Centre Wellington Bridge and Transportation Network Study for Bridges
2-WG, 3-E, 5-E, and 7-E Natural Heritage Report

Township of Centre Wellington
1 MacDonald Square
Elora ON N0B 1S0

Centre Wellington Bridge and Transportation Network Study for Bridges 2-WG, 3-E, 5-E, and 7-E Natural Heritage Report

Township of Centre Wellington
1 MacDonald Square
Elora ON N0B 1S0

R.J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph ON N1H 1C4 CANADA

November 2024
300058117.0000

Distribution List

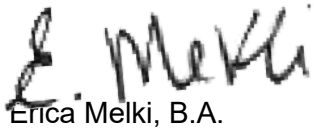
No. of Hard Copies	PDF	Email	Organization Name
0	Yes	Yes	Township of Centre Wellington

Record of Revisions

Revision	Date	Description
0	November 28, 2024	Initial Submission to Township of Centre Wellington

R.J. Burnside & Associates Limited

Report Prepared By:



Erica Melki, B.A.
Project Coordinator – Terrestrial Ecologist
EM:js/af

Mark Saunders, MES, B.Sc. (Hons), CAN-CISEC-IT
Aquatic Ecologist

Kevin Butt, B.Sc. (Env), Eco. Rest. Cert. TRAQ
ISA Certified Arborist and Terrestrial Ecologist
Vice President, Ecology

Report Reviewed By:

Tricia Radburn, MCIP, RPP
Senior Environmental Planner

Table of Contents

1.0 Introduction 1
2.0 Methodology 2
3.0 Existing Conditions 5
3.1 Terrestrial Environment 5
3.1.1 Terrestrial Natural Features at Each Structure 10
3.2 Aquatic Habitat Conditions 22
3.2.1 Aquatic Natural Features at Each Structure 24
4.0 Impacts, Mitigation and Monitoring Guidelines 26
5.0 Future Commitments 31
6.0 References 33

Tables

Table 1: Natural Environment Field Investigations 4
Table 2: Candidate SAR and SCC on the Subject Lands or Adjacent Lands Based on Background Review 6
Table 3: Bridge 2-WG Summary of Natural Heritage Features 11
Table 4: Bridge 3-E Summary of Natural Heritage Features 14
Table 5: Bridge 5-E Summary of Natural Heritage Features 17
Table 6: Bridge 7-E Summary of Natural Heritage Features 20
Table 7: Summary of Fish Species Historically Found in tributaries of the Speed River 22
Table 8: Existing Aquatic Habitat Conditions 23
Table 9: Summary of Impacts, Mitigation and Monitoring for Natural Features 27

Figures

Figure 1: Study Area 1
Figure 2: Natural Heritage Features at Bridge 2-WG 12
Figure 3: Natural Heritage Features at Bridge 3-E 15
Figure 4: Natural Heritage Features at Bridge 5-E 18
Figure 5: Natural Heritage Features at Bridge 7-E 21

Appendices

Appendix A Existing Aquatic Habitat Conditions Photo Page

Disclaimer

1.0 Introduction

The Township of Centre Wellington initiated a Bridge and Transportation Network Study for Bridges 2-WG, 3-E, 5-E, and 7-E in May 2024. This study will evaluate the role of these structures within the overall transportation network and connectivity in the community and determine the most suitable alternative at each bridge location.

Three of the four bridges (3-E, 5-E, 7-E) are closed due to poor condition. The fourth bridge (2-WG) is open with load restrictions. The study will evaluate whether each bridge should be closed permanently, rehabilitated (with minor upgrades and modifications), or replaced.

The four bridges being investigated as part of the study are located in the southeast quadrant of the Township of Centre Wellington, as shown on Figure 1.

The location of the bridges are as follows:

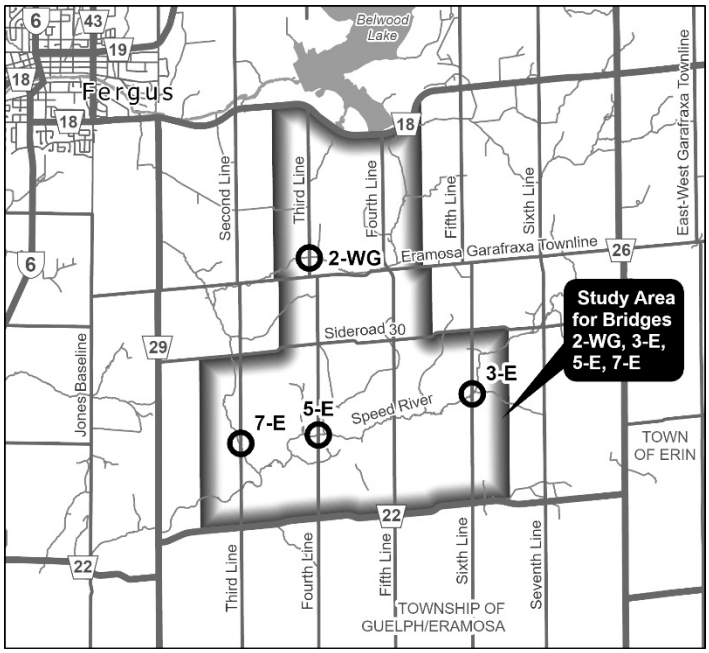


Figure 1: Study Area

- Bridge 2-WG is located on Third Line, approximately 330 m north of Eramosa-Garafraxa Townline
- Bridge 3-E is located on Sixth Line, approximately 1.9 km north of Wellington Road 22
- Bridge 5-E is located on Fourth Line, approximately 1.5 km north of Wellington Road 22
- Bridge 7-E is located on Third Line, approximately 1.5 km north of Wellington Road 22

The four bridges service a rural community which is home to agricultural, residential, and commercial properties. The network of roads within the study area carries motorized vehicles, pedestrians and cyclists and connects the community to Fergus, Belwood and the Township of Guelph-Eramosa to the south.

This Natural Heritage Report documents the existing natural heritage conditions, both terrestrial and aquatic, in a 120 m study area around each respective bridge.

The natural features associated with the watercourses and their crossings are part of larger connected natural systems comprised of varied forests, hedgerows, swamps and marshes. These areas are designated as Core Greenlands according to the Wellington County OP – Schedule B1. GRCA regulated lands are associated with all of the crossings.

This report will inform the preferred alternative decision by identifying natural feature constraints that will need to protected or mitigated from short-term or long-term impacts.

A review of existing documents and databases was used to identify the presence, or potential presence, of the natural features and their associated policy constraints, supported by a field investigation by Burnside ecologists.

2.0 Methodology

The following sources of information to determine the ecological constraints in the vicinity of each structure.

- Aerial photographic imaging and 1:10,000 Ontario Base Mapping (OBM)
- DFO Aquatic SAR mapping (2023)
- Ministry of Natural Resources and Forestry (MNRF) Make a Map: Natural Heritage Areas to identify natural heritage features and Natural Heritage Information Centre (NHIC) data of rare wildlife species on, and in the vicinity of, the subject lands: 1x1 km^2 Squares: 17NJ5540, 17NJ5838, 17NJ5737, 17NJ5940.
- MNRF Land Information Ontario (LIO) database
- MNRF Aquatic Resource Area (ARA) summary data
- Ontario Hydrology Network (OHN) mapping
- The Ontario Breeding Bird Atlas (OBBA) 2001-2005 – 10x10 km^2 Square 17NJ53 and 17NJ54
- Ontario Reptile and Amphibian Atlas (ORAA) – 10x10 km^2 Square 17NJ53 and 17NJ54
- Ontario Insect Atlas (OIA) 2005 – 2021 – 10x10 km^2 Square 17NJ53 and 17NJ54
- iNaturalist records
- eBird records
- GRCA Regulated Areas and Features Mapping
- Township of Centre Wellington Official Plan (2023)
- Wellington County Official Plan (2022)

In addition, field investigations were carried out, as follows:

- August 20, 2023:
  - An Ecological Land Classification (ELC) and botanical inventory were undertaken from the road ROW. ELC communities were described according to the updated Second Approximation 2008 codes (Lee, 2008) with reference to Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998) for units that could not be adequately described by the 2008 codes. Approximations of communities were made where permission to enter was not available and work was completed from the publicly-owned road right-of-way. Air photos were used to delineate the features, as needed.
  - Each bridge structure was surveyed by a Burnside ecologist for evidence of breeding birds, primarily Cliff Swallow nests
  - Visual aquatic habitat survey
  - Onsite meeting with First Nations monitors to review the project sites and introduce project. Billye Bomberry and Matthew Turner from Haudenosaunee Development Institute and Leanna Hill from Six Nations of the Grand River were in attendance.

A summary of conditions during field investigations is presented in Table 1.

Table 1: Natural Environment Field Investigations

Field Study	Methodology	Staff Involved	Date(s)	Time of Day	Weather Conditions		
					Precipitation/Cloud Cover	Temperature (°C)	Wind (Beaufort Wind Scale)[1]
Ecological Land Classification	Ecological Land Classification for Southern Ontario (Lee et al.,1998) of entire property.	Kevin Butt	August 20, 2024	0830 - 1730	No precipitation Partly cloudy	10°C on arrival 21°C on departure	2 - Slight Breeze
Aquatic Habitat Assessment	Ontario Ministry of Transportation (MTO) Fisheries Protocol - Environmental Guide for Fish and Fish Habitat (June 2009)	Mark Saunders	August 20, 2024	0830 - 1730	No precipitation Partly cloudy	10°C on arrival 21°C on departure	2 - Slight Breeze
Search for potential wildlife habitats	Survey throughout study areas to search for features that could provide habitat for wildlife or SAR habitat such as: Nests, reptile hibernacula, old barns, structures, uncapped chimneys, foundations, mature forest areas with cavities or other features suitable for bat roosting, turtle nesting or overwintering sites.	All staff	August 20, 2024	0830 - 1730	No precipitation Partly cloudy	10°C on arrival 21°C on departure	2 - Slight Breeze
Incidental flora and fauna observations	Visual observations of animals, tracks or scat and compilation of a plant inventory during all site visits.	Kevin Butt	August 20, 2024	0830 - 1730	No precipitation Partly cloudy	10°C on arrival 21°C on departure	2 - Slight Breeze

[1] Beaufort Wind Scale: 0 = calm, smoke rises vertically (0-2 km/hr); 1 = light air movement, smoke drifts (3-5); 3 = gentle breeze, wind felt on face; leaves rustle (6-11); 4 = moderate breeze, small branches moving, raises dust & loose paper (20-30); 5 = fresh breeze, small trees begin to sway (31-39); 6 = strong breeze, large branches in motion (40-50)

3.0 Existing Conditions

All areas are identified in Schedule B1 of the Wellington County OP as surrounded by Core Greenlands. Greenlands in Wellington County are determined by their composition of natural features. Any wetland in Wellington County is considered significant. Additionally, in Wellington County, all streams and valleylands are considered significant, providing protection to these watercourses at all structures.

The following sections document the terrestrial and aquatic natural heritage features and functions within each study area.

3.1 Terrestrial Environment

A review of NHIC shows that structures 3-E and 7-E are situated on the border of Evaluated Non-Provincially Significant Wetlands (PSW), however, the mapping shows that all four structures are found within the Natural Heritage System (NHS).

Based on a review of the OBBA, ORAA, and OIA, the following SAR (Endangered or Threatened) and Species of Conservation Concern (SCC) were identified as potentially being present on or adjacent to the subject lands (see Table 2).

Table 2: Candidate SAR and SCC on the Subject Lands or Adjacent Lands Based on Background Review

Common Name	Scientific Name	Bridge Location	Provincial S-Rank[1]	Provincial SARO Status[2]	Federal COSEWIC Status[3]	Federal SARA Status[4]	Federal SARA Schedule[4]	Habitat Requirements	Location of Habitat or Potential Habitat in the Study Area
Canada Warbler	*Cardellina canadensis*	3-E, 5-E, 2-WG	S5B	SC	SC	THR	1	Generally, prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.[5]	Potential habitat at 3-E, 5-E, and 7-E. No potential habitat at 2-WG
Chimney Swift	*Chaetura pelagica*	5-E, 7-E	S3B	THR	THR	THR	1	Historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys. Proximity to lakes is also a preferred habitat feature as they will forage for flying insects close to water.[5]	No potential habitat at any structures.
Bank Swallow	*Riparia riparia*	3-E, 5-E, 7-E	S4B	THR	THR	THR	1	Open habitats including farmland, lake/river shorelines, grasslands, and wetlands. Nests in exposed earthen banks along shorelines.[5]	No potential habitat at any structures.
Barn Swallow	*Hirundo rustica*	All bridges	S4B	SC	SC	THR	1	Farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, wetlands. Nests inside or on buildings, under bridges, and in road culverts; on rock faces, and in caves.[6]	Confirmed habitat at 3-E and 2-WG. Potential habitat at 5-E and 7-E.
Bobolink	*Dolichonyx oryzivorus*	All bridges	S4B	THR	SC	THR	1	Open grasslands and hay field for nesting. Can use large field of winter wheat and rye. High grass-to-forb ratio preferred. Can tolerate wetter fields.[7]	No potential habitat at any structures.
Eastern Meadowlark	*Sturnella magna*	All bridges	S4B, S3N	THR	THR	THR	1	Grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins.[8]	No potential habitat at any structures.

Common Name	Scientific Name	Bridge Location	Provincial S-Rank[1]	Provincial SARO Status[2]	Federal COSEWIC Status[3]	Federal SARA Status[4]	Federal SARA Schedule[4]	Habitat Requirements	Location of Habitat or Potential Habitat in the Study Area
Eastern Whip-poor-will	*Antrostomus vociferus*	5-E, 7-E	S4B	-	SC	THR	1	Found in areas with a mix of open and forested areas, such as savannahs, open woodlands or opening in more mature, deciduous, coniferous and mixed forests. It forages in open areas and roosts in forested areas. [6]	Potential habitat at 5-E and 7-E. No potential habitat at 3-E and 2-WG.
Eastern Wood-pewee	*Contopus virens*	All bridges	S4B	SC	SC	SC	1	Open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without.[5]	Potential habitat at all structures.
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	All bridges	S4B	SC	SC	SC	1	Prefers drier, sparsely vegetated grasslands, particularly rough or unimproved pastures with scattered forb and shrub growth, at least 30 ha in size. It will occasionally also use cultivated hayfields and cereal crops.[5]	No potential habitat at all structures.
Henslow's Sparrow	*Ammodramus henslowii*	5-E, 7-E	S1B	END	END	END	1	Occupies open fields. It prefers undisturbed areas with dense living grasses and a dense thatch of dead grasses. [6]	No potential habitat at any structures.
Midland Painted Turtle	*Chrysemys picta marginata*	5-E, 7-E	S4	-	SC	SC	1	Generally, prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation.[9]	No potential habitat at any structures.
Monarch	*Danaus plexippus*	All bridges	S2N, S4B	SC	END	END	1	In Ontario, larvae feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers.[8]	Potential habitat at 2-WG and 3-E although no Milkweed observed No potential habitat at 5-E and 7-E.

Common Name	Scientific Name	Bridge Location	Provincial S-Rank[1]	Provincial SARO Status[2]	Federal COSEWIC Status[3]	Federal SARA Status[4]	Federal SARA Schedule[4]	Habitat Requirements	Location of Habitat or Potential Habitat in the Study Area
Red-headed Woodpecker	*Melanerpes erythrocephalus*	5-E, 7-E	S3	END	END	END	1	Open woodland and woodland edges and often found in parks, golf courses and cemeteries because these areas typically have many dead trees which the woodpecker uses for nesting and perching.[7]	No potential habitat at any structures.
Snapping Turtle	*Chelydra serpentina*	All bridges	S4	SC	SC	SC	1	Shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.[8]	Potential habitat at all structures.
Western Chorus Frog (Great Lakes/ St, Lawrence-Canadian Shield population)	*Pseudacris triseriata*	All bridges	S4	-	THR	THR	1	The Western Chorus Frog is primarily a lowland terrestrial species. In marshes or wooded wetland areas, it is found on the ground or in low shrubs and grass. Like all other frogs, the Western Chorus Frog requires both terrestrial and aquatic habitats in close proximity. For breeding and tadpole development, it requires seasonally dry temporary ponds devoid of predators, particularly fish. It is very rarely found in permanent ponds. In southern Ontario, its range is bounded by the United States border in the south, Georgian Bay in the northwest, and south of Algonquin Park and up the Ottawa River valley to the vicinity of Eganville in the east. [6, 9]	Potential habitat at 3-E, 7-E and 2-WG. No potential habitat at 5-E.
Wood Thrush	*Hylocichla mustelina*	All bridges	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understory are usually prerequisites for site occupancy.[5]	No potential habitat at any structures.

Common Name	Scientific Name	Bridge Location	Provincial S-Rank[1]	Provincial SARO Status[2]	Federal COSEWIC Status[3]	Federal SARA Status[4]	Federal SARA Schedule[4]	Habitat Requirements	Location of Habitat or Potential Habitat in the Study Area

1 Provincial S-Rank: S1 to S3 are provincially tracked (S1-critically imperiled; S2-imperiled; S3-vulnerable). Breeding (B) status qualifier: Conservation status refers only to the breeding population of the species in the province. Non-breeding (N) status qualifier: Conservation status refers only to the non-breeding population of the species in the province.

2 SARO: Official Species at Risk in Ontario list under the ESA, 2007. Status Coding – Endangered (END), Threatened (THR), Special Concern (SC)

3 COSEWIC: Committee on the Status of Endangered Wildlife in Canada

4 SARA and Schedule: Species at Risk Act; The Act establishes Schedule 1 as the official list of wildlife SAR

5 Cadman, M.D., et al. (eds). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp

6 Species at Risk Public Registry https://species-registry.canada.ca/

7 McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (Sturnella magna) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, viii + 88 pp.

8 SARO List Species Descriptions (Species at risk in Ontario | ontario.ca)

9 Ontario Nature Reptile and Amphibian Atlas (ON Reptile & Amphibian Atlas (ontarioinsects.org))

The following sections describe natural features at each bridge site.

3.1.1 Terrestrial Natural Features at Each Structure

Bridge 2-WG

The natural heritage system adjacent to this structure is narrow, with hedgerows separating the watercourse from the agricultural lands. The northwest portion has a swamp feature, not identified on GRCA mapping that extends westward along the riparian edge. Open grown trees and hedgerows associated with the rural property are found at the northeast portion of the structure.

There were two Swallow nests under structure identified during the field investigation.

A summary is provided in Table 3 and is illustrated on Figure 2.

Table 3: Bridge 2-WG Summary of Natural Heritage Features

ELC Code	ELC Description	Provincially Significant Wetlands/Other Wetlands	Significant Woodlands	Candidate Significant Wildlife Habitat
SWTM3-1	Missouri Willow Mineral Deciduous Thicket Swamp	Evaluated Non-PSW	N/A	Turtle Wintering Areas
MEGM3-5	Smooth Brome Graminoid Meadow	N/A	N/A	No Candidate SWH
TAGM5	Fencerow	N/A	N/A	No Candidate SWH
CVR_4	Rural Property	N/A	N/A	No Candidate SWH
OAGM1	Annual Row Crops	N/A	N/A	No Candidate SWH

Wetland (GRCA)

Watercourse (GRCA)

Ecological Land Classification

Bridge

Study Area

ELC Descriptions
CVR_4: Rural Property
MEGM3-5: Smooth Brome Graminoid Meadow
OAGM1: Annual Row Crops
SWTM3-1: Missouri Willow Mineral Deciduous Thicket Swamp
TAGM5: Fencerow

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -46.64°	Scale Factor: 0.99960

Grid North

0 30 50 80 100
Metres

BURNSIDE

Client
TOWNSHIP OF CENTRE WELLINGTON

Figure Title
CENTRE WELLINGTON BRIDGE AND TRANSPORTATION NETWORK STUDY FOR BRIDGES 2-WG, 3-E, 5-E, AND 7-E
NATURAL HERITAGE REPORT
ECOLOGICAL LAND CLASSIFICATION
BRIDGE 2-WG

Drawn	Checked	Date	Figure No.
HN	KB	2024/11/28	2
Scale		Project No.	
H 1:1,250		300058117	

File Path: \\GUE-Nasuni-v-07.rjburnside.com\NasuniVolumeGIS\Data\CADD\058117\00000\08-GIS\058117 Centre Wellington EA\058117 Centre Wellington EA.aprx Print Date: 2024/11/28 Time: 01:06 PM

Bridge 3-E

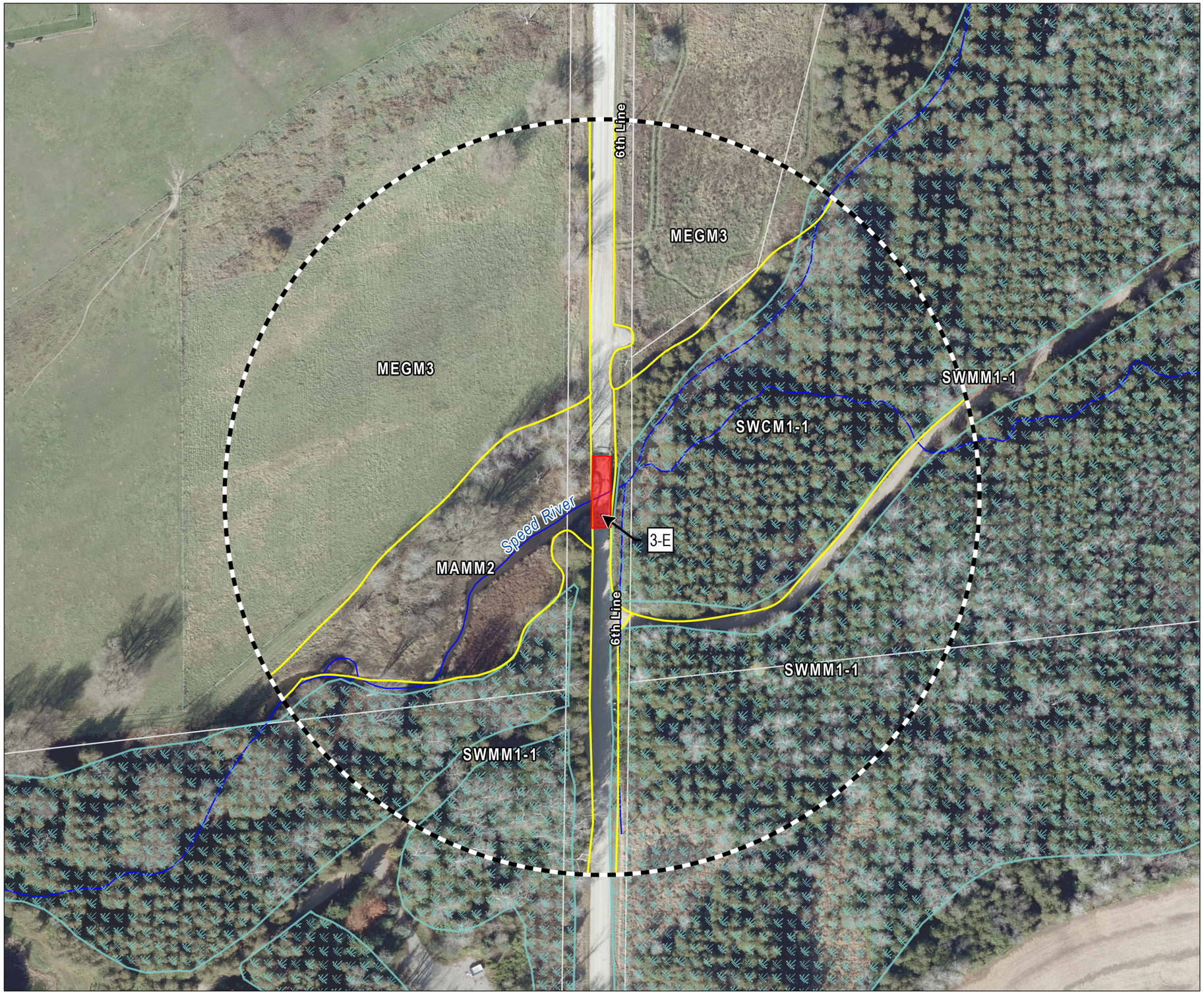
This structure crosses an extensive treed swamp system associated with the riparian area, associated with the evaluated wetland. These swamps are dominated by White Cedar with varying levels of hardwood tree species. An isolated forb-dominated meadow marsh associated with the riparian lands is found west of the structure. Meadows / grazing pastures are found north of the valley system.

There were three Swallow / Eastern Phoebe nests under structure identified during the field investigation.

A summary of these features is provided in Table 4 and illustrated on Figure 3 below.

Table 4: Bridge 3-E Summary of Natural Heritage Features

ELC Code	ELC Description	Provincial Significant Wetlands/Other Wetlands	Significant Woodlands	Candidate Significant Wildlife Habitat
MAMM2	Forb Mineral Meadow Marsh	Non-Provincially Significant Wetland	N/A	Amphibian Breeding Habitat (Wetlands) Marsh Breeding Bird Habitat
SWCM1-1	White Cedar Coniferous Swamp	Non-Provincially Significant Wetland	Yes	Raptor wintering area Bald Eagle & Osprey Nesting, Foraging, Perching Turtle Wintering Areas
SWMM1-1	White Cedar – Hardwood Mineral Mixed Swamp	Non-Provincially Significant Wetland	Yes	Raptor wintering area Bald Eagle & Osprey Nesting, Foraging, Perching Turtle Wintering Areas
MEGM	Dry-Fresh Graminoid Meadow	N/A	N/A	Special Concern and Rare Wildlife Species



Wetland (GRCA)

Watercourse (GRCA)

Ecological Land Classification

Bridge

Study Area

ELC Descriptions

MAMM2: Forb Mineral Meadow Marsh
MEGM3: Dry - Fresh Graminoid Meadow
SWCM1-1: White Cedar Mineral Coniferous Swamp
SWMM1-1: White Cedar - Hardwood Mineral Mixed Swamp

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -46.64°	Scale Factor: 0.99960

Grid North

0 30 50 80 100

Metres

BURNSIDE

Client

TOWNSHIP OF CENTRE WELLINGTON

Figure Title

CENTRE WELLINGTON BRIDGE AND TRANSPORTATION NETWORK STUDY FOR BRIDGES 2-WG, 3-E, 5-E, AND 7-E
NATURAL HERITAGE REPORT
ECOLOGICAL LAND CLASSIFICATION
BRIDGE 3-E

Drawn	Checked	Date	Figure No.
HN	KB	2024/11/28	3
Scale		Project No.	
H 1:1,250		300058117	

File Path: \\GUE-Nasuni-v-07.rjburnside.com\NasuniVolumeGIS\Data\CADD\058117\00000\08-GIS\058117 Centre Wellington EA\058117 Centre Wellington EA.aprx Print Date: 2024/11/28 Time: 01:11 PM

Bridge 5-E

The adjacent lands at this crossing are varied and include forest communities, plantation, rural residential, hedgerows and pasture / hayfield. The plantation found southeast of the crossing is dominated by Norway spruce (*Picea abies*). There are two Fresh-Moist White Cedar forest communities identified at the southwest and northeast portions of the Study Area, adjacent to the two rural property lands. The rural properties only have a small area being managed as manicured turf for amenity space but are otherwise densely treed. The pasture / hayfield is dominated by cool season grasses with abundant Goldenrod, Wild Carrot and meadow forbs. A mature hedgerow of White Cedar is found between the watercourse and the pasture. A Fresh-Moist White Cedar - Hardwood Mixed Forest is found at the southeast corner of the Study Area that contains wetland immediately beyond the Study Area limit, as identified by GRCA mapping.

No bird nests were observed under the structure.

A summary of these features is provided in Table 5 and illustrated on Figure 4.

Table 5: Bridge 5-E Summary of Natural Heritage Features

ELC Code	ELC Description	Provincially Significant Wetlands/Other Wetlands	Woodlands	Candidate Significant Wildlife Habitat
TAGM1	Coniferous Plantation	N/A	Contiguous with extensive forested riparian corridor	No Candidate SWH
TAGM5	Fencerow	N/A	N/A	No Candidate SWH
FOCM4-1	Fresh-Moist White Cedar Coniferous Forest	N/A	Contiguous with extensive forested riparian corridor	Raptor wintering area Bald Eagle & Osprey Nesting, Foraging, Perching Special Concern and Rare Wildlife Species
FOMM7-2	Fresh-Moist White Cedar – Hardwood Forest	N/A	Contiguous with extensive forested riparian corridor	Raptor wintering area Bald Eagle & Osprey Nesting, Foraging, Perching Special Concern and Rare Wildlife Species
OAGM5	Open Pasture	N/A	N/A	Special Concern and Rare Wildlife Species
CVR_4	Rural Property	N/A	N/A	No Candidate SWH

Wetland (GRCA)

Watercourse (GRCA)

Ecological Land Classification

Bridge

Study Area

ELC Descriptions
CVR_4: Rural Property
FOCM4-1: Fresh - Moist White Cedar Coniferous Forest
FOMM7-2: Fresh - Moist White Cedar - Hardwood Mixed Forest
OAGM4: Open Pasture
TAGM1: Coniferous Plantation
TAGM5: Fencerow

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -46.64°	Scale Factor: 0.99960

Grid North

0 30 50 80 100
Metres

BURNSIDE

Client
TOWNSHIP OF CENTRE WELLINGTON

Figure Title
CENTRE WELLINGTON BRIDGE AND TRANSPORTATION NETWORK STUDY FOR BRIDGES 2-WG, 3-E, 5-E, AND 7-E
NATURAL HERITAGE REPORT
ECOLOGICAL LAND CLASSIFICATION
BRIDGE 5-E

Drawn	Checked	Date	Figure No.
HN	KB	2024/11/28	4
Scale		Project No.	
H 1:1,250		300058117	

File Path: \\GUE-Nasuni-v-07.rjburnside.com\NasuniVolumeGIS\Data\CADD\058117\00000\08-GIS\058117 Centre Wellington EA\058117 Centre Wellington EA.aprx Print Date: 2024/11/28 Time: 01:16 PM

Bridge 7-E

The majority of the land around this crossing within the Study Area is identified as White Cedar Mineral Coniferous Swamp that extends throughout the riparian corridor that is associated with the evaluated wetland. These forested lands connect with upland and riparian forested communities (forests, swamps and plantations) on both sides of the road. Rural property and annual row crop lands are also found within the Study Area of this site.

No bird nests were observed under the structure.

A summary of these features is provided below in Table 6 and illustrated on Figure 5.

Table 6: Bridge 7-E Summary of Natural Heritage Features

ELC Code	ELC Description	Provincially Significant Wetlands/Other Wetlands	Woodlands	Candidate Significant Wildlife Habitat
SWCM1-1	White Cedar Mineral Coniferous Swamp	Non-Provincially Significant Wetland	Contiguous with extensive forested riparian corridor	Raptor wintering area Bald Eagle & Osprey Nesting, Foraging, Perching Turtle Wintering Areas
OAGM1	Annual Row Crops	N/A	N/A	No Candidate SWH
CVR_4	Rural Property	N/A	N/A	No Candidate SWH

Wetland (GRCA)

Watercourse (GRCA)

Ecological Land Classification

Bridge

Study Area

ELC Descriptions
CVR_4: Rural Property
OAGM1: Annual Row Crops
SWCM1-1: White Cedar Mineral Coniferous Swamp

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: -46.64°	Scale Factor: 0.99960

Grid North

0 30 50 80 100
Metres

BURNSIDE

Client
TOWNSHIP OF CENTRE WELLINGTON

Figure Title
CENTRE WELLINGTON BRIDGE AND TRANSPORTATION NETWORK STUDY FOR BRIDGES 2-WG, 3-E, 5-E, AND 7-E
NATURAL HERITAGE REPORT
ECOLOGICAL LAND CLASSIFICATION
BRIDGE 7-E

Drawn	Checked	Date	Figure No.
HN	KB	2024/11/28	5
Scale		Project No.	
H 1:1,250		300058117	

File Path: \\GUE-Nasuni-v-07.rjburnside.com\NasuniVolumeGIS\Data\CADD\058117\00000\08-GIS\058117 Centre Wellington EA\058117 Centre Wellington EA.aprx Print Date: 2024/11/28 Time: 01:02 PM

3.2 Aquatic Habitat Conditions

A review of MNRF's ARA data shows that all the structures are along the Speed River's tributaries, all of which have a cold thermal regime. Based on this review, these tributaries share a common spring-spawning fish community (Table 7), which would exclude in-water works from March 15 to July 15 of any year.

Table 7: Summary of Fish Species Historically Found in tributaries of the Speed River

Species Name	Scientific Name	Thermal Regime
Blacknose Dace	*Rhinichthys atratulus*	Cool
Brook Stickleback	*Culaea inconstans*	Cool
Creek Chub	*Semotilus atromaculatus*	Cool
Fantail Darter	*Etheostoma flabellare*	Cool
Greenside Darter	*Etheostoma*	Warm
Longnose Dace	*Rhinichthys cataractae*	Cool
Mottled Sculpin	*Cottus bairdii*	Cool
White Sucker	*Catostomus commersonii*	Cool
Yellow Perch	*Perca flavescens*	Cool

MNRF ARA (2017)

Table 8 below summarizes channel dimensions (i.e., information pertaining to morphology, wetted width/depth, substrate etc.) and conditions observed by Burnside's aquatic ecologist on August 20, 2024. Weather conditions were sunny with air temperatures ranging between 14°C and 16 °C. Common sources of pollution include the agricultural lands (e.g., agricultural pesticides and fertilizers) and the roadway (i.e., gravel road source of fine sediments and salts) that surrounded all sites. A photo page that references the observations described in Section 3.2.1 is provided in Appendix A.

Table 8: Existing Aquatic Habitat Conditions

Structure	Watercourse Names	Morphology	Wetted Width/Depth Upstream (m)	Wetted Width/Depth Downstream (m)	Dominate Substrate Upstream	Dominate Substrate Downstream	Fish Observed	Evidence of Groundwater Upwelling
2-WG	Speed River tributary	Flat	1.5/ 0.3	-	Muck	Muck	No	No
		Pool	8.9/0.4	8.4/0.6	Muck	Muck	No	No
3-E	Speed River tributary	Pool	10.4/ 0.5	10.4/ 0.5	Muck	Muck	Yes	No
5-E	Speed River tributary	Flat	6.6 /0.23	6.0/0.4	Cobble	Cobble	Yes	Yes
7-E	Speed River tributary	Riffle	2.6/0.11	5.32/0.13	Cobble	Cobble	Yes	No
		Pool	3.2/0.4	5.3/0.3	Cobble	Cobble	Yes	No

3.2.1 Aquatic Natural Features at Each Structure

2-WG

Upstream

The upstream reach flowed northeast to southwest along a wooded corridor surrounded by an agriculturally dominated landscape (Photo 1). The watercourse was nearly stagnant, starting narrow and flat-like (averages: 1.5 m width, depth 0.3 m; Photo 2) before quickly widening into a large pool (averages: 8.9 m width, >0.4 m depth; Photo 3). The banks were heavily vegetated with herbaceous plants and small woody shrubs. Overhanging shrubs, grasses, and a few larger trees cover nearly 80% of the watercourse. Some emergent vegetation (<5% cover) occurred near the shoreline (Photo 4). The dominant substrates were silt and muck. A layer of organic (e.g., decaying vegetation) and woody debris covered ~15% of the area, especially in the leading into the structure. In the far upstream area, debris jams were present. However, most of the woody debris were small branches instead of larger logs and branches.

Downstream

The surrounding riparian habitat was similar to that observed upstream. However, the downstream reach was noticeably more exposed to sunlight (~30% coverage) as there were no large trees, just overhanging shrubs, willows, and grasses. The pool observed upstream continues under the structure and into the downstream area (8.4 m width, 0.6 m depth; Photos 5, 6, & 7). The pool quickly narrows to 2.0 m but maintains the depth. The aquatic habitat was similar to upstream's habitat, except there were more woody debris, including a few large branches (25% cover), cobbles (5% cover), and boulders (5% cover). Undercut banks were observed in small patches on the east and west sides of the structure, but they appear to result from footpaths (Photo 8).

Habitat Improvement

The soft bottom may benefit from addition of harder substrate (e.g., rock) to increase habitat heterogeneity and improve erosion protection.

3-E

Upstream

The upstream reach flowed north to south and was surrounded by riparian woodland with small grass-dominated banks (Photo 9). The watercourse was largely exposed to sunlight, with ~40% covered by overhanging trees and grasses. The grasses helped to protect the banks, as there were minimal signs of erosion (Photo 10). The watercourse

was a large pool (10.4 m width, 0.5 m depth) with a substrate dominated by finer sediments like muck (60% cover) with scattered cobble (10% cover), gravel (10% cover), and a few small boulders (10% cover). No aquatic plants, except for a few emergent grasses (5% cover), were observed with the watercourse, and some large woody branches (5% cover) were scattered across the width of the watercourse.

Downstream

The watercourse remains a pool nearly unchanged from the upstream, except for narrowing slightly as the pool leaves the observed area (Photos 11 & 12). The substrate was still dominated by muck (~50%), but there was noticeably more cobble than upstream (30%). The downstream riparian area has fewer trees, more shrubs, and tall grasses, resulting in the watercourse being more exposed than upstream (30% cover). The well-vegetated banks showed no signs of erosion. Despite the riparian vegetation, there was no instream vegetation.

Habitat Improvement

The soft bottom may benefit from addition of harder substrate (e.g., rock) to increase habitat heterogeneity and improve erosion protection.

5-E

Upstream

The upstream reach flowed north to south and was surrounded by riparian woodland with small grass-dominated banks (Photo 13). The watercourse was a flat (6.6 m width, 0.23 m width) with a substrate dominated by cobbles (60% cover) interspaced by sand and gravel (10% cover). Large patches of muck (20% cover) were present along the shorelines. There were minimal aquatic habitat features besides several boulders (10% cover) as there were neither aquatic plants nor woody debris in the observed area. The rocky banks and shorelines showed no signs of erosion. There was a small patch of watercress (*Nasturtium officinale*) found along the east bank, indicating a minor amount of groundwater upwelling (Photo 14). There were no aquatic habitat features underneath the structure (Photo 15).

Downstream

The downstream area was identical to the upstream in terms of overhead cover (Photo 16). The watercourse remains a flat, though slightly narrower and deeper than upstream (6.0 m width, 0.4 m width). The substrate remains similar, though there is less cobble (60% cover) and more sand and gravel (30%; Photo 17). There were more woody debris (<5% cover) and several large concrete chunks (<5%) within the

watercourse too (Photo 18). However, the most noticeable differences were more signs of erosion (i.e., bank undercuts) along both banks (Photo 19).

Habitat Improvement

It is recommended that replacements or repairs to the structure do not impede possible groundwater upwelling identified in the area. In addition, stabilization of the banks may reduce the risk of erosion.

7-E

Upstream

The watercourse flows west to east through a densely wooded corridor (90% cover), only entering an open area immediately in front of the structure (Photo 20). The well-vegetated banks showed minimal signs of erosion. The watercourse was a riffle (2.6 m width, 0.11 m depth) with a cobble substrate (90%) interspaced with sand and gravel (10%) and no woody debris or aquatic vegetation. The watercourse widens underneath the structure (3.2 m width, 0.4 m depth) into a pool with simar instream features to the riffle (Photo 21).

Downstream

The watercourse exits the structure and turns into a riffle-pool stretch more exposed than upstream (50% cover; Photo 22). The riffle section (5.32 m width, 0.13 m depth) was the dominant feature near the watercourse. The pool is as wide as the riffle but noticeably deeper (0.3 m depth; Photo 23). The substrate was mainly cobble (70% cover) interspaced with sand and gravel (15%) and large boulders (15% cover). The rocky shorelines showed no signs of erosion.

Habitat Improvements

The area was good quality fish habitat.

4.0 Impacts, Mitigation and Monitoring Guidelines

Impacts, mitigation measures and monitoring must be considered when selecting the preferred alternative. Table 9 provides a summary of impacts that are anticipated with bridge replacement, removal or rehabilitation (depending on extent of impact area and workzone), with guidelines for the mitigation measures and monitoring.

Table 9: Summary of Impacts, Mitigation and Monitoring for Natural Features

Feature	Description of Potential Effects	Mitigation Measures	Monitoring Activities
Effects on Ecological Features and Functions			
Wildlife (General)	Temporary displacement and disturbance to wildlife and habitat during the construction phase. May include SAR and Species of Special Concern.	The footprint of the proposed disturbed area shall be minimized as much as possible. In the event an animal is encountered during construction and does not move from the construction zone, the Contract Administrator should be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location should temporarily stop and the MNRF or MECP can be contacted for direction. If temporary perimeter exclusion fencing is used at a location, it should be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning. The excluded area should be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife should be safely relocated or permitted to escape, to a suitable habitat. All works should stop immediately and MECP should be contacted if SAR is encountered within the area to ensure compliance with the ESA. Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (during breeding and migration seasons). The new structure will allow for wildlife passage below the structure if feasible. Fencing to delineate the work zone will prevent encroachment into adjacent habitat supporting SAR and Species of Special Concern.	The Contractor will conduct regular monitoring of the erosion and sediment control measures to ensure they are acting as intended and are containing the work area.
Migratory Breeding Birds	Disturbance or destruction of migratory breeding bird nests / habitat may occur during construction phase (vegetation clearing)	To reduce the risk of contravening the federal Migratory Bird Convention Act, 1994 (MBCA), timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction) during the active window for breeding birds, broadly from April 1 to August 31 for most species. Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the ESA, cannot be destroyed at any time of the year. If a nesting migratory bird (or SAR protected under ESA) is identified within or adjacent to the construction site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a contravention of the MBCA or ESA, all activities should stop and the Contract Administrator (with assistance from an Avian Biologist) should discuss mitigation measures with the Town. If SAR are identified, all activities should stop and MECP should be contacted to ensure compliance with the ESA. The Contract Administrator can instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the Township, the MECP and/or Environment Canada.	If construction works occur during the active window for breeding birds, an Environmental Inspector should monitor the tarped or netted structure every 2 to 3 days to ensure that no bird nests are established on the bridge (some species such as Barn Swallow or Eastern Phoebe (Sayornis phoebe) have been reported to attempt nesting on the exterior of the tarp material used for exclusion).

Feature	Description of Potential Effects	Mitigation Measures	Monitoring Activities
		To avoid contravention of the MBCA and/or ESA, the bridge structure should be completely excluded with tarping or netting material prior to the next active window for breeding birds (i.e., by end of March) if construction works are to occur during the active window for breeding birds (as noted above). Tarping or netting of the bridge ensures that breeding birds are excluded from nesting on or under the structure while the bridge is being replaced.	
SAR bat maternity-roosting habitat	Tree removals could impact wildlife	Trees that are identified as candidate bat maternal roosting habitat must be taken down outside the active bat window (active window is March 31 to October 1).	Further studies are required to confirm the extent of impacts and whether surveys are required to determine absence or presence of SAR bats.
Trees	Loss of woody vegetation and creation of new forest edges causing new growing conditions such as sun exposure and weed invasion.	A tree inventory will be completed during the detailed design to characterize and confirm required removals. Impacts will be minimized to remaining trees by implementing measures such as tree protection or ESC fencing to protect trees from grading impacts near adjacent construction. ESC measures and other specified protection measures must be installed prior to commencement of any construction or vegetation disturbance. No access, storage or stockpile of materials or equipment should occur within the area protected by the ESC and other protection measures. A replanting plan may be required to compensate for tree loss.	An Environmental Inspector should be engaged during the construction phase to review ESC and other protection measures for deficiencies. Monitoring of mitigation / compensation plantings will be associated with plant warranty inspections.
Vegetation	Temporary disturbance of meadow, swamp, hedgerow, marsh, forest and plantation vegetation may be required for access and construction.	Tree protection fence and ESC measures will delineate the areas of access and construction to reduce impacts extending unnecessarily into adjacent lands. Seeding of native grasses and wildflowers may be required to revegetate the disturbed areas that will be illustrated in replanting plan.	An Environmental Inspector should be engaged during the construction phase to review ESC and other protection measures for deficiencies. Monitoring of mitigation / compensation plantings will be associated with plant warranty inspections.
Fish and Fish Habitat	In-water works may be required, and the proposed works could potentially result in HADD to fish habitat and the death of fish by means other than fishing.	A qualified professional aquatic ecologist will submit a Request for Review to DFO for any bridge replacements or removals requiring in-water works. It is anticipated that a Letter of Advice will be obtained for the project based on the footprints of the structures and fish community present. During Detailed Design, correspondence shall be maintained with a qualified professional aquatic ecologist to determine appropriate mitigation measures and whether the proposal has potential to pose HADD to fish habitat and/or if the proposal has the potential to kill fish. Preferred mitigation measures include workzone isolation while maintaining flow downstream and fish salvage from the isolated work area. Efforts will be made in consultation with the DFO to mitigate should HADD to fish habitat occur. A fish salvage must occur under a License to Collect Fish for a Scientific Purpose obtained from the MNRF.	ESC monitoring during construction Fish salvage prior to the commencement of any in-water works Spill management plan to be created and measures to contain potential spills are to be on-site throughout construction

Feature	Description of Potential Effects	Mitigation Measures	Monitoring Activities
		Near-water work and work below the annual high-water mark will adhere to the appropriate in-water work timing window to avoid potential impacts to resident and migratory fish species.	
Groundwater	Potential for localized groundwater quality impacts as a result of spills. Temporary dewatering in the work area.	Refueling of equipment and fuel storage shall be conducted in designated areas, at least 30 m away from the watercourses and any existing wells, with spill protection provided. The work area shall be dewatered as per recognized provincial standards and pumped into acceptable dewatering traps. These dewatering traps will be placed away from the watercourse to allow for infiltration prior to discharging to the watercourse.	ESC monitoring throughout construction Spill management plan to be created and measures to contain potential spills are to be on-site throughout construction
Surface Water / Hydrology / Stormwater	Potential for sediments to enter the water course due to stockpiling, excavation, and construction. Potential for localized water quality impacts in the case of spills. Potential for invasive species to enter the environment	The footprint of the disturbed area shall be minimized as much as possible, for example, vegetated buffers/setbacks will remain untouched adjacent to the watercourse, wherever possible. An ESC Plan shall be developed during the detailed design phase of the project, prior to construction. Implementation of the erosion and sediment control measures shall conform to recognized standard specifications, such as Ontario Provincial Standards Specification (OPSS), and the requirements of the GRCA. A permit from the GRCA under the Development, Interference, with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06) will be required prior to conducting the proposed works as work is proposed within a flood Regulated Area. In-water operation of heavy equipment shall be prevented, as well as minimizing the operation of any equipment on the banks of the watercourse. Stockpiled material will be stored and stabilized a minimum of 30 m from the watercourse. All materials and equipment used for the purpose of site preparation and project completion will be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water. ESC measures (silt curtains, silt fence, rock check dams, etc.) shall be installed and maintained during the work phase, until the site has been stabilized. ESC measures will be inspected daily to ensure they are functioning and maintained as required. If ESC measures are not functioning properly, no further work will occur until the problem is resolved. Temporary mitigation measures shall be installed prior to the commencement of any clearing, grubbing, excavation, filling, or grading works and must be maintained on a regular basis, prior to, and after precipitation events.	Monitoring of surface water quality will be completed along with regular ESC monitoring as outlined above Spill management plan to be created and measures to contain potential spills are to be on-site throughout construction

Feature	Description of Potential Effects	Mitigation Measures	Monitoring Activities
		Water quality impacts related to surface water runoff shall be mitigated to avoid downstream impacts by controlling surface water run off within the boundaries of the site. All disturbed areas of the work site shall be stabilized immediately and revegetated as soon as conditions allow. All equipment fueling and maintenance shall be done at least 30 m from the watercourse to ensure that no deleterious substances enter the waterway. The Contractor shall be required to develop Spill Prevention and Contingency Plans for construction and operational phases of the project. Personnel will be trained in how to apply the Plans, and the Plans will be reviewed to strengthen their effectiveness and ensure continuous improvement. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on site at all times during the work. Spills will be reported to the Ontario Spills Action Center at 1 800 268 6060. All equipment and personal protective equipment must arrive on-site clean to prevent the potential transfer of invasive species (i.e., phragmites) to the local environment.	

5.0 Future Commitments

The following future commitments are recommended to be addressed following the selection of the preferred alternative, as detailed design is being carried out. Many of these commitments have been provided by Six Nations of the Grand River Elected Council from a previous, similar project and are applicable here.

- The wetland limits should be determined with GRCA through in-field staking to measure extent of impacts that will result from construction.
- A review of preliminary grading areas of each site for SAR wildlife habitats such as bat roost trees and snake hibernacula should be completed.
- Agency permits, licenses and approvals should be determined that are required to carry out the work, including a GRCA permit to do work in regulated areas, Letter of Advice from the Department of Fisheries and Oceans, License to Collect Fish for a Scientific Purpose from the Ministry of Natural Resources and a Permit from Wellington County to remove trees under By-Law 5515-09.
- A tree inventory will be completed to determine and characterize required removals. The Six Nations of the Grand River Elected Council (SNGREC)'s list of plant species of interest and importance shall be reviewed to identify if vegetation proposed for removal is of interest to the SNGREC. Impacts to trees shall be minimized by implementing a tree protection plan in areas adjacent to construction or grading.
- If any Provincial SAR are identified during the tree inventory and / or associated detailed design studies, potential impacts will be mitigated to the extent possible and the MECP will be consulted with as needed to determine next steps and permitting requirements.
- Plant species loss should be minimized where possible, and a re-vegetation plan using native species and seed mix should be created. A re-planting ratio of ten replanted trees per one removed tree shall be used for quantifying replacements, as per the request of the Six Nations of the Grand River Elected Council (SNGREC). Re-planting should be completed on-site to the extent possible. Where the required re-planting quantities are unable to be achieved within the Township right-of-way, the preference is for the Township to strive to reach an agreement with the immediately adjacent landowners to allow for replanting on-site, beyond the Township right-of-way. If on-site planting is not achievable, off-site plantings to reach the desired ratios are acceptable to the SNGREC.
- Plant species identified for replanting shall be selected from the SNGREC's list of species of Interest / Importance which are suitable for the proposed planting locations. The Kayanase Greenhouse is available for consultation regarding replanting initiatives during detailed design.
- Near-bank cover plantings along the watercourse shall be included in the re-planting landscaping plan where possible, while considering the required offset of plantings from structures.

- Detailed Hydrologic and hydraulic modelling shall be completed to verify compliance of the proposed works with GRCA policies 8.1.15-8.1.16. The GRCA shall be consulted early in the detailed design stage to determine the scope of work for this exercise.
- An Erosion and Sediment Control (ESC) Plan shall be developed during the detailed design phase of the project in consultation with the GRCA and will conform to industry best management practices and recognized standard specifications such as Ontario Provincial Standards Specification (OPSS).
- Further investigations shall be undertaken to ensure the proposed alternatives will not impact potential erosion hazards that may be present due to riverine slopes and / or the meander belt of the creek. The requirement for engineering assessments such as geotechnical or fluvial geomorphology should be confirmed with the GRCA at the detailed design stage.
- The geometry and alignment of structures should be reviewed during the detailed design stage.
- All bridge and SWM-related components of the projected shall be designed with consideration for increased precipitation due to Climate Change.
- Where erosion protection, channel regrading / stabilization or earth retaining structures are determined to be required, the use of “softer” means of protection shall be preferred over the use of hard surfaces unless it is unfeasible to do so.
- Should future work require an expansion of the study area, then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential heritage resources.
- All Indigenous communities previously engaged shall be contacted, if there are any substantial changes to the project / process or if the Owner applies for subsequent permits from the Ministry (MECP) that may be of interest or concern to communities.
- The required erosion and sediment control measures shall be determined during detailed design to limit sediment migration and protect receiving watercourses. All disturbed areas of the construction site shall be stabilized and re-vegetated as soon as conditions allow.

6.0 References

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds). Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

County of Wellington. September 2023. Official Plan.

Department of Fisheries and Oceans Canada (DFO). 2017. Aquatic Species at Risk Maps. Accessed online at: http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/onsw-soon-22-eng.htm.

Endangered Species Act (ESA). 2007. Statues of Ontario, Chapter 6.

Fink, D., T. Auer, A. Johnston, M. Strimas-Mackey, S. Ligocki, O. Robinson, W. Hochachka, L. Jaromczyk, C. Crowley, K. Dunham, A. Stillman, I. Davies, A. Rodewald, V. Ruiz-Gutierrez, C. Wood. 2023. eBird Status and Trends, Data Version: 2022; Released: 2023. Cornell Lab of Ornithology, Ithaca, New York. https://doi.org/10.2173/ebirdst.2022

Fisheries Act. 1985. Royal Statutes of Canada, Chapter F-14.

Government of Ontario. 2017. Greenbelt Plan.

Grand River Conservation Authority (GRCA). 2018. Mapping of a Natural Heritage System in the County of Wellington. Final Report.

Lee et al. 2008. Ecological Land Classification for Southern Ontario - unpublished version.

Lee, H.T, W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch. Technical Manual ELC-005.

Macnaughton, Alan, Ross Layberry, Rick Cavasin, Bev Edwards, and Colin Jones. Ontario Butterfly Atlas.

Migratory Birds Convention Act. 1994. Statutes of Canada, Chapter 22.

MNRF. 2024. Natural Heritage Information Centre (NHIC). Data pertaining to natural areas and provincially significant species obtained online at:

http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (SWHTG) & Appendices. 151 pp.

Ontario Nature, 2020. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario. Available: https://www.ontarioinsects.org/herp.

Species at Risk Act (SARA). 2002. Statutes of Canada, Chapter 29.

Township of Centre Wellington. April 2023. Official Plan.

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Existing Aquatic Habitat Conditions Photo Page

Structure 2-WG

Photo 1:Landscape surrounding the upstream reach. Facing northeast.

Photo 2: Upstream flat. Facing north.

Photo 3: The upstream pool. Facing east.

Photo 4: Vegetation in upstream pool. Facing south.

Structure 2-WG

Photo 5 Inlet of the structure. Facing east.

Photo 6 Downstream pool. Facing south.

Photo 7: Downstream pool. Facing west.

Photo 8: Erosion on the downstream's east bank, small patched were present on the west as well. Facing west.

Structure 3-E

Photo 9: Upstream section. Facing north.

Photo 10: The east bank of the upstream area. Facing east.

Photo 11: Downstream section. Facing south.

Photo: 12 Downstream section. Facing east.

Structure 5-E

Photo 13: Upstream section. Facing north.

Photo 14: The east bank of the upstream section. Watercress (Nasturtium officinale) present. Facing north.

Photo 15: The inlet of the structure. Facing south.

Photo 16: Downstream section. Facing south.

Structure 5-E

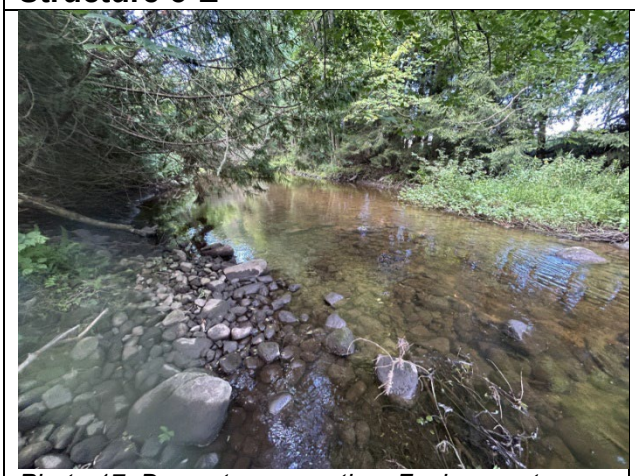


Photo 17: Downstream section. Facing west.

Photo 18: Structure's outlet. Facing north.

Photo 19: Northern bank of the downstream area. Facing north.

Structure 7-E

Photo 20: Upstream section. Facing west.

Photo 21: Inlet of the structure. Facing east.

Photo 22: Downstream riffle. Facing east.

Photo 23: Downstream pool. Facing east.

R.J. Burnside & Associates Limited