the deposition of sediments onto down-slope vegetation, ultimately causing vegetation die-back or impaired health. Sedimentation to the watercourses where they approach the road and at the road crossing must also be considered, and mitigated appropriately to prevent impacts fish/fish habitat and water quality degradation.

Soil compaction also has potential to occur as a result of heavy machinery in the area of construction. Soil compaction can greatly reduce the permeability of soils and affect their ability to retain water during rain/snow melt events. This will result in an increase in surface water run-off which will ultimately increase the erosion potential and the amount of sediment being transported into adjacent areas.

An Erosion and Sediment Control (ESC) Plan must be developed prior to any construction activities on-site. The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure, (2) retain existing vegetation, where feasible, (3) encourage re-vegetation, (4) divert runoff away from exposed soils, (5) keep runoff velocities low, and (6) trap sediment as close to the source as possible.

The ESC Plan should include, but not be limited to, the following measures:

- Placement of silt fencing along any construction limits that are down-slope of construction zones and may receive sediment-laden runoff;
- Timing of construction activities to occur during dry periods, where possible;
- Regular inspection, maintenance/repair and where necessary, replacement of damaged silt fencing;
- Operation and storage of all materials and equipment in a manner that prevents any deleterious substance from leaving the construction zone;
- Stripping and strategic placement of topsoil stockpiles, and placement of sediment control fencing around all stockpile areas; and,
- Re-vegetation of completed areas as soon as possible after construction.

Disturbances to watercourse riparian vegetation must be avoided or minimized during construction. If riparian vegetation is removed or disturbed, ESC measures such as silt fences, rock check flow dams and sedimentation ponds should be utilized to protect downstream receivers. These measures must be maintained during construction until the site is stabilized with seed and mulch.

7.4.3 Changes to the Hydrological Regime

Surface Water Drainage and Quantity Control

Road runoff drainage between Highway 401 and Derry Road is currently captured in storm sewers within the James Snow Parkway ROW; this condition will remain unchanged upon completion of the road improvements. Between Derry Road and Britannia Road, James Snow Parkway has a semi-urban cross-section that is drained through a combination of storm sewers and roadside drainage ditches. Post-construction, the ROW will be fully urbanized and drainage will entirely be directed to storm sewers that will discharge to their respective outlets (A. Reitmeier, HDR, pers. comm., July 2025). No significant change in drainage pattern within the

study area as a result of the road improvements is therefore expected. Runoff quantity control measures are not required as part of the road design, and negative impacts to receiving natural features are not expected.

Dewatering Effects on Groundwater

The Preliminary Hydrogeological Investigation Report for James Snow Parkway (Thurber Engineering 2025) determined that any groundwater dewatering for excavation works associated with the road improvements would be minimal. For example, excavation around the CKPC railway underpass structure to accommodate proposed work on that structure is expected to be maintained about the groundwater table, with minimal dewatering requirements expected. As noted above, the existing culvert conveying the Middle Sixteen Mile Creek Tributary will not require replacement or extension.

Due to the limited dewatering activity anticipated, relatively limited groundwater table drawdown is expected. When considered against the low hydraulic conductivity of the surrounding soils, the magnitude of any potential dewatering impact is not expected to be significant (Thurber Engineering 2025). Further, the adjacent natural features within the study area are not known to be reliant on or sensitive to changes in groundwater condition. Therefore, negative hydrogeological effects on the study area natural features as a result of the proposed undertaking are not expected.

7.4.4 Water Quality Control

During Construction

Indirect impacts may occur through faulty construction equipment. Machinery should arrive on site in clean condition and is to be checked and maintained free of fluid leaks. A Spill Response Plan (SRP) should be developed prior to commencement of construction if there is the potential for deleterious substance leaks during construction. This SRP should provide a detailed response system to deal with events such as the release of petroleum, oils and lubricants or other hazardous liquids and chemicals. A spill kit must also be kept on site at all times and on-site workers must be trained in the use of this kit and be fully aware of the SRP.

Any groundwater dewatering discharge that is directed to the land surface must be discharged at least 30m away from any water bodies. It was noted in the Preliminary Hydrogeological Investigation Report (Thurber Engineering 2025) that groundwater quality exceeded various water quality parameters (e.g., for various metal concentrations and for total suspended solids).

Groundwater discharge water will therefore require appropriate treatment to meet Provincial Water Quality Objectives before being released into the watercourse.

Post-Construction

To mitigate for a minor widening of the impervious road surface area, and in conjunction with the plan to reconstruct the James Snow Parkway ROW as a fully urbanized ROW, oil-grit separator (OGS) units and underground infiltration systems will be incorporated into the storm sewer drainage system to treat road runoff prior to its release into receiving areas such as the Middle Sixteen Mile Creek Tributary. Provided these systems provide an 'enhanced' level of water quality treatment, no negative water quality impacts to the receiving natural features as a result of the planned road upgrades are expected.

Indirect water quality impacts should be considered during the Detailed Design stage regarding the potential to negatively impact the existing water quality within the study area. Where feasible, use of salt during winter should be minimized where application occurs near natural receivers such as the Middle Sixteen Mile Creek Tributary, or alternatives to road salt should be used to avoid water contamination.

7.5 Induced Impacts

Induced impacts may occur where public use of the reconstructed James Snow Parkway ROW causes human-induced disturbances or stresses on adjacent natural features or existing ecological functions. For road reconstruction projects, including for the James Snow Parkway improvements, induced impacts associated with vehicular use of the road are often minimal or negligible, given the continuation of an existing transportation corridor land use and because significant increases in traffic volume are not anticipated as a result of the reconstruction itself. For example, wildlife occupying lands adjacent to the ROW are already habituated to human use of the corridor, including noise and vibration effects. However, induced impacts can occur when the redesigned ROW encourages additional pedestrian use in areas adjacent to natural features, such as through the addition of sidewalks and cycle paths. For example, impacts can occur when less accessible ROWs (e.g., in terms of pedestrian or cycle use) become more accessible and lead to increased potential for members of the public to encroach into adjacent natural features.

The proposed undertaking will result in the construction of sidewalks, and a corresponding increase in pedestrian traffic, adjacent to certain study area significant natural features where no

sidewalks currently exist within the ROW (i.e., the SWD3-3 swamp community (Maps 5c-5d), the FOD4 woodland (Map 5d), and the FOD9-4 and CUW1 woodlands (Maps 5f-5g)). Increased human access to these features will increase the potential for unauthorized encroachment and associated effects including the wearing of informal paths, vegetation trampling and damage, and litter and debris deposition. These effects can in turn facilitate the establishment and spread of non-native/invasive species growth within the features. Although increased human access to wooded natural features may cause disturbances to certain wildlife species, the majority of wildlife species occupying these features are relatively tolerant of urbanized conditions or human-influenced environments and are not expected to be significantly impacted.

Evidence of widespread human disturbance within the adjacent natural features was not observed by NRSI biologists. Nonetheless, it is recommended that permanent fencing (e.g., chain-link) be installed along the ROW boundaries facing certain adjacent natural features as a means of inhibiting future human encroachment impacts. It is recommended that, at a minimum, fencing be installed along the ROW limits abutting the SWD3-3, FOD4, FOD5-5, FOD9, and the CUW1 feature south of Derry Road. Installation of permanent fencing is expected to effectively inhibit public access into these features from the James Snow Parkway ROW. The installation of fencing along these features will also mitigate wildlife-vehicle hazards and road mortality by inhibiting the movement of medium to large wildlife movement onto the road. Fencing locations and specifications can be further refined during the Detailed Design phase.

8.0 Ecological Restoration and Enhancement

The preferred Preliminary Design of the road improvements will require encroachment into natural feature edges, particularly along the east side of James Snow Parkway. Restoration of these disturbed feature edges will therefore be necessary to mitigate the associated negative effects, such as the colonization and spread of non-native/invasive species, erosion of disturbed soils, and increases in negative edge effects within wooded natural features. Of particular focus for natural feature edge restoration and management will be Dry-Fresh Deciduous Forest (FOD4), Fresh-Moist Shagbark Hickory Deciduous Forest (FOD9-4), and the Mineral Cultural Woodland (CUW1) south of Derry Road. The road reconstruction also affords the opportunity to enhance the natural feature edges that will be retained. It is recommended that ecological enhancements focus on significant woodland and wetland features as identified on Map 3, while

restoration measures on non-significant natural features within the study area (e.g., lower quality meadow marsh at the south end of the study area) emphasize mitigative actions such as soil stabilization of disturbed/graded areas through native seed mix application.

A Restoration Planting Plan (RPP) should be prepared during the Detailed Design stage to direct the species types, locations, quantities, and other parameters associated with all restoration and enhancement zones within the study area. The RPP should address all areas of construction disturbance into adjacent natural features as well as the watercourse crossing location within the ROW. At a minimum, disturbed areas along graded slopes should be stabilized with an appropriate nurse cover crop (e.g., Proso Millet (*Panicum miliaceum*), Annual Rye (*Lolium multiflorum*) or oats (*Avena sativa*)) supplemented with or followed by an application of native seed mix appropriate to the location. Seed mix selection and application rates must meet municipal and/or Conservation Halton guidelines where applicable. Areas of grading disturbance that extend into adjacent natural features should also be subject to additional ecological restoration treatments (e.g., native seed mix application, native woody species plantings) that are tailored to the natural feature type being restored.

Where road construction will require encroachment into wooded natural features, treatment of those feature edges should be prescribed within the RPP and include management techniques to prevent and protect the retained wooded features from further impacts. This can include activities such as selective tree removal, pruning, pre-stressing and interplanting and should be designed by a qualified professional. Native woody vegetation plantings should also be established along the new created edges of the natural features that will require edge removal, in accordance with the RPP. These plantings should be reflective of the existing species assemblage within the natural features, be suitable to the site conditions (e.g., accounting for sunlight exposure and soil conditions) and should comprise species native to Halton Region. Coordination with the owners of the adjacent properties containing the natural features will be required where any activities might extend outside of the ROW limits. Special consideration should be made for restoration species that are tolerant of harsh roadside conditions, such as species that are hardy to the effects of road salt spray and pollution.

An updated assessment of non-native/invasive species growth within the natural features to be restored (e.g., within the natural feature edge areas) should be undertaken during the Detailed Design stage. Based on these results, an Invasive Species Management Plan targeted to the non-native/invasive species at issue should be developed and incorporated into the RPP.

The feasibility of transplanting or salvaging regionally rare plants or seeds from the impacted areas should be considered and included in the RPP.

The recommendations described above will be compiled and described within an Edge Management Plan, which will guide the implementation of all required natural feature edge restoration activities including planting installations, maintenance and monitoring. The Edge Management Plan will also incorporate the Invasive Species Management Plan, any requirements for significant species relocations, disturbance inspections, and any other required edge management measures.

The planned undertaking also provides the opportunity to establish a diverse assemblage of tree plantings within the study area ROW, including species that are less susceptible to road salt and pollution toxicity effects. These ROW plantings are expected to contribute toward the compensation requirements for anticipated tree removals as recommended in the Preliminary Tree Inventory Report (NRSI 2025). ROW plantings, including the requirements for tree compensation, will be detailed in a future Landscape Planting Plan and/or RPP to be prepared during the Detailed Designs stage.

9.0 Monitoring

It is recommended that a natural environment Monitoring Plan be developed that incorporates elements of aquatic and terrestrial ecological monitoring. The Monitoring Plan should be designed within an adaptive management framework, such that monitoring data is continuously reported and reviewed by regulatory agency staff and that mitigative or remedial actions are taken when warranted in a timely manner. The components, methodologies and timing considerations of the Monitoring Plan would itself be continually under review based on these results. The Monitoring Plan should be prepared in consultation with the Region, Conservation Halton and other stakeholders as warranted (e.g., Town of Milton) during the Detailed Design stage.

Recommended monitoring measures include those summarized below, subject to agency consultation and additional natural heritage information collected during the Detailed Design stage. Recommended monitoring tasks associated with this undertaking are primarily grouped into two categories: (a) compliance monitoring associated with the effective functioning of construction mitigation measures, and (b) monitoring of terrestrial and aquatic restoration areas to ensure these features are successfully establishing as intended.

9.1 Construction-Stage Compliance Monitoring

9.1.1 Pre-Construction

Prior to any construction activity on-site, including vegetation clearing and grubbing, on-site inspections of the following should be undertaken to ensure proper installation:

- sediment and erosion control measures (e.g., silt fencing); and
- tree and natural feature protection measures, including proper installation of tree protection fencing as confirmed by a Certified Arborist/Registered Professional Forester or environmental inspector, or other construction limit fencing where tree protection fencing isn't required.

9.1.2 During Construction

Construction monitoring is the responsibility of the proponent and is to be undertaken by a designated environmental inspector or qualified delegate. Generally, construction monitoring must occur to ensure compliance with the conditions of various permits. Construction monitoring measures are to include the following:

- Periodic monitoring of the above measures to ensure maintenance and effectiveness.
- Pruning of any limbs or roots (of trees to be retained) damaged during construction by a Certified Arborist/Registered Professional Forester.
- Visual inspection of the adjacent natural features, to ensure no unauthorized construction encroachments, vegetation damage, or other disturbances caused by construction activities.
- Fueling of machinery to be undertaken at a designated location away from the adjacent natural areas.
- Storage of machinery and material, fill, etc. in designated areas away from the adjacent natural features.

9.1.3 Vegetative and Habitat Restoration Inspections

Inspections of restoration plantings and seeded areas should be completed to ensure survival and healthy establishment. The objective of this monitoring should be to validate that the intended ecological condition (e.g., restored woodland edge) is being achieved. This is expecting that some die-back of vegetation will occur due to a variety of causes (e.g., wildlife browsing). Remedial actions should be identified for implementation if/when necessary, such as

efforts to reduce competition from adjacent vegetation (e.g., cutting back overcrowding vegetation, removing non-native growth), or installing new replacement plantings. A component of this monitoring may include inspection of the restored aquatic habitat at the watercourse crossing within and immediately adjacent to the ROW, if it is determined that additional aquatic habitat enhancement (beyond what was recently completed for the adjacent floodplain areas) would be beneficial. If required this would include detailed habitat mapping to ensure created aquatic habitat features are consistent with what was planned and installed, and may include targeted fish community surveys to determine whether the target fish community is using the features.

10.0 Summary and Recommendations

NRSI was retained by HDR, on behalf of Halton Region, to complete a NER to inform the Municipal Class EA and Preliminary Design for improvements to James Snow Parkway, between Britannia Road and just south of Highway 401, in the Town of Milton. The study area represents a divide between highly developed residential lands to the west of the road, and lands that are rapidly urbanizing through warehouse and other commercial/industrial developments to the east of the road. Natural heritage cover is highly fragmented throughout the study area, mainly comprising woodland and wetland features that in many cases are entirely surrounded by or immediately adjacent to urban development. The Middle Sixteen Mile Creek Tributary represents the primary watercourse within the study area, and its crossing of James Snow Parkway, which has recently been restored through previous land development activities, represents a key ecological linkage that connects lands west and east of the ROW. One SAR, Butternut, was confirmed within the study area where it occurs as two side-by-side trees within a Dry-Fresh Deciduous Forest (FOD4) feature. Wooded natural features throughout the study area may also provide habitat for SAR bats.

The Preliminary Design will require localized widening of the existing ROW, and grading encroachment into the edge of certain natural features, primarily on the east side of the road. These include grading encroachments into significant woodland features that represent Key Features in the Region's NHS. Direct impacts to these features will be limited to their ROW-facing edges, but will largely represent permanent loss of habitat to accommodate ROW design elements such as sidewalks and cycle tracks based on the Preliminary Design. It is generally recommended that the Detailed Design consider options to eliminate or minimize development encroachment into significant natural features.

The proposed undertaking will require the removal of several roadside trees, both within and outside of the ROW, to accommodate the Preliminary Design. Tree removals must be compensated according to Regional guidelines. Where possible, these compensation tree plantings should be established within the James Snow Parkway ROW as part of natural feature edge restoration efforts and landscape planting designs. A supplementary tree inventory will be required at the Detailed Design stage to account for the full extent of the planned road improvements, and will include an updated assessment of tree removal and compensation requirements as well as details of tree retention and protection requirements.

An updated assessment of impact to the mapped SAR Butternut trees should be completed at the Detailed Design stage. If impacts to these trees or their habitat zones may occur, it is recommended that a Butternut Health Assessment be completed for these trees during the Detailed Design stage, or that existing Butternut Health Assessment results be reviewed, to determine if these trees fall under the protections of the SCA. If these Butternuts are determined to be “retainable” (i.e., Category 2 or 3 trees), and if impacts to these trees or their habitat zones may occur, then additional actions pursuant to the SCA may be required.

The existing bridge structure spanning the Middle Sixteen Mile Creek Tributary within the study area will not require alteration or replacement. Therefore, negative effects on fish or aquatic habitats are not anticipated provided standard construction mitigation measures are implemented and work is maintained outside of the high-water mark. A DFO Request for Review submission is not expected to be required provided these measures are implemented.

Various other recommendations were provided to effectively mitigate indirect and induced impacts associated with the planned road improvements. Recommendations have also been provided for the restoration and enhancement of the adjacent natural features and the watercourse channel within the ROW, and to monitor construction-stage mitigation measures and post-construction ecological enhancements.

Provided the above measures are implemented, and subject to future Detailed Design-stage requirements, it is expected that all applicable Regional, municipal, and provincial plan policies regarding the need to minimize infrastructure reconstruction disturbances to the natural heritage features and ecological functions have been appropriately satisfied.

10.1 Recommendations

The following recommendations should be carried forward for application during the Detailed Design stage, or for inclusion in the Detailed Design plans for James Snow Parkway. See the Preliminary Tree Inventory Report (NRSI 2025) for additional recommendations pertaining to tree protection and compensation.

Table 4. Summary of Natural Environment Report recommendations.

Number	Recommendation
1.	Efforts should be made during the Detailed Design stage to avoid or minimize encroachments into natural features, with a focus on identified significant natural features.
2.	An updated assessment of impacts to Butternuts and their habitat should be completed at the Detailed Design stage. If impacts may occur, a Butternut Health Assessment should be completed for the identified Butternut trees by a Qualified Professional, or existing Butternut Health Assessment information should be reviewed, to determine if they fall under the protections of the <i>Species Conservation Act</i> .
3.	If the Butternut trees are confirmed to be subject to the requirements of the <i>Species Conservation Act</i> , and if the trees or their habitat may be impacted, additional actions as required pursuant to the <i>Species Conservation Act</i> must be undertaken.
4.	Measures should be taken to avoid or mitigate impacts to regionally significant vegetation species along roadside areas, such as through transplantation of individuals or seed collection and dispersal if necessary.
5.	A supplementary tree inventory will be required to update the preliminary tree inventory data collected for the EA, and an updated Tree Protection Plan should be prepared based on the Detailed Design.
6.	Landowner permissions will be required to accommodate removal of an estimated 33 boundary or privately owned inventoried trees.
7.	An estimated total of 192 compensation tree plantings will be required, and should be planted within the James Snow Parkway ROW as part of natural feature edge restoration and landscape plan designs, to the extent feasible.
8.	All tree removals should be completed outside of the period April 1-November 30 to avoid contravention of the <i>Species Conservation Act</i> with respect to SAR bat impacts. All other non-tree vegetation removal should be completed outside of the period April 1-August 31 to avoid contravention of the <i>Migratory Birds Convention Act</i> .
9.	An updated bat habitat assessment of the study area wooded natural features should be completed to assess their potential for use by the SAR Hoary Bat and Eastern Red Bat.
10.	An updated assessment of impacts to SAR bats and their habitat should be completed at the Detailed Design stage. If impacts may occur, additional actions as required pursuant to the <i>Species Conservation Act</i> must be undertaken.
11.	The wildlife movement path under the James Snow Parkway bridge conveying the watercourse should be considered for enhancements, such as through determination of whether it contains appropriate substrates to allow wildlife movement, and the establishment of wildlife cover habitat objects under and adjacent to the bridge structure. The need for other wildlife crossing mitigation measures (e.g., signage, directional fencing) should be considered during the Detailed design stage.
12.	Construction works should maintain a footprint above the Middle Sixteen Mile Creek Tributary high-water mark and adhere to the DFO's Measures to Protect Fish and Fish Habitat. If this cannot be achieved, a DFO Request for Review may be required.
13.	Standard construction mitigation measures at the watercourse crossing must be implemented, including but not limited to appropriate sediment and erosion control methods, work site isolation, completing work in the dry where possible, and associated monitoring of the efficacy of these measures.
14.	Tree protection fencing must be installed and regularly inspected for structural integrity and functionality in accordance with the Tree Protection Plan.

Number	Recommendation
15.	The Clean Equipment Protocol (Halloran et al. 2016) should be implemented to mitigate the potential spread of invasive plant species from one site to another during construction.
16.	Standard dust control measures must be implemented during construction, such as moistening areas of bare, dry soil as needed.
17.	Daily construction activities should be restricted to the period 7:00hr and 19:00hr.
18.	Any artificial lighting for construction purposes should be turned off or directed away from the adjacent natural features following the completion of daily construction activities.
19.	Sediment and erosion control measures must be installed and regularly inspected in accordance with an Erosion and Sediment Control Plan.
20.	If riparian vegetation is disturbed, ESC measures should be implemented including silt fencing, rock check flow dams and/or sedimentation ponds to protect downstream areas.
21.	OGS units with underground infiltration systems are to be installed to adequately treat road runoff water quality prior to discharge into adjacent natural features.
22.	A Spill Response Plan should be prepared and should be employed as necessary in the event of any contaminant spills during construction activities
23.	Groundwater dewatering discharge will require appropriate treatment to meet Provincial Water Quality Objectives before being released into the watercourse. Any groundwater discharge that is directed to the land surface must be discharged at least 30m away from any water bodies
24.	Recommendations for measures to minimize winter road salt application and release into the adjacent natural features should be considered during the Detailed Design stage.
25.	Permanent fencing should be installed along the ROW limits facing the Swamp Maple Mineral Deciduous Swamp (SWD3-3), Dry-Fresh Deciduous Forest (FOD4), Dry-Fresh Sugar Maple-Hickory Deciduous Forest (FOD5-5), Fresh-Moist Oak-Maple-Hickory Deciduous Forest (FOD9), and the Mineral Cultural Woodland (CUW1) south of Derry Road, to inhibit unauthorized human access.
26.	A Restoration Planting Plan should be prepared to identify and map details of planned vegetation enhancement and restoration plantings along natural feature edges.
27.	The Restoration Planting Plan should be completed as part of an Edge Management Plan that will focus recommended measures to restore and improve the condition and resiliency natural feature edges that have been disturbed through road construction activities.
28.	As part of the Edge Management Plan, an updated assessment of invasive species cover along natural feature edges should be completed, and an Invasive Species Management Plan should be implemented post-construction.
29.	A natural environment Monitoring Plan should be developed that incorporates pre-construction and construction-stage inspections of tree protection and erosion and sedimentation control measures, and inspections of restoration planting success.
30.	An Environmental Implementation Report should be prepared during the Detailed Design stage, which will summarize the results of any necessary supplemental field surveys, incorporate an updated impact assessment based on the refined Detailed Design, and update associated mitigation recommendations and necessary actions following agency consultations.

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