



Design and Construction Report

**New Highway 7 Phase 3 – Advanced
Vegetation Clearing and Fencing
Ministry of Transportation, West Region
G.W.P. 408-88-00**

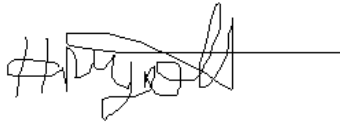
Ontario 

October 31, 2023

New Highway 7 Phase 3 Advanced Vegetation Clearing and Fencing
City of Guelph to the City of Kitchener
G.W.P. 408-88-00

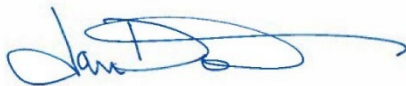
Design and Construction Report
Prepared for the Ministry of Transportation

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Glossary

Acronym	Description
AA	Archaeological Assessment
ANSI	Area of Natural and Scientific Interest
BHA	Butternut Health Assessment
BMP	Best Management Practices
CEAA	Canadian Environmental Assessment Act
CHER	Cultural Heritage Evaluation Reports
DCR	Design and Construction Report
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ELC	Ecological Land Classification
ESA	Endangered Species Act
ESC	Erosion Sediment Control
GRCA	Grand River Conservation Authority
HCCC	Haudenosaunee Confederacy Chiefs Council
HDI	Haudenosaunee Development Institute
IDR	Initial Design Report
LSW	Locally Significant Wetland
MBCA	Migratory Birds Convention Act
MBR	Migratory Bird Regulations
MNRF	Ministry of Natural Resources and Forestry
MECP	Ministry of Environment, Conservation and Parks
MTO	Ministry of Transportation
MCFN	Mississaugas of the Credit First Nation
MCM	Ministry of Culture and Multi-culturalism
NHIC	Natural Heritage Information Centre
NSA	Noise Sensitive Area
OASDB	Ontario Archaeological Sites Database
OPSS	Ontario Provincial Standard Specifications
PSW	Provincially Significant Wetland
ROW	Right-of-way
SAR	Species at Risk
SARA	Species at Risk Act
SCC	Species of Conservation Concern
SNEC	Six Nations of the Grand River Elected Council
TESR	Transportation Environmental Study Report

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1. Introduction

This Design and Construction Report (DCR) documents the proposed vegetation clearing and right-of-way (ROW) fence installations not completed as part of Phase 1 for new Highway 7 construction. In 1997, MTO completed the Individual Environmental Assessment (EA) for the construction of a new, four-lane highway between Kitchener and Guelph, Ontario. The new highway originates in the Regional Municipality of Waterloo and extends from the Kitchener-Waterloo Expressway (Highway 85) easterly to the Hanlon Expressway (Highway 6) in the City of Guelph, in the County of Wellington. The EA was approved with conditions in March 2007 as noted in the Highway 7 Kitchener to Guelph Amendment to the Environmental Assessment Report 1997 (2004).

Design improvements developed from the subsequent Value Engineering Study were presented at two Public Information Centres held on May 3, 2011 (Kitchener) and May 5, 2011 (Guelph) and were documented in a Transportation Environmental Study Report (TESR) to amend the approved individual EA. The TESR received environmental clearance for ROW Designation and Expropriation on October 22, 2012.

The Initial Design (30% Detailed Design) phase was completed in 2014 and is documented in the 2014 Initial Design Report (IDR). The Initial Design phase further developed and refined the approved EA design and incorporated the recommended Value Engineering design improvements.

Phase 1 – Construction Completed

Phase 1 of new Highway 7 construction began in 2015 when the Guelph Street overpass was widened to accommodate the future interchange at Highway 85 and is now complete. Phase 1 also included:

- Widening and extension of Shirley Avenue in Kitchener;
- Relocation of municipal utilities at the Victoria Street Bridge over Highway 85 in Kitchener;
- Clearing of vegetation and fencing of select areas along the new Highway 7 ROW between Kitchener and Guelph; and
- Replacement of the Victoria Street Bridge over Highway 85 in Kitchener.

Phase 2 – Grand River Bridges

Building on the approved EA for new Highway 7, MTO is completing the Detailed Design for the two new bridges crossing the Grand River to accommodate the eastbound and westbound lanes of new Highway 7.

Phase 3 – Completion of the New Highway

The engineering and environmental work for the final phase of new Highway 7 is on-going. DCRs are being prepared for other Phase 3 contracts ahead of construction.

1.1 Summary Description of the Undertaking

1.1.1 ROW Fencing Installation

Fencing will be installed in select areas within the ROW, as required.

1.1.2 Vegetation Clearing

The federal Migratory Bird Convention Act (MBCA) protects the nests, eggs and young of migratory bird species from harm or destruction. Environment Canada considers the “general nesting period” of breeding birds in southern Ontario to be between late March and the end of August. As such, no vegetation clearing or disturbance to nesting bird habitat shall occur during the peak period of bird nesting between April 1st to August 31st of any given year.

Vegetation removal will be required throughout the new Highway 7 corridor as identified within the Detailed Design drawings. Vegetation clearing will be undertaken outside of the breeding bird timing window of April 1st to August 31st of any given year to protect migratory breeding birds and their nests.

In line with the ESA permit for Little Brown Myotis, clearance will be restricted to the vegetation removal period which can permit clearance from October 1st to March 31st. Additional mitigation requirements are to be implemented as outlined in the ESA permit conditions.

1.2 Study Area/Project Limits

The following image shows a high-level overview of the proposed Project route.

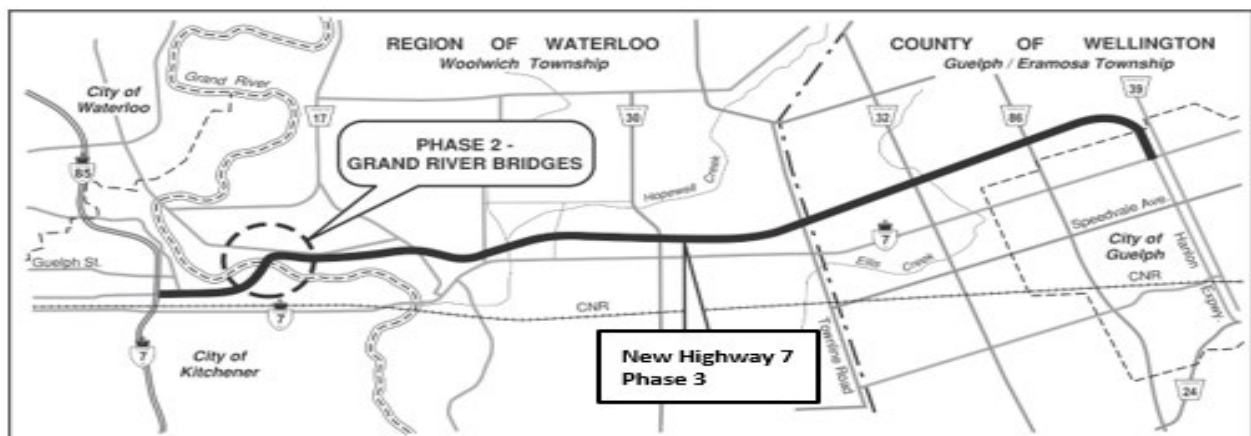


Figure 1 Overview of Project Route

For a more detailed overview of the project boundary refer to Appendix A of this DCR.

1.3 Purpose of the Design and Construction Report

This DCR reflects the Detailed Design for the new Highway 7 Project and provides recommendations for environmental mitigation for the Phase 3 clearance scope and builds on the

Highway 7 Kitchener to Guelph Amendment to the Environmental Assessment Report 1997 (2004) and the Highway 7 New Transportation Environmental Study Report to Amend the Individual Environmental Assessment (2012).

This DCR has been prepared to:

- Describe aspects of the Detailed Design for the new Highway 7 Route;
- Document specific environmental impacts associated with the project;
- Confirm mitigation activities that will be performed to address environmental impacts; and
- Confirm monitoring methods and requirements for the Project.

2. Consultation Process

In April 2017, MTO provided a progress update for the status of new Highway 7 between Kitchener and Guelph through notifications to external agencies, municipalities, Indigenous communities, and the public through the launch of a Project website at www.NewHighway7.ca.

2.1 Public Consultation and Engagement

The progress update in April 2017 included the 'Notice of Study Commencement for Detailed Design' for the new Highway 7 Project. The Ontario Government notice was advertised in the Waterloo Region Record newspapers on May 3, 2017, and the Guelph Tribune on May 4, 2017. The notice included information on the three phases of construction of new Highway 7, a map showing the Project limits, and Project Team contact details. Notices were also sent to approximately 800 members of the public within the new Highway 7 study limits on April 26, 2017.

Public consultation continues with the publication of this DCR welcoming comments for the 'Phase 3 Advanced Vegetation Clearing and Fencing' throughout the 30-day comment period.

2.2 Indigenous Consultation and Engagement

The Progress Update in April 2017 included the 'Notice of Study Commencement for Detailed Design' for the new Highway 7 Project. The Ontario Government notice was advertised in the Turtle Island News and Two Row Times newspapers on May 3, 2017.

The following Indigenous communities received notification during the Study including the 'Notice of Completion – DCR Filing for Phase 3 Advance Vegetation Clearance and Fencing':

- Six Nations of the Grand River Territory;
- Mississaugas of the Credit First Nation; and
- Haudenosaunee Development Institute.

2.3 Stakeholder and Ministry Consultations

The following ministries and stakeholders have been consulted throughout the Project:

Federal Agencies	
<ul style="list-style-type: none"> ○ Canadian Transportation Agency ○ Environment and Climate Change Canada 	<ul style="list-style-type: none"> ○ Transport Canada – Ontario Region ○ Fisheries and Oceans Canada (DFO) ○ Impact Assessment Agency of Canada

Provincial Ministries	
<ul style="list-style-type: none"> ○ Ministry of Transportation (MTO) ○ Ministry of Agriculture, Food and Rural Affairs ○ Ministry of Community Safety and Social Services ○ Ministry of Municipal Affairs and Housing ○ Ministry of Indigenous Affairs ○ Ministry of Citizenship and Multiculturalism ○ Ministry of the Solicitor General ○ Ministry of Education 	<ul style="list-style-type: none"> ○ Ministry of the Environment, Conservation and Parks (MECP) ○ Ministry of Natural Resources and Forestry (MNR) ○ Grand River Conservation Authority (GRCA) ○ Conservation Ontario ○ Ontario Heritage Trust ○ Ministry of Economic Development, Employment, and Infrastructure

Municipalities	
<ul style="list-style-type: none"> ○ Police Services ○ Kitchener Fire Department ○ Region of Waterloo ○ Guelph Eramosa Township 	<ul style="list-style-type: none"> ○ Township of Woolwich ○ County of Wellington ○ City of Kitchener ○ City of Guelph

Other Stakeholders	
<ul style="list-style-type: none"> ○ Hydro One Networks Inc. ○ Nav Canada ○ Ontario Power Generation ○ Ontario Realty Corporation ○ Waterloo Regional International Airport 	<ul style="list-style-type: none"> ○ Councillor Wards/MPPs ○ Merry-Hill Golf Club ○ Hunterlane Stables ○ Pioneer Gas Station ○ Metrolinx Operations

3. Description of the Recommended Design

New Highway 7 will be an 18 km four-lane divided highway extending from Highway 7/Highway 85 in Kitchener easterly to Highway 6 (Hanlon Expressway) in Guelph and includes a new bridge crossing over the Grand River between Shirley Avenue and Bridge Street.

Vegetation clearance activities will be undertaken as part of an advanced works contract. These works will be performed in accordance with the Detailed Design drawings within the ROW boundary. Fencing may be installed throughout the corridor or in specific Project areas which will be determined by MTO, where required.

4. Potential Environmental Effects, Mitigation Measures and Commitments to Further Work

Potential direct and indirect environmental effects have been identified based on the planned vegetation clearing and fence installation works within the new Highway 7 corridor. In addition, proposed mitigation measures that will be implemented to minimize construction effects are provided along with any follow-up monitoring requirements. The proposed mitigation measures could include planning decisions, design features, construction requirements, construction constraints.

As the design details were further developed, environmental mitigation requirements were refined and detailed in the contract documents. The key to ensuring effective environmental quality control and risk management during the Project is to include approaches which:

- Identifies the environmental sensitivities within the Project boundary and adjacent sites;
- Presents the environmental protection measures in a way that can be translated into contractual requirements and for which compliance can be verified; and
- Includes a monitoring program which verifies that environmental protection measures are being implemented and are effective.

All responsible parties will become familiar with environmental risks and conflicts that arise from the proposed works. Mitigation activities and further provisions should be included in the contract documentation to address specific environmental and operational concerns.

4.1 Erosion and Sediment Control

An 'Erosion and Sedimentation Overview Risk Assessment' (2020) was completed by WSP for the proposed route. The report evaluated various regions to determine the erodibility of fill that may result from construction activities.

The report determined all areas of the Project contained high erosion potential due to the high soil erodibility, surficial geological materials, and the proximity to watercourses. Areas containing adjacent watercourses or wetlands were at the greatest risk of impacts from erosion conflicts. The report also indicated that erosion and sediment could be mitigated through implementation of best

management practices (BMPs) adhering to the Ontario Provincial Standard Specification (OPSS) during construction.

4.1.1 Potential Impacts

Established vegetation can function as a soil-stabilizer to reduce fluvial sediment transport into watercourses. Sediment deposits can have detrimental effects on watercourse quality including:

- Introduction of contaminants which are attached to sediment particles;
- Decrease of water depth that can inhibit navigation or passage of aquatic species;
- Death of aquatic species from gill irritation or breathing obstructions;
- Dislodgement or burial of plant species, and invertebrates that function as food sources;
- Reduction of light infiltration which affects schooling behavior and decreases survival; and
- Settling sediment that can damage or bury aquatic eggs causing death of fish species.

4.1.2 Mitigation Measures

Erosion and sediment control (ESC) measures will be implemented as part of construction for the advanced vegetation clearing and fencing contract, as required. These measures will then be regularly monitored and maintained as per OPSS 804 & OPPSS 805, respectively. Special attention and maintenance will be provided where sites have adjacent watercourses to control sediment from disturbed areas.

ESC BMPs were incorporated into the design and will be performed on-site in accordance with the Ontario Ministry of Transportation's 'Environmental Guide for Erosion and Sediment Control During Construction of Highway Projects' (2015).

Mitigation measures shall include:

- Installation of silt fencing or other soil stabilizing measures prior to construction;
- Regular monitoring and maintenance of ESC measures; and
- Stabilizing soils in the vicinity of watercourses following clearance activities with various ESC applications including but not limited to (hydro-seeding, matted fabrics).

4.2 Fish and Fish Habitat

During design, a series of studies were completed to gain information on fish and aquatic species within the Project route. The 'Fish and Fish Habitat Existing Conditions and Preliminary Impact and Mitigation Report' (2014) was prepared by MMM Group Limited to assess conditions at the preliminary design stage. This report was then superseded by a 'Fish and Fish Habitat Existing Conditions and Impact Assessment Report' (2018) conducted by WSP to acquire updated survey information and provide additional recommendations where bridge construction or adjacent works could impact fish and fish habitat. A separate DCR has been prepared by WSP (2023), specifically

addressing Phase 2 – Grand River Bridges, and provides further guidance on impacts, construction activities and recommended mitigations.

For this Phase 3 DCR, the fish and fish habitat impacts are not applicable. Where works are slated to occur in the vicinity of adjacent watercourses, mitigation in the form of ESC will be implemented. However, there are no in-water works activities within the clearance scope, and therefore will avoid direct conflicts to fish and fish habitats.

4.3 Vegetation and Terrestrial Habitats

During Detailed Design, WSP conducted a study of the existing vegetation and terrestrial communities within the Highway 7 corridor. The results were detailed in the 'Terrestrial Ecosystems Impact Assessment Report' (2020). It was determined that construction clearance works would cause impacts to several natural features, including interior forest habitat and wetlands. However, the affected vegetation communities are considered common for the region and do not include rare habitats.

The Project area is primarily agricultural and rural residential properties separated by hedgerows. Within the approved ROW, the majority of the habitat is comprised of cultural meadow and communities, which are dominated by non-native grasses. Manicured lawns, residential plantings, and natural features also make up a small portion of the terrestrial habitat.

4.3.1 Habitat Characterization:

The landscape surrounding the new Highway 7 is characterized by a mixture of natural and anthropogenic features. Findings from the terrestrial survey are accounted for below:

- No Provincial Parks within the study area;
- No Areas of Natural or Scientific Interest (ANSI) within the Project boundary;
- Primarily agriculture landscapes and rural residential properties separated by hedgerows;
- Vegetation communities identified in the proposed route entail: cultural meadow, cultural thicket, cultural woodlands, cultural plantations, hedgerows, and open agriculture.

The WSP report concluded that the established habitats contained little native botanical diversity or habitat values for the region.

However, this excluded wetlands within or adjacent to the Project route which are considered highly sensitive receptors to any proposed highway construction activities.

Woodlands also yielded potential for nesting species and thus require additional management ahead of vegetation clearance activities in line with the Migratory Birds Act (1994).

4.3.2 Significant Woodlands

Significant Woodlands are defined in the Waterloo Regional Official Plan (2015) as woodlands that meet all of the following criteria:

- Greater than four hectares in size, excluding any adjoining hedgerows;
- Consisting primarily of native species of trees; and
- Meets the criteria of a woodland in accordance with the provisions of the Regional Woodland Conservation By-law.

There are 8 Significant Woodlands within or adjacent to the New Highway 7 Project.

The Significant Woodlands in or directly adjacent to the Project are:

- Grand River Crossing (Grand River Valley) Woodland;
- Bloomingdale;
- Rosendale Woodland;
- Weiland Tract Woodland;
- Regional Road 30 Complex Woodland;
- Townline West Woodland;
- Townline East Woodland;
- Ellis Creek Woodland; and
- Marden South Woodland.

4.3.3 Significant Wetlands

There are 5 Provincially Significant Wetlands (PSWs) in or adjacent to the Project:

- Bloomingdale Rosendale Swamp;
- Breslau Wetland Complex;
- Ellis Creek Wetland Complex;
- Marden South Wetland Complex; and
- Waterloo Guelph Townline Wetland.

One Locally Significant Wetland (LSA) is also present within the alignment:

- Hopewell Creek Riparian Wetland.

4.3.4 Potential Impacts

Impacts from the advanced clearance of vegetation communities are anticipated. Although much of the vegetation in the approved ROW is cultural in nature (cultural meadow, agricultural land,

manicured lawn etc.), construction will also involve the permanent removal of natural vegetation and features.

Wetlands are generally considered to be sensitive features due to their dependence on specific hydrological regimes, with certain wetland types considered more sensitive due to their greater species or structural diversity and importance for specific habitats.

The works include direct longer-term and short-term impacts to vegetation as well as indirect impacts to adjacent retained vegetation features. These impacts include:

- Creating new forest edges, and highly disturbed ROW corridor;
- Impacting and removing edge and interior habitat;
- Potential spills of contaminants, fuels and other materials may reach semi-natural areas;
- Potential release of construction-generated sediment to adjacent habitats;
- Potential damage to adjacent natural vegetation from roadway maintenance activities such as salting and sanding, structure/culvert repairs and ditch cleanout;
- Potential salt runoff and salt spray into vegetated areas may cause loss of vegetation vigour and in extreme cases, vegetation dieback and spread of salt tolerant flora (halophytes); and
- Changes in drainage patterns (groundwater and or surface runoff flow) can impact dependent vegetation areas located either up-gradient or down-gradient of the ROW. An increase in downstream runoff can result in erosion impacts to receiving vegetation.

4.3.5 Mitigation Measures

Vegetation impacts are primarily associated with the intrusion into wetland and forest units.

Recommended general vegetation mitigation measures to minimize short-term and longer-term impacts to the local vegetation communities and their associated habitat functions include:

- Implementing vegetation restoration and enhancement plans in consultation with the Ministry of Natural Resources and Forestry (MNR) and Grand River Conservation Authority (GRCA) to offset vegetation removals, including the following:
 - An initial compensation approach for permanent forest and wetland vegetation removals and habitat loss at a 1:1 ratio. Continue to work with MNR and GRCA to identify priority areas for habitat replacement and finalize the approach to offset the impacts to vegetation communities and habitat features that adequately reflect the ecological functions that will be lost;

- Post-construction restoration plans will be available for the river valley crossing and forest blocks that will be disturbed during construction to offset vegetation removals; and
- Re-stabilize and re-vegetate all exposed surfaces as soon as possible following construction, using appropriate seed mixes, plantings or other appropriate cover.
- Short-term mitigation measures include the following:
 - Temporary ESC measures, per OPSS 577;
 - Clear delineation of vegetation clearing on contract drawings with on-site direction and confirmation during construction;
 - Vegetation removal and protection to be conducted in accordance with appropriate OPSS, including OPSS 201 and OPSS 565-1.
 - Proper removal and felling of trees, consideration for damaged plants along cleared edges, including hazards and susceptible trees;
 - Requirements for appropriate product handling and spills management procedures and equipment to be in place prior to construction; and
 - Requirement for inspections to be undertaken during key construction periods at key locations to ensure environmental protection measures are implemented and working, and any required remedial action is taken.
- Long-term measures include the following:
 - Final landscaping initiatives are to be implemented following review by the agencies (MNRF and GRCA);
 - Provide provision for edge plantings along the perimeter of forest/wetland edges that would benefit from new edge interiors from drying winds, sun exposure, and salt spray. Recommended use of native plantings to infill gaps in natural areas and to provide replacement planting where vegetation is removed;
 - Careful consideration for the use of herbicides applied in the ROW to address site-specific concerns regarding noxious weeds adjacent to agricultural land.

4.4 Wildlife

Wildlife surveys were undertaken in 2016 and 2017 throughout the Project route to identify local wildlife and species at risk (SAR) which were to be considered during Detailed Design and which could experience impacts from the proposed vegetation clearance works. Full details are outlined within the WSP 'Terrestrial Ecosystems Impact Assessment Report' (2020), prepared under separate cover.

The survey noted a presence of approximately 103 wildlife species at the time of the assessment. The species breakdown includes: 81 birds, 10 mammals, five insects, three reptiles, and five

amphibians. The relatively high number of species is expected due to the varied habitat conditions and high quantity of disturbance-tolerant species present.

The Project may also support mammals which were not observed during preliminary field surveys such as: Red Fox, Virginia Opossum, and a number of small mammals that often go undetected without targeted surveys.

4.4.1 Potential Impacts

4.4.1.1 Impacts on Forest Interior Habitat

An assessment was conducted for the Initial Design Report (MMM 2014). The investigation concluded that the loss of forest interior habitat of the eight woodland and wetland habitats in the Project would be small.

4.4.1.2 Impacts on Wildlife Movement

It was noted in the WSP 'Terrestrial Ecosystems Impact Assessment Report (2020), that deer movement occurs between Marden South Wetland and Ariss Woods. This corridor will be severed by the highway development and create a barrier to north-south movement. Deer use of the habitat will be reduced; however, some continued use of the north portion is anticipated as the conifer cover will remain intact and access to woodland/wetlands to the north will remain available.

Other wildlife movement in habitat features may be impacted where the alignment intrudes or severs features. There is the risk of increased mortality from wildlife species attempting crossings of the new highway from fragmented habitat areas.

4.4.1.3 General Wildlife Mitigation Measures

For the protection of general wildlife, the contractor will ensure that:

- Any wildlife incidentally encountered during construction will not be harmed and will be allowed to move away on its own;
- If wildlife encountered during construction does not move from the construction zone and there is a risk of wildlife injury, all activities that could potentially harm the individual will cease immediately; and
- SAR should not be handled, or treated in any manner that may disturb or harm them. If SAR do not move out of the impact area, MECP should be immediately contacted for guidance on how to proceed.

4.4.1.4 Timing Restrictions

Construction activities involving the removal of tress should be restricted between the beginning of April to the end of October, of any given year. This will ensure that no bats actively roosting in trees will be killed or harmed as a result of clearing activities and is outside of the migratory breeding bird season. Tree cutting should be timed to occur during the calendar months of

November 1 to March 31 and no cutting activity in forested areas should occur outside that period.

4.4.1.5 Migratory Birds Mitigation Measures

The MBCA (1994) and Migratory Birds Regulations (MBR) (2022) protect most species of migratory birds, and their nests and eggs. It is prohibited to damage, disturb or remove migratory bird nests when they contain a live bird or viable egg, including via incidental take, which is defined by Environment Canada as: “The inadvertent harming, killing, disturbance or destruction of migratory birds, nests and eggs.” The MBR also prohibits the deposit of harmful substances in waters and areas frequented by them.

For 18 species of migratory birds identified on SARA Schedule 1, the MBR 2022 provides year-round nest protection until they can be deemed abandoned. The Schedule includes certain migratory birds who either re-use their own nests from one year to the next (colonial species), or whose nests are commonly re-used by other species of migratory bird species, like Pileated Woodpeckers. If the nest of a Schedule 1 species has not been occupied by a migratory bird for the entirety of the waiting time indicated in the MBR 2022, it is considered abandoned, and to no longer have high conservation value for migratory birds.

A due diligence approach is recommended which includes the following management strategies:

- Awareness of the potential for nesting activity in the Project limits during the regional nesting period for the Nesting Zone (which extends from early April to late August);
- Avoidance of activities that may disturb or harm nesting migratory birds, eggs, or nests;
- Avoidance of vegetation clearing will be avoided during the regional nesting period;
- No removal or disturbance of active nests in accordance with the MBCA;
- If a nesting migratory bird is identified in or adjacent to the construction site and the construction activities are such that continuing construction in that area would result in a contravention of the MBCA, all activities will cease until a qualified avian biologist is able to confirm the nest is inactive (i.e., generally 48 hours after young leave the nest).
- Possible mitigation may include enacting buffer zones around the nest (circumference determined from a qualified biologist) until the nest is considered inactive.

4.5 Species at Risk

Based on current federal legislation (Species at Risk Act – Schedule 1) and provincial *Endangered Species Act* (ESA) (SAR in Ontario List), the following SAR were confirmed within the Highway 7 Project area in either 2016 or 2017:

- Butternut (federally and provincially Endangered);
- SAR Bats: primarily Little Brown Myotis, but also a single Northern Myotis (both federally and provincially Endangered);

- Bank Swallow (federally and provincially Threatened);
- Bobolink (federally and provincially Threatened);
- Chimney Swift (federally and provincially Threatened);
- Eastern Meadowlark (federally and provincially Threatened);
- Barn Swallow (federally Threatened, but provincially of Special Concern);
- Wood Thrush (federally Threatened, but provincially of Special Concern);
- Eastern Wood-Pewee (federally and provincially of Special Concern);
- Grasshopper Sparrow (federally and provincially of Special Concern);
- Monarch (federally and provincially of Special Concern);
- Snapping Turtle (federally and provincially of Special Concern); and
- Midland Painted Turtle (federally Special Concern, but provincially Not at Risk).

WSP also identified that the following SAR species had a moderate or high likelihood of presence in the Project area based on records of regional occurrence and key habitats used by the species:

- Red-headed Woodpecker (federally and provincially Endangered), but not observed during targeted surveys in 2022;
- Common Nighthawk (federally Threatened, but provincially of Special Concern);
- Northern Map Turtle (federally and provincially of Special Concern);
- Eastern Ribbonsnake - Great Lakes population (federally and provincially of Special Concern); and
- Eastern Milksnake (federally of Special Concern).

4.5.1 Species at Risk Overview

Based on WSP's 'Terrestrial Ecosystems Impact Assessment Report' (2020), of the SAR mentioned in Section 4.5 (above), the following are unlikely to be impacted by the development of Highway 7:

- Bank Swallow – no nesting habitat detected, and foraging activities unlikely to be affected;
- Chimney Swift – no breeding activity recorded, and foraging activities unlikely to be affected;
- Common Nighthawk – no individuals recorded, and any foraging activities are unlikely to be affected;
- Wood thrush – alignment occurs at the edge of breeding habitat; large areas of forest interior being retained;

- Northern Myotis – only one individual detected; MNRF confirmed no ESA authorization required; and
- Monarch – low numbers were recorded during surveys and any impacts to foraging/breeding habitat are anticipated to be temporary.

In accordance to Section 4.4, the following SAR are anticipated to experience minimal or low impacts, provided recommended mitigation measures are implemented:

- Barn Swallow – two barn structures with nesting habitats will be removed. Impacts have been mitigated by removing the nests outside the Barn Swallow active period and installing replacement nesting structures (nest cup kiosks);
- Bobolink and Eastern Meadowlark – breeding evidence for both species were recorded within the Project boundary. In some cases, the alignment will result in minimal edge impacts for the breeding habitat; MTO registered the proposed works with MNRF per the requirements of Ontario Regulation 242/08 and are to be compensated in accordance with ESA permit requirements and conditions;
- Grasshopper Sparrow – the majority of the field where breeding evidence was recorded will be maintained; additional habitat may be created through Bobolink/Eastern Meadowlark compensation areas.
- Red-headed Woodpecker – not recorded during breeding bird surveys, and there is low potential for impacts along forest edges, which can be mitigated by completing the proposed works outside of the breeding bird window.
- Northern Myotis – potential maternity roost habitat was assessed in the Project area, including cavity trees in forested areas. This species is not common in the Project area. MNRF has confirmed that only one of the potential SAR bat species, Little Brown Myotis, requires ESA authorization in the form of an Overall Benefit Permit.
- Eastern Ribbonsnake – potential impacts to individuals that may travel through construction areas or travel along access routes will be mitigated by installing temporary and/or permanent exclusion fencing and ensuring appropriate passage design(s) are installed at watercourse crossings.
- Snapping Turtle - potential impacts to individuals dispersing through construction areas or travelling along access routes can be mitigated by installing temporary and/or permanent fencing and utilizing timing or restrictions on in-water works.

There is potential for three additional herpetofauna species of conservation concern (SCC) to use habitat in the Project area: Blanding's Turtle, Northern Map Turtle, and Spiny Softshell. As was the case with Eastern Ribbonsnake and Snapping Turtle, these species may be incidentally encountered if they move across the highway or enter construction areas. Impacts to these turtles will be mitigated through measures including temporary exclusion fencing.

4.5.2 Mitigation Measures

In addition to the above wildlife measures, special provisions should be implemented in areas where SCC have been identified. These measures include:

- Implementation of site-specific mitigation measures identified within the ESA permit;
- Reference to specific Technical Memorandums for SAR that include detailed mitigation measures; such memos would include those for SAR Bats, birds and herpetofauna in the Project area;
- Daily maintenance and checks of mitigation measures and vehicles in SCC designated areas (i.e., fencing) to ensure wildlife has not become trapped or ensnared;
- Vehicle checks to be performed before mobilization to ensure species have not migrated into the bottom cavity overnight or during periods of inactive use, as species may attempt to enter such areas for warmth or shelter;
- Additional mitigation measures in line with the ESA permit for Little Brown Myotis will be implemented in accordance with stipulated permit conditions.

4.6 Noise

4.6.1 Potential Impacts

There is the potential for noise to result from construction equipment, vegetation removals and fencing construction. This could cause disturbance to adjacent property owners or sensitive receptors within the noise sensitive area (NSA).

4.6.2 Mitigation Measures

Standard mitigation measures will be implemented to keep construction noise impacts to a minimum throughout the duration of the Phase 3 Advanced Vegetation Clearing and Fencing works. The Contractor will be required to keep idling of construction equipment to a minimum to reduce noise emissions.

Despite compliance with any noise control measures identified in the contract documents, a persistent complaint will trigger field investigations to determine actual noise level emissions.

If noise level emissions for the construction equipment in use exceed the sound level criteria for construction equipment contained in the Ministry of Environment, Conservation and Parks Model Municipal Noise Control Bylaw, the Contractor will comply with the required sound level criteria and introduce quieter alternative equipment where possible.

4.7 Archaeology

Archaeological assessments were conducted within the Project limits for the new Highway 7 corridor. Additional intrusive archaeological investigations were undertaken where archaeological artifacts were discovered, or where project design could not be altered to avoid significant sites.

The Stage 1-2 archaeological assessment resulted in the identification of archaeological sites that demonstrate the Pre-Contact and nineteenth century Euro-Canadian occupations of the study area. Several sites were required to have further Stage 3 and Stage 4 intrusive investigations in advance of construction.

4.7.1 Indigenous Engagement for Archaeological Works

Indigenous engagement was included as part of the archaeological assessment for the new Highway 7 project. The Mississaugas of the Credit First Nation (MCFN), Six Nations of the Grand River Elected Council (SNEC), and the Haudenosaunee Confederacy Chiefs Council (HCCC), via the Haudenosaunee Development Institute (HDI), were involved in all phases of the archaeological assessment including: discussions about work planning, inclusion of archaeological monitors, requests for meetings, report sharing and archaeological sensitivity plans. The results of these discussions were applicable to all Stage 1-2, Stage 3, and Stage 4 archaeological assessments completed for this Project.

Indigenous monitors were deployed during the Stage 2 assessments and the Stage 3 and 4 excavations throughout the main corridor. The consultant licensed archaeologists: coordinated the deployment of monitors, provided site location information and field director contact information, provided summaries (when requested) of completed work, and tracked all points of engagement. They also provided regular updates on the progress of the assessments and excavations, and presented both the archaeological assessment results, strategies and the proposed recommendations to community representatives prior to the submission of reports.

Preliminary summaries of the Stage 4 results and recommendations were provided to the engaged Indigenous groups with a request for feedback.

4.7.2 Potential Impacts

Archaeological discoveries could be uncovered during vegetation clearance of fencing installations due to ground disturbance.

4.7.3 Mitigation Measures

Archaeological investigations were conducted within the ROW where construction activities would cause considerable ground disturbance. During Stage 1 investigations, each site was reviewed against historical records to characterize archaeological potential. Recommendations were then provided by the licensed archaeologists to advise which sites would require additional intrusive works (i.e., trenching or hand-digging) to obtain additional information ahead of ground disturbance, or where design mitigations should be adapted.

Several Stage 4 investigations were conducted in partnership with Indigenous Monitors to excavate core areas of select sites where high potential for archaeological materials were suspected to be present. Stage 4 investigations would be implemented where design could not mitigate for the anticipated disturbance of these high-potential sites. This would ensure removal and preservation of artifacts in advance of ground disturbance to avoid damaging significant quantities of archaeological materials.

Archaeological investigations have now been concluded within the Project boundary.

However, should any previously unknown or unassessed deeply buried archaeological resources be uncovered during development, the work area should be classified as a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act.

The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act. A licensed archaeologist shall be contacted to investigate the suspected archaeological materials before works are resumed.

4.8 Built Heritage and Cultural Landscapes

The cultural heritage resources within the Project limits were previously documented by Unterman McPhail Associates in various Cultural Heritage Evaluation Reports (CHER) and provided commentary on the heritage asset features, direct impacts and indirect impacts.

Cultural Heritage Evaluation Reports addressed the following structures on the route:

- 297 Woodlawn Road West – City of Guelph
- Grand River – City of Kitchener and Township of Woolwich
- 5395 Woolwich-Guelph Townline – Township of Guelph-Eramosa
- 5390 Township Road No. 3 – Township of Guelph-Eramosa
- 5432 Wellington Road 86 (Elmira Road North) – Township of Guelph-Eramosa

Cultural heritage features and their associated impacts are not applicable to this Phase 3 Design Construction Report as vegetation clearing and fencing will not disturb the cultural designated assets. Heritage impacts, including associated mitigation will be featured in a separate DCR.

5. Permits, Approvals and Authorizations

The following permits/approvals have been secured for the Project:

5.1 Endangered Species Act

A permit authorization under the ESA for all Threatened and Endangered species within the Project area has been received.

5.2 Archaeology

Archaeological clearance from MCM has been received for all archaeological assessments.

5.3 Notice of Activity

The Notice of Activity (NOA) process was followed to address impacts to Bobolink and Eastern Meadowlark and submitted as per O.Reg. 242/08.

6. Monitoring

The Contract Administrator will ensure that the environmental protection measures outlined in this Design and Construction Report are carried out. If the impacts of construction are different than anticipated, or if the method of construction is such that there are greater than anticipated impacts, the Contractor's methods of operation will be changed or modified to reduce those impacts.

During construction, the on-site Contract Administrator ensures that implementation of mitigating measures and key design features are consistent with the contract and external commitments. In addition, the effectiveness of the environmental mitigating measures is assessed to ensure that:

- Individual mitigating measures are providing the expected control and/or protection;
- Composite control and protection provided by the mitigating measures is adequate;
- Mitigation measures are maintained, and any necessary repairs are completed; and
- Additional mitigating measures are provided, as required, for any unanticipated environmental problems that may develop during construction.

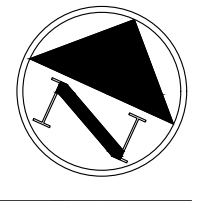
Contractors will ensure that the environmental measures outlined in the contract documents and within this DCR are established at each region of the Project.

Where problems are encountered, the MTO Environmental Section and appropriate provincial ministries and agencies will be contacted to provide additional input and recommendations.

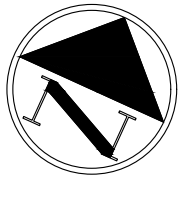
Appendices

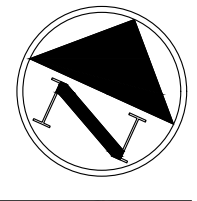
Appendix A

Detailed Drawings Project Boundary



GEOGRAPHIC TOWNSHIP OF WATERLOO





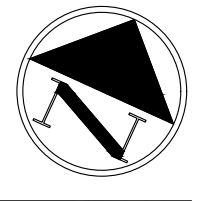
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SPITZIG RD

VICTORIA ST N (HWY 7)

GREENHOUSE RD

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VICTORIA ST N (HWY 7)

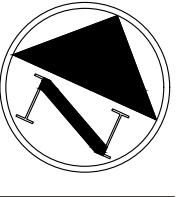
GREENHOUSE RD

GREENHOUSE RD

VICTORIA ST N (HWY 7)

SHANTZ STATION RD

GEOGRAPHIC TOWNSHIP OF WATERLOO

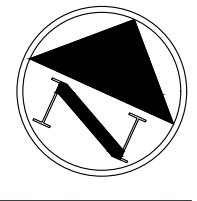


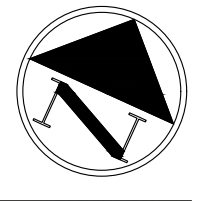
WOOLMICH GUELPH TOWNLINE

VICTORIA ST N (HWY 7)

HIGHWAY 7







ELMIRA RD

SILVERCREEK PKWY

CURTIS DR

RECAL RD

WOODLAWN RD W. (HWY 7)

