

MINISTRY OF TRANSPORTATION OF ONTARIO,  
EASTERN REGION

**GWP 4203-15-00**

# Hawkesbury Bridge Replacements Final Transportation Environmental Study Report



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November 4, 2020

## THE PUBLIC RECORD

A copy of this Transportation Environmental Study Report (TESR) is available for review on the project website at [www.cr17bridges.com](http://www.cr17bridges.com).

In order to keep the economy running, and to ensure the safety of the public, MTO will be posting all Class EA documentation online only for public review during this time. Normally we identify locations where hard copies are made available for public review, but given the current situation we will not be directing the public to such locations.

This report has been formatted to comply with the Accessibility for Ontarians with Disabilities Act (AODA). For accessibility-related inquiries, please contact:

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## 1.0 Overview of the Undertaking

### 1.1 Project Summary

The Ministry of Transportation Ontario (MTO) has retained Jacobs and Dillon Consulting Limited to complete a Detail Design and Environmental Assessment Study for the replacement of the Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0) and the County Road 17 Underpass (Site No. 27X-0051/B0) in the Town of Hawkesbury/Township of Champlain and the United Counties of Prescott and Russell (UCPR). The bridge sites are shown in **Figure 1**.

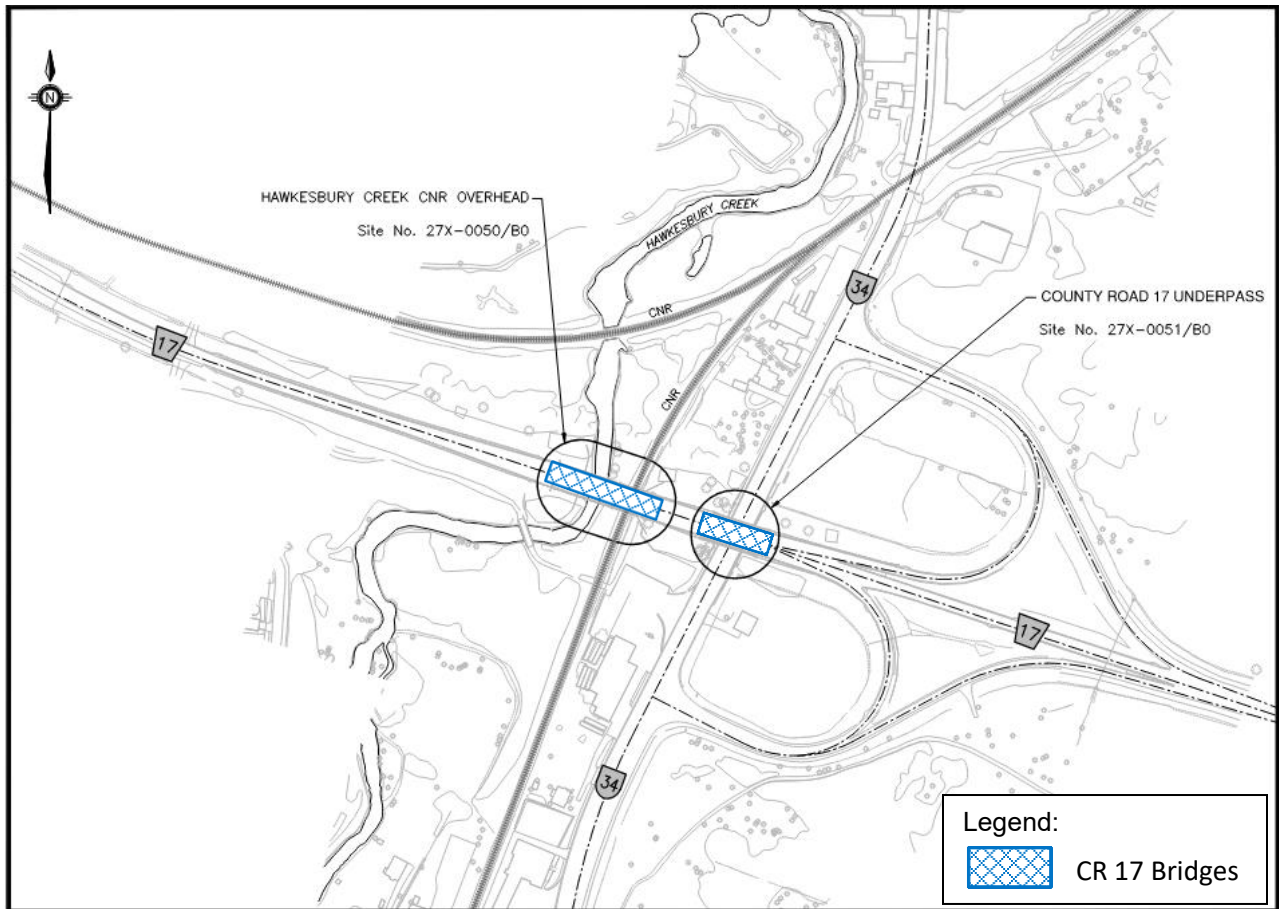


Figure 1: Study Area

The Hawkesbury Creek and CNR Overhead is a three-span bridge carrying two lanes of traffic and two speed change lanes (for the interchange ramps) on County Road 17 over Hawkesbury Creek and the CN rail line. The County Road 17 Underpass (Site No. 27X-0051/B0) is located approximately 50 m to the east of the CN rail line and also carries two lanes of traffic and two speed change lanes over Highway 34. Both bridges are nearing the end of their useful service life and require replacement.

The replacement bridges will be reduced from four to two lanes (eliminating the existing speed change lanes) as traffic analysis has shown that these additional lanes are not required to accommodate existing and projected future traffic volumes. This will result in modifications to the east bound (EB) off-ramp and west bound (WB) on-ramp at the County Road 17 and Highway 34 interchange.



The bridges will be replaced using accelerated bridge replacement construction, whereby the new bridge decks are constructed on temporary supports adjacent to (and north of) the existing bridges. When the foundations are constructed, and new bridge decks are complete, the existing bridges will be demolished, and the new bridges will be slid into place, maintaining the existing roadway alignment. This construction methodology is expected to reduce overall traffic impacts compared to conventional staged construction.

To accommodate the replacement, short duration road closures will be required on Highway 34 and County Road 17. During these closures, traffic will be detoured for approximately 2 to 4 weeks along County Road 17 and approximately 2 to 3 weekends along Highway 34. Detailed information regarding detour routes can be found in **Section 6.1.7**. Traffic management during construction will be coordinated with the local municipalities. Construction is expected to take up to two years to complete.



Figure 2: View of the Hawkesbury Creek and CNR Overhead (Left) and County Road 17 Underpass (Right) – Looking North

## 1.2 Transportation Environmental Study Report (TESR)

As per the requirements of the MTO Class EA, this Transportation Environmental Study Report (TESR) documents the Environmental Assessment (EA) process followed for the replacement of the Hawkesbury Creek and CNR Overhead and the County Road 17 Underpass and contains important information regarding various elements of the project including:

- Purpose and objectives of the assignment;
- An overview of the environmental assessment process;
- Summary of the stakeholder consultation process and public engagement;
- An inventory of existing conditions in the study area;
- The generation and evaluation of both planning and design alternatives;
- Environmental and transportation engineering issues and solutions;
- The development of a recommended plan;
- Anticipated impacts to the environment from the recommended plan and identification of mitigation strategies; and
- Commitments to further work and any environmental effects monitoring

We encourage you to review the information in this report and contact the Project Team to discuss any questions, comments or concerns regarding information related to the project by **December 4, 2020**. Members of the Project Team that can be contacted include:

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In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e. requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g. require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester's contact information and full name for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request.

The request should be sent in writing or by email to the following addresses:



**Minister of the Environment, Conservation and Parks**

Ministry of Environment, Conservation and Parks  
777 Bay Street, 5th Floor  
Toronto ON M7A 2J3

**E-mail:** [minister.mecp@ontario.ca](mailto:minister.mecp@ontario.ca)

**Director, Environmental Assessment Branch**

Ministry of Environment, Conservation and Parks  
135 St. Clair Ave. W, 1st Floor  
Toronto ON, M4V 1P5

**E-mail:** [EABDirector@ontario.ca](mailto:EABDirector@ontario.ca)

Requests should also be sent by mail or by e-mail to members of the Project Team at the addresses listed above.

## 2.0 Environmental Assessment Process

### 2.1 Ministry of Transportation Class Environmental Assessment

The Ministry of Transportation Class Environmental Assessment (Class EA) for Provincial Transportation Facilities (2000) is a provincially approved planning process that MTO must follow to meet the requirements of the Ontario Environmental Assessment Act (OEAA). Under this process, existing environmental conditions are identified, project alternatives are evaluated, mitigation measures are developed, and consultation is held with public, agency, interest and Indigenous groups to provide ample opportunity for comment throughout the project.

This study is following the approved environmental planning process for Group 'B' undertakings under the Ministry of Transportation's Class Environmental Assessment (Class EA) for Provincial Transportation Facilities (2000). Group B projects are defined as major improvements to existing provincial transportation facilities.

**Figure 3** illustrates the environmental assessment process followed for this study.

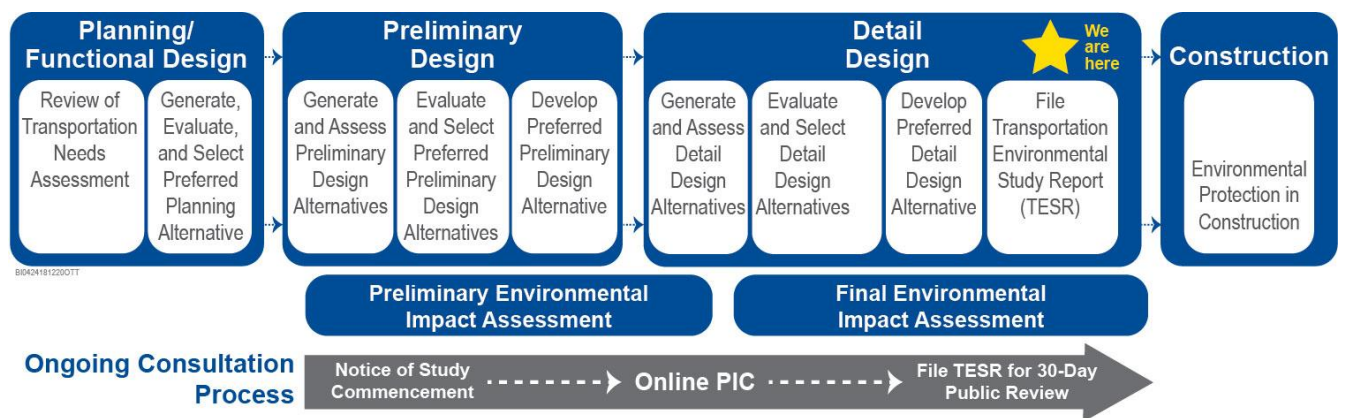


Figure 3: MTO Class EA Process for Group B Projects

Based on a life cycle cost analysis, MTO decided that continuing to rehabilitate the existing bridges was no longer feasible and decided to pursue a replacement strategy. During the Planning/Functional Design phase of this study, MMM Group evaluated different bridge replacement alternatives using conventional construction methodologies that resulted in numerous interchange configuration options (see **Appendix J**). During the Preliminary Design phase, Jacobs evaluated additional bridge replacement alternatives including accelerated bridge construction, which would maintain the existing County Road 17 alignment, reducing overall impacts to the community, property and the environment. A lateral slide bridge replacement was selected as the preferred alternative to advance through Detail Design.

As part of Detail Design, interchange configuration alternatives were generated and evaluated; however, due to site constraints and existing conditions, there are limited options for the interchange configuration. In order to meet geometric design standards, minimize impacts to property and environment and achieve an economic solution, the preferred Detail Design alternative replaces the existing free-flow N/S-W ramp with a stop controlled/right hand turn onto County Road 17 westbound.

This preferred alternative was developed and presented at a Municipal Technical Advisory Committee (MTAC) meeting, council presentations with the Town/Township/Counties, as well as during the online PIC update.

After receiving concerns regarding the N/S-W ramp, Jacobs returned to investigate further into other Detail Design alternatives to see whether there was an option that would enable re-instatement of the free-flow ramp. Jacobs prepared an Impact Assessment Memo to comprehensively review the schedule, cost, and technical impacts (e.g. traffic, utilities, natural environment, property) of this option (see **Appendix K**). It concluded that the free-flow ramp option would result in greater impacts to cost, property, environment and schedule compared to the stop controlled right hand turn onto County Road 17. Based on these findings, MTO decided to proceed with the preferred Detail Design.

Now that the Detail Design phase is complete, the TESR will be filed for a 30-day public review. Further details regarding the generation and assessment of Functional, Preliminary and Detail Design alternatives may be found in **Section 5**.

## 2.2 Consultation Process

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One of the objectives of the OEAA is to ensure that stakeholder input is considered in decision-making, and that every opportunity is given, from the earliest stages of project planning, for interested or concerned parties to provide their comments, questions or concerns regarding the project. Therefore, it is a requirement for Group 'B' projects under the MTO Class EA to engage with federal and provincial agencies, local municipalities, Indigenous communities, local elected representatives, external agencies, interest groups, and members of the public on an on-going basis throughout the study.

For this study, stakeholders and the public were kept informed of the project and were asked for input through the use of effective consultation methods including:

- Ontario Government Notices published in local newspapers;
- Direct letter mailings to over 8000 residents and businesses within the Town of Hawkesbury and L'Orignal as well as registered mailing to approximately 80 addresses within the direct vicinity of the study area;
- Correspondence with external agencies and Indigenous Communities;
- Three Municipal Technical Advisory Committee (MTAC) meetings;
- A Project Webpage and two Online Public Information Centres (PIC);
- Three council presentations, one to each of the Town of Hawkesbury, Township of Champlain and the United Counties of Prescott & Russell (UCPR); and
- Filing of the Transportation Environmental Study Report (TESR) for public review.

### 2.2.1 Ontario Government Notices

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Three Ontario Government Notices (OGN) have been published throughout the course of the study to advertise: 1) Study Commencement and Online PIC; 2) Online PIC Update; and 3) Filing of the TESR for 30-day public review (see **Table 1**). As the project is in a French Language Service Area as designated by the French Language Services Act (FLSA), English notices were published in *The Review* and French notices were published in *Le Regional*. A total of six newspaper notices were published and are included in **Appendix A**.

Table 1: OGN Newspaper Publishing

<b>Study Commencement and Online PIC</b>	
The Review	March 28, 2018
Le Regional	March 29, 2018
<b>Online PIC Update</b>	
The Review	April 24, 2019
Le Regional	April 25, 2019
<b>Filing of the TESR</b>	
The Review	November 4, 2020
Le Regional	November 3, 2020

### 2.2.2 Study Contact List

A master contact list was developed that includes local elected representatives; relevant federal, provincial and municipal departments; local emergency services; school boards and utility companies (see **Table 2**). The list also includes potentially affected Indigenous communities, residents, businesses and interest groups that may be directly impacted by the proposed bridge replacements, including those located along the identified detour route and within direct vicinity of the works. Representatives on the contact list received direct letter notifications of key project activities and as the study progressed, any individuals or organizations expressing interest in the project were added to the contact list.

Table 2: Master Contact List

<b>Indigenous Communities</b> <ul style="list-style-type: none"> <li>• Algonquins of Pikwakanagan</li> <li>• Algonquins of Ontario Consultation Office</li> <li>• Ottawa Algonquin First Nation</li> <li>• Ottawa Metis Council</li> <li>• Metis Consultation Unit</li> </ul>	<b>Local Elected Representatives</b> <ul style="list-style-type: none"> <li>• MP - Glengarry</li> <li>• MPP - Glengarry Prescott-Russell</li> <li>• Mayor of Hawkesbury</li> <li>• Mayor of Township of Champlain</li> </ul>
<b>Utility Companies</b> <ul style="list-style-type: none"> <li>• Allstream</li> <li>• Bell Canada</li> <li>• Cogeco Inc.</li> <li>• Enbridge Gas Distribution</li> <li>• Rogers Communications</li> <li>• Telus Corporation</li> <li>• Hydro Hawkesbury</li> <li>• Hydro One</li> <li>• Hawkesbury Waterworks</li> </ul>	<b>Federal and Provincial Agencies</b> <ul style="list-style-type: none"> <li>• Ministry of Tourism, Culture and Sport</li> <li>• Ministry of Natural Resources and Forestry</li> <li>• Ministry of Indigenous Affairs and Reconciliation</li> <li>• Raisin Region Conservation Authority</li> </ul>
<b>Municipal Technical Advisory Committee</b> <ul style="list-style-type: none"> <li>• Town of Hawkesbury – Superintendent of Roads</li> <li>• Town of Hawkesbury – Capital Projects Coordinator</li> <li>• UCPR – Director of Public Works</li> <li>• Township of Champlain – Director of Public Works</li> <li>• OPP - Hawkesbury Detachment</li> <li>• Hawkesbury Fire Department</li> </ul>	<b>School Boards</b> <ul style="list-style-type: none"> <li>• Conseil des Ecoles Catholiques du Centre-Est</li> <li>• Conseil des Ecoles Publiques de l'Est de l'Ontario</li> <li>• Upper Canada District School Board</li> <li>• Catholic District School Board of Eastern Ontario</li> </ul>

<ul style="list-style-type: none"> <li>• Hawkesbury &amp; District General Hospital</li> <li>• Prescott-Russell Paramedic Services</li> </ul>	
<b>General Public in Hawkesbury and L'Orignal</b>	<b>General Public along Detour Route</b>

### 2.2.3 Notification Letters

At study commencement, letters were sent to all representatives on the contact list, notifying them of the project and directing them to the dedicated project website containing detailed project information. A key map and comment sheet were attached to solicit all comments, questions and concerns. Returned comments were compiled into a summary table. Letters to local elected officials and Indigenous communities were signed and sent directly by the MTO on Tuesday, March 20th, 2018. The letters were sent through direct mail (and email wherever possible) to external agencies, residents, local businesses and interest groups on Tuesday, April 3rd, 2018. Letter notifications were provided in English and included contact information for a bilingual team member.

In April 2019, notification letters were sent out notifying representatives on the contact list that an update to the online PIC was being posted from April 29 to May 27, 2019 so that stakeholders could review key project updates, the detailed design progress and a summary of the public feedback collected from the first round of consultation. Individuals were once again encouraged to submit their questions, comments and concerns to the Project Team. Letters to local elected officials and Indigenous communities were signed and sent directly by MTO on April 23, 2019. External agencies and interest groups were sent the notification letter by Jacobs between the 22<sup>nd</sup> and 25<sup>th</sup> of April 2019. Flyer notifications were sent to all residents and local businesses located in Hawkesbury and L'Orignal and Registered Mail was sent to residents/businesses in the direct vicinity of the construction area on April 22, 2019. Letter notifications were provided in English and included contact information for a bilingual team member.

At study completion, notification letters regarding the filing of the TESR were also sent to all representatives on the contact list on October 26, 2020. Notification letters are included in **Appendix B**.

### 2.2.4 Project Website and Online PIC

An Accessibility for Ontarians with Disabilities Act (AODA) compliant, bilingual project website was developed to provide background information and key documentation including OGNs and online Public Information Centre (PIC) display materials. The online PIC provided detailed information including:

- A description of the project
- The EA process
- Existing conditions in the study area including structural, environmental, archeological and cultural heritage conditions
- The recommended bridge design and interchange configuration
- An evaluation of construction staging alternatives
- Proposed traffic detours
- Potential environmental impacts and proposed mitigation plan
- Next steps

The online PIC was static, allowing visitors to read through the material at their own pace, and included a comment feature to allow stakeholders the ability to contact the project team directly. During the online PIC comment period (March 20, 2018 – April 27, 2018), 116 people visited the website, 342-page views were generated, and 14 comments were received. A copy of the PIC material can be found in **Appendix C**.

The key issues that were raised during the Online PIC involved the functionality of both the proposed detour route and changes to the eastbound on-ramp and westbound off-ramp at Highway 34. Residents were concerned that the detour route through the Main Street of Hawkesbury would be chaotic given the 3 signalized intersections and relatively narrow street, and would cause a backup of local and through traffic. Multiple comments were also received regarding the lack of signalization at the on/off ramps and that the removal of the merge lanes could present a safety issue. The Project Team officially responded to all comments and inquires that were submitted on September 18, 2018. Comments and responses are summarized below in **Section 2.2.5** and also found in **Appendix D**.

### 2.2.5 PIC Comments Received

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All comments received were compiled into a summary table that includes the contact information for the interested party as well as responses provided by the Project Team. Any additional follow up correspondence with interested individuals was also included and updated regularly. A summary of comments received, and responses issued are found in **Table 3**. With the exception of personal information, all original comments are found in **Appendix D**.

Table 3: Summary of PIC Comments and Responses

Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
01	03/30/2018	Local Resident	<ul style="list-style-type: none"> <li>Concerned that the CR17 WB on ramp will now be a stop.</li> <li>Believes the posted ramp speed reduction will not be effective.</li> <li>Concerned about the detour route through Main Street of Hawkesbury being chaotic given the narrow Main Street and 3 traffic lights. Suggested an alternative of using McGill St and involving the Hwy 34 diversion loop</li> </ul>	<p>Response provided:</p> <ul style="list-style-type: none"> <li>The conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and design speed along County Rd 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts.</li> <li>The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. A posted ramp speed lower than present conditions is required for the proposed radius of the re-configured W-N/S Ramp in order to meet current standards.</li> <li>Yes, the proposed detour route of County Rd 17 eastbound/westbound traffic is along County Rd 4 (Main St) and Tupper St which will be operational for up to 4 weeks during bridge replacement. Half of the Highway 34 interchange will remain in operation, maintaining traffic flow to/from the east, to/from McGill Street. The Hwy 34 "diversion loop" is being used over two or three weekends only, and will re-route traffic around the Highway 34 Overpass bridge structure at County Road 17 during girder/diaphragm erection and formwork/falsework installation, rapid demolition of existing bridges, and lateral slide of new bridges into final position. Using McGill St as a detour route was considered however the northbound left turn lane at Main St is very short and unable to accommodate the additional traffic volumes related to the detour. Operation of the proposed detour route along Main St and Tupper St will require some traffic signal modifications and a temporary traffic control signal at Main St/Tupper St to operate efficiently.</li> </ul>
02	04/11/2018	D&W Forwarders Transportation Company	Asked if traffic from Montreal to Ottawa or Ottawa going to Montreal will have to use the main street in Hawkesbury.	<ul style="list-style-type: none"> <li>Traffic from Montreal going to Ottawa and from Ottawa going to Montreal will not need to use the detour route through Main Street. Signage will be posted to notify vehicles of the construction works and advise them to use HWY 417 instead of CR 17 to access Ottawa/Montreal during the full road closures.</li> </ul>
03	04/12/2018	OFSC Local Snowmobile Association	The group has an OFSC prescribed trail on the south side of the study area with a bridge over the creek. They also have trails on the County Road 17 property.	Information has been noted and will be considered.
04	04/23/2018	Bell Utility Company	Wondering if the existing Bell structure running underground on the east side of Hwy 34 will need to be relocated.	Company was asked to provide survey data and/or GIS mapping for assets to import the information into our base mapping and identify potential conflicts. Once the composite utility plan is generated, further coordination will be required.
05	04/19/2018	Local Resident	Wondering if there are conceptual drawings to comment on, or if the public has the opportunity to provide input on the design.	<p>Response provided:</p> <ul style="list-style-type: none"> <li>Further information, including conceptual drawings, will be included in the Transportation Environmental Study Report. The public will have a 30-day review period. Input from the public will be reviewed.</li> </ul>
06	04/19/2018	Local Resident	<p>Asking if there will be lights or simply stop signs when exiting CR 17 from the west or entering it going west bound. Resident has real concerns that the risk for traffic accidents will be increased with the removal of the merging lanes with going westbound or coming from the westbound and exiting on the 34. A light was added along the Tupper Street intersection for that reason. The resident would like to know why the existing merge lane will not be kept.</p> <p>-Resident has an issue with the elimination of the SCL on the eastbound County Road 17. He is concerned about the safety of vehicles slowing down to access the ramp in combination with the visibility of the movement due to the horizontal and vertical curve of the approaching road.</p>	<p>Response provided:</p> <ul style="list-style-type: none"> <li>Traffic lights will not be provided at the County Road 17 and Highway 34 interchange. Illumination of the interchange is under review.</li> <li>Conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and design speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts.</li> <li>The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design</li> </ul>



Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
				standards. The County Road 17 vertical curve is being improved (compared to existing conditions) and adequate signage to inform traffic of the upcoming W-N/S Ramp (off-ramp) will be provided.
07	04/30/2018	Ivaco Rolling Mills LP	<p>Company Superintendent asked what consideration has been given to, and what information is available regarding the following items:</p> <p>-Ivaco Rolling Mills ships and/or receives in excess of 100 truckloads daily). Based on their origin, or outbound destinations, the logical and likely detour they will take will be through VanKleek Hill using Cassburn Rd. with access to or from Highway 17 being Highway 34 or County Road 10. Has there been any thoughts regarding the volume and weight of this traffic and the likelihood of them using the route described? Are there any concerns? The proposed detour route provided on the online public information website does not seem suitable for the volume of transport trucks that will be moving through these narrow, congested streets on a daily basis.</p> <p>-What, if any disruption is foreseen for rail service through the affected area? Ivaco ships and receives significant product by rail, and are typically served twice weekly to maintain the flow of product. Has there been any discussion regarding the potential impact to service along that corridor? Will there be any delays?</p>	<p>Response provided:</p> <ul style="list-style-type: none"> <li>Traffic data was collected and analyzed along the proposed detour route and at the County Road 17 and Highway 34 interchange. The level of service was concluded to be satisfactory for the duration of the full closure of County Road 17, which is between two and four weeks. Other options reviewed for the detour route could not accommodate observed commercial traffic volumes or truck turning movements without significant improvements to intersections.</li> <li>Disruptions to rail traffic will be avoided, where/when possible. All works are being coordinated with CN throughout the detail design phase which include track protection schemes, rail flagging services and instrumentation/monitoring during construction.</li> <li>The rapid demolition of existing structures and lateral slide of new structures into final position, which will occur over two separate weekends, may impact rail traffic.</li> </ul>
08	04/5/2018	Local Resident	Resident indicated that she is visually challenged and was asking what the letter was about.	It was explained to her that the bridges are being replaced and residents in close proximity and along the detour route are all receiving letters and can express their concerns or ask questions. She was reminded that she may call back if any questions or concerns arise.
09	04/6/2018	Hawkesbury Honda	We have no concerns at this time but wish to remain on the contact list for this study.	No response required. The individual was added to the project contact list and will receive notification regarding the filing of the TESR for the 30-day public review period.
10	04/16/2018	Member of Parliament	We have no concerns at this time but wish to remain on the contact list for this study.	No response required. The individual was added to the project contact list and will receive notification regarding the filing of the TESR for the 30-day public review period.
11	04/9/2018	Croupe Corbeil	We have no concerns at this time but wish to remain on the contact list for this study.	No response required. The individual was added to the project contact list and will receive notification regarding the filing of the TESR for the 30-day public review period.
12	04/10/2018	Laplante Cadillac	We have no concerns and do not need to be involved in this study.	No response required. The individual was removed from the contact list.
13	04/20/2018	OPP	We have no concerns at this time but wish to remain on the contact list for this study.	No response required. The individual was added to the project contact list and will receive notification regarding the filing of the TESR for the 30-day public review period.
14	04/27/2018	CEPEO	We have no concerns at this time but wish to remain on the contact list for this study.	No response required, as indicated on the study comment sheet. The individual was added to the project contact list and will receive notification regarding the filing of the TESR for the 30-day public review period.

### 2.2.6 Online PIC Update

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New information was posted in an update to the online PIC (comment period held from April 29, 2019 to May 27, 2019) to provide stakeholders with an opportunity to review key project updates such as:

- The detailed bridge design;
- Proposed interchange configuration;
- Traffic management plan details;
- Anticipated environmental impacts and mitigation; and
- Comments received from the PIC and how they were addressed.

Individuals were encouraged to submit any additional questions, comments and concerns to the Project Team to elicit feedback on details of the recommend design. During the online PIC update period, 324 people visited the website, 682-page views were generated, and 33 comments were submitted. A copy of the PIC Update material can be found in **Appendix C**.

The key issues that were raised during the Online PIC Update were predominantly focused on the functionality of the changes to the eastbound on-ramp and westbound off-ramp. Multiple comments were received regarding the T-intersection configuration at the N/S-W ramp, lack of signalization at the on/off ramps and removal of the merging lanes causing a potential safety risk and/or traffic congestion. The Project Team officially responded to all comments and inquires that were submitted on February 14, 2020. Comments and responses are summarized below in **Section 2.2.7**. Copies of comments received are also found in **Appendix D**.

### 2.2.7 PIC Update Comments Received

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All comments received from the PIC Update were compiled into a summary table that includes the contact information for the interested party as well as responses provided by the Project Team. Any additional follow up correspondence with interested individuals was also included and updated regularly. A summary of comments received, and responses issued are found in **Table 4**. With the exception of personal information, all original comments are found in **Appendix D**.

Table 4: Summary of PIC Update Comments and Responses

Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
01	04/25/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about traffic congestion due to removal of the speed change lanes.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response to your concern, a traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. The type of bridge selected can be widened in the future. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
02	04/25/2019	Local Resident	<ul style="list-style-type: none"> <li>Would prefer that the N/S-W on-ramp onto CR17 remain as is to avoid traffic congestion.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
03	04/25/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the absence of traffic signals at the interchanges</li> <li>Concerned about the safety of the interchange configurations</li> <li>Proposed the idea of a roundabout as an alternative configuration at the interchanges.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. The type of bridge selected can be widened in the future. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> <li>In addition, a roundabout was reviewed during the functional design phase however it was determined that it was not preferred when compared to the proposed option due to the impact on County Road 17 geometry and the required speed reduction to navigate the roundabout safely.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>

Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
04	04/25/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the safety of removing the speed change lanes and having a T-intersection at the N/S-W on-ramp.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards.</li> <li>To clarify, the N/S-W ramp (on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (on-ramp) and E-N/S ramps (off-ramp) will remain in place as per existing conditions. See figure below for clarity.</li> </ul>
05	04/26/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the safety of removing the speed change lanes due to an observed increase in traffic.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is. To clarify, the posted speed limit on County Road 17 is proposed to be reduced from 90km/h to 70km/h. No reference was made to an "aging population" in the PIC material, so we are unable to provide you with a study containing statistics of that nature. However, a traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volumes. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17. The French PIC material can be found at the following link : <a href="https://cr17bridges.com/wp-content/uploads/2019/04/4203-15-00_Hawkesbury_PIC_Update_Rev_C_french-1.pdf">https://cr17bridges.com/wp-content/uploads/2019/04/4203-15-00_Hawkesbury_PIC_Update_Rev_C_french-1.pdf</a></li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
06	04/29/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the safety of removing the speed change lanes.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>To clarify, the N/S-W ramp (westbound on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (eastbound off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (eastbound on-ramp) and E-N/S ramps (westbound off-ramp) will remain in place as per existing conditions. See figure below for clarity.</li> </ul>

Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
				Attached a figure with the response illustrating the interchange configuration.
07	04/29/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the safety of removing the speed change lanes and adding a T-intersection at the N/S-W on-ramp.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response to your concern, a traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> </ul>
08	04/29/2019	Local Resident	<ul style="list-style-type: none"> <li>Received the notification letter in English only and believes it should at least be bilingual, as Hawkesbury is a predominantly francophone city.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>A French-speaking individual and their contact information was provided in the letter. Future public notifications regarding this project (including the Filing of the Transportation Environmental Study Report), will include a French summary of the notification to provide the public with key project updates and guidance to a bilingual project website and/or a bilingual member of the project team. In addition, the French PIC material can be found at the following link: <a href="https://cr17bridges.com/wp-content/uploads/2019/04/4203-15-00_Hawkesbury_PIC_Update_Rev_C_french-1.pdf">https://cr17bridges.com/wp-content/uploads/2019/04/4203-15-00_Hawkesbury_PIC_Update_Rev_C_french-1.pdf</a></li> </ul>
09	04/29/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned about the safety and traffic congestion of removing the speed change lanes and having a T-intersection at the N/S-W on-ramp.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
10	04/30/2019	Local Resident	<ul style="list-style-type: none"> <li>As the cost of building a four-lane bridge is more expensive than building a two-lane bridge, discussion is closed on the cost factor.</li> <li>Assume that traffic movement assistance on and off of CR17 that is rendered by the current design is being incorporated into the new design.</li> <li>Asks a number of questions regarding distances of the ramp and bridge configurations.</li> <li>Unsure if there is enough sight distance at the N/S-W on-ramp to merge safely</li> <li>Believes traffic lights would facilitate safer movements at the interchanges.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. To clarify, the N/S-W ramp (westbound on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (eastbound off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (eastbound on-ramp) and E-N/S (westbound off-ramp) ramps will remain in place as per existing conditions. Additionally, the posted speed limit on County Road 17 is proposed to be reduced from 90km/h to 70km/h. See figure below for clarity. To address your specific questions, the distance between the existing ramp entrance and proposed ramp entrance is approximately 115m. See sketch with measurements illustrated for clarity. The proposed right turn lane length is a 75m taper and 70m parallel lane length. The existing deceleration lane has an approximate taper length of 100m and an approximately parallel lane length of 200m. The distance between the two proposed intersections are offset by approximately 15 m. See sketch with measurements illustrated for clarity. Also, there is no T-intersection proposed on the south side of the road. The existing N/S-E on-ramp is</li> </ul>



Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
				<p>to be maintained. Refer to explanation and figure. A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</p> <p>Attached a figure with the response illustrating the interchange configuration and the distance between the existing ramp entrance and proposed ramp entrance.</p>
11	04/30/2019	Local Resident	<ul style="list-style-type: none"> <li>Concerned with the traffic congestion that will occur on Main Street as a result of the detour route.</li> <li>Suggests rerouting traffic via CR12 and CR11 and eastbound traffic in the opposite direction.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>We have considered the detour alternative that you identified and offer the following rationale as to why this route was not selected as our preferred alternative.</li> <li>Preferred CR4 / Main Street / Tupper Street Detour Route <ul style="list-style-type: none"> <li>The proposed detour route via is 9.7 km in length with an estimated travel time of approximately 13 minutes;</li> <li>The detour route captures local and regional traffic within a single detour;</li> <li>The detour is located in proximity to the CR17 closure, resulting in better compliance with the detour route;</li> <li>The detour avoids Township Roads (MTO typically avoids placing traffic on lower tier roadways where possible) however, uses Tupper Street, which is designated as a Collector Road. The detoured traffic volumes forecast on Tupper Street are within acceptable Collector roadway levels;</li> <li>The detour route is anticipated to operate effectively with some minor intersection modifications and temporary traffic control features;</li> <li>Traffic will be maintained between Highway 34 and County Road 17 to the east using the existing interchange; and,</li> <li>Traffic between Highway 34 and County Road 17 to/from the west will detour via McGill Street and County Road 4 (Main Street W).</li> </ul> </li> <li>CR 11 / Pleasant Corner Road / CR12 Detour Route <ul style="list-style-type: none"> <li>This detour route is 21.6 km in length which would have a travel time requirement of approximately 19 minutes;</li> <li>This detour route captures regional traffic, however, a second detour would be required to address local detour requirements;</li> <li>This detour is further from the CR17 closure, resulting in less compliance with the detour route; and,</li> <li>This detour places detoured traffic on Pleasant Corner Road (MTO typically avoids placing traffic on lower tier roadways when possible).</li> </ul> </li> <li>For these reasons, the preferred CR17 detour route was selected as CR4 / Main Street / Tupper Street. As you have noted, the travelling public will have other options available to them (such as the route you have identified) however the alternatives are not intended to be signed detour routes.</li> </ul>
12	05/02/2019	Local Resident	<ul style="list-style-type: none"> <li>Requesting to know the estimated cost of the project.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>Total Cost estimates of the bridge replacements will be included in the Transportation Environmental Study Report that will be available for a 30-day public period once complete.</li> </ul>
13	04/22/2019	Hydro One	<ul style="list-style-type: none"> <li>Requesting to know how traffic will enter and exit CR17 from HWY34 if the existing speed change lanes are being removed.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will be maintained, and the existing N/S-W (westbound on-ramp) and W-N/S (eastbound off-ramp) ramps will be reconfigured. See figure below for clarity.</li> </ul>

Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
14	04/22/2019	Cogeco	<ul style="list-style-type: none"> <li>Requesting to know if Cogeco's existing plant running along HWY34 will need to be relocated/alterd and when the work will commence.</li> </ul>	<ul style="list-style-type: none"> <li>The Bell conduit running under the east curb of Highway 34 under County Road 17 will be relocated. Based on discussions with you (call with Brad Hewson of Jacobs on April 26<sup>th</sup>, 2019) it is understood that Cogeco will be working directly with Bell for cabling works in the relocated ducts. Any further questions can be directed to Brad Hewson (613.667.1814)</li> </ul>
15	04/24/2019	OPP Officer	<ul style="list-style-type: none"> <li>Would like an explanation of why the existing speed change lanes are being removed and what an accelerated bridge replacement is.</li> <li>Feels the N/S-W on-ramp should be extended as some motorists have difficulty merging onto westbound traffic.</li> <li>Concerned with the detour route and is unsure where traffic will be rerouted to.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is. Attached is a copy of the PIC update material, which addresses your questions regarding the interchange configuration, bridge replacement technique, and detour route.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
16	04/25/2019	Operations Manager of Hawkesbury OPP	<ul style="list-style-type: none"> <li>Requesting to know how wide load tractor trailers travelling through the area</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>To address your questions: <ol style="list-style-type: none"> <li>We are currently working with MTQ to minimize truck traffic through Hawkesbury while the detour route is in operation. One way we are trying to accomplish this is by limiting permits for oversize vehicles and adding advanced notification signage on the bridge.</li> <li>Vertical clearance might be reduced to 4.5 meters under the HWY 34 overpass during construction. Short duration lane closures may be required periodically on both County Road 17 and HWY 34 to allow for access to the construction site and delivery of materials.</li> <li>Construction start date will not be known until the project is awarded</li> <li>Jacobs will contact the OPP directly to coordinate details of oversized loads</li> </ol> </li> </ul>
17	04/29/2019	Enbridge	<ul style="list-style-type: none"> <li>Information has been reviewed and coordination between Enbridge and the design team has ensured our third-party requirements are met.</li> </ul>	Noted. No response required.
18	04/29/2019	Real Estate Appraisers and Consultants	<ul style="list-style-type: none"> <li>Concerned about the removal of the speed change lanes due to vehicular access and future growth in the region.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the preferred design meets geometric design standards for lane and shoulder widths. As a result, there will be no issue for snow plows accessing the bridges. Furthermore, bridges are capable of being widened if/when traffic volumes warrant a widening. A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> </ul>
19	04/20/2019	Resident	<ul style="list-style-type: none"> <li>Concerned that removing the speed change lanes will cause safety issues for vehicles, especially due to increased commercial/institutional infrastructure nearby which will bring more traffic onto CR17.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response to your concern, a traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County</li> </ul>



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				<p>Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</p> <ul style="list-style-type: none"> <li>To clarify, the posted speed limit on County Road 17 is proposed to be reduced from 90km/h to 70km/h. With adequate sight distances of 600m (minimum desirable is 350m) and a speed reduction to 70km/h, the stop condition will allow for motorists to wait for a gap in traffic and proceed when safe to do so.</li> </ul>
20	04/29/2019	Resident	<ul style="list-style-type: none"> <li>Believes speed change lanes should remain in place as they are still regularly used.</li> </ul>	<p>Mailed response:</p> <ul style="list-style-type: none"> <li>In response to your concern, a traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> </ul>
21	05/08/2019	Resident	<ul style="list-style-type: none"> <li>Feels that the current roadway design is more appropriate than the proposed design given the safety issues presented with the new interchange configurations.</li> </ul>	<p>Mailed response:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. To clarify, the N/S-W ramp (on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (on-ramp) and E-N/S ramps (off-ramp) will remain in place as per existing conditions. See figure below for clarity.</li> </ul>
22	05/02/2019	Resident	<ul style="list-style-type: none"> <li>Requesting that the speed change lanes remain as is and are not removed from the preferred design, as the transport trucks transporting steel to/from the local steel mill have a very limited ability to stop or accelerate quickly due to the weight of the steel. This could cause significant safety hazards when attempting to merge onto CR17 or if needing to slow down for other vehicles merging in front.</li> </ul>	<p>Mailed response:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
23	05/08/2019	Local Business	<ul style="list-style-type: none"> <li>Phone call received from a local business inquiring about the project.</li> </ul>	Noted. No response required.
24	05/10/2019	Resident	<ul style="list-style-type: none"> <li>Objection to the T-intersection with a stop on CR17</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the</li> </ul>

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				<p>current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</p> <p>Attached a figure with the response illustrating the interchange configuration.</p>
25	05/10/2019	Resident	<ul style="list-style-type: none"> <li>Concerned about the removal of the speed change lanes on CR17 and believes there should at least be a traffic light at the N/S-W on-ramp.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>Additionally, based on the OTM Book 12 signal warrant methodology and existing traffic volumes, the proposed County Road 17 at Highway 34 N/S-W (westbound on-ramp) ramp intersection does not meet the warrants for traffic signals. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
26	05/14/2019	Director of Public Works Township of Champlain	<ul style="list-style-type: none"> <li>The Council of Champlain Township is adamantly opposed to the recommended interchange configuration for the County Road 17 Bridge Replacement for the following reasons; Serious safety concerns related to the WB ramp having a T intersection with a stop sign and eliminating the speed change lanes: We can appreciate that studies have been conducted where it would indicate that this design will be sufficient for current traffic and future projections, however as the residents of this community who are the ones using these roadways we know that this would be a grave design error if approved. The volume of traffic, the heavy trucks (many steel trucks travelling from IVACO Rolling Mills) and many other transport trucks and the speed of these vehicles travelling East and Westbound on Cty. Rd 17 would make it hazardous for any vehicle travelling on or turning onto Cty. Rd 17. This design does not seem to take into account the difficulty and danger it would be for any transport truck to have to come to a complete stop and then expect that heavy vehicle to pull out into the roadway and to get their vehicle up to speed safely without impacting the flow of the East and Westbound traffic. We also anticipate that with this design there would be an increased possibility of vehicles entering the on-ramp, making a stop at the stop sign and deciding that they are going to go the opposite direction the ramp is intended for and as a result will make a dangerous left hand turn onto Cty. Rd. 17. Having speed change lanes (such as the current design) eliminates this risk; vehicles have no choice but to merge onto the road in the direction that the on-ramp</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. Signage (including no left turn and one-way only) will be installed to notify motorists of the non-permitted turning movements, and a concrete island is currently being considered to assist with deterring vehicles from accidentally making a southbound left turn. Furthermore, the posted speed is proposed to be reduced from 90 km/h to 70 km/h on County Road 17 in the vicinity of the intersection. A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17. The intersection of Highway 34 and the W-N/S (off-ramp) / N/S-E (on-ramp) is a different configuration and permits more turning movements than the intersection of County Road 17 and the W-N/S ramp (off-ramp) / N/S-W ramp (on-ramp). The Highway 417 intersection permits all turning movements for each leg of the intersection (i.e. left turns, right turns and through movements are permitted at all four legs of the intersection). The intersection of County Road 17 permits through movements in the eastbound and westbound direction, a westbound right turn, and a southbound right turn. Refer to the attached sketch for permitted turning movements at the County Road 17 intersection. For further clarification, please refer to the April 25, 2019 MTO follow up letter that was addressed to the Mayor of Champlain and Mayor of Hawkesbury and provided to you. If you require additional consultation regarding this matter, please reach out to the MTO Project Manager Brian Utigard.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>

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			<p>is intended for. It is our opinion that the speed change lanes need to be included in this design. If it is a matter of reducing the bridge deck width to only two lanes, then perhaps a design layout could be made with the speed change lanes set back further so that it provides the required merge lane distances, and if that is not feasible, design the bridge in a way that allows for the speed change lanes to stay as is. Perhaps it is of value to remind you of the recent Highway 417 Eastbound ramp and Highway 34 intersection improvements. This was a very dangerous T intersection with a stop sign where many traffic accidents occurred. If you move forward with the current proposed design it will likely result in the same hazardous outcome.</p> <ul style="list-style-type: none"> <li>On behalf of the Township of Champlain we thank you in advance for your consideration on this matter."</li> </ul>	
27	05/15/2019	Resident	<ul style="list-style-type: none"> <li>Objection to the T-intersection with a stop on CR17</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>Attached a figure with the response illustrating the interchange configuration.</li> </ul>
28	05/21/2019	Mayor of Hawkesbury	<ul style="list-style-type: none"> <li>Further to your letter of May 13, 2019 I wish to bring your attention to paragraphs 4 and 5. During your presentations on September 2018, of which Guillaume Boudrias has photos where the T-stop was not in your drawings. Furthermore, all presentations by MTO before the UCPR, Champlain and Hawkesbury, you receive very strong objections against the ramps. We needed to have an additional meeting of April 15, 2019 to reiterate to you that we were still in disagreement with the ramps and even more so with the T intersection with a stop on highway 17.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</li> <li>To clarify, the preferred interchange design was presented at the MTAC 3 meeting on September 20th 2018. Attached is the slideshow presentation for the meeting, please note slide 15. Present at this meeting were the following individuals: Guillaume Boudrais (Town of Hawkesbury), and Marc Clermont (County of Prescott &amp; Russell), James McMahon (Township of Champlain). For further clarification, please refer to the May 13, 2019 follow up letter that was addressed to you from the MTO. If you require additional consultation regarding this matter, please reach out to the MTO Project Manager Brian Utigard: <a href="mailto:Brian.Utigard@ontario.ca">Brian.Utigard@ontario.ca</a>.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
29	05/23/2019	Resident	<ul style="list-style-type: none"> <li>Concerned that the proposed interchange configurations do not look as easily negotiable as the existing design, with traffic being much more fluid now.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of</li> </ul>

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				<p>construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is.</p> <p>Attached a figure with the response illustrating the interchange configuration.</p>
30	05/23/2019	Resident	<ul style="list-style-type: none"> <li>Asking who will be responsible for the accidents that will be caused as a result of the proposed design.</li> </ul>	<p>Sent letter response via email. English translation:</p> <ul style="list-style-type: none"> <li>In response, we would like to clarify that the conversion of the N/S-W Ramp (westbound on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, sight distance and posted speed along County Road 17. The stop condition with a right turn onto County Road 17 also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (eastbound off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. Attached is a figure that clarifies the permitted turning movements for the proposed interchange configuration. The existing E-N/S (westbound off-ramp) and N/S-E (eastbound on-ramp) ramps will remain as-is. In addition, the Ontario Provincial Police are a member of the Technical Advisory Committee for this project and have been consulted with numerous times during key project milestones.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
31	05/24/2019	Resident	<ul style="list-style-type: none"> <li>Does not agree with the stop condition at the N/S-W on-ramp due to the heavy volume of traffic at this site.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 allows trucks/motorists to wait for a gap in traffic before proceeding and also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards.</li> <li>A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> <li>To clarify, the N/S-W ramp (on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (on-ramp) and E-N/S ramps (off-ramp) will remain in place as per existing conditions. See figure below for clarity.</li> </ul>
32	05/27/2019	Civil Engineering Project Manager, Town of Hawkesbury	<ul style="list-style-type: none"> <li>Dear MTO, Please find below the comments and concerns from the Town of Hawkesbury: 1. Difficulty for vehicles, especially for heavy trucks, to enter County Road 17 using the new STOP control westbound ramp configuration; 2. Risk of congestion on County Road 17 and westbound access ramp; 3. Risk of collision when a vehicle engages westbound on County Road 17 due to the new configuration of the access ramp. 4. The potential for a traffic signal being required in the future at the intersection of County Road 17</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 allows trucks/motorists to wait for a gap in traffic before proceeding and also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (off-ramp) speed change lane, which</li> </ul>



Ref No.	Date of Contact	Party	Comment Received	How it was Addressed
			<p>and the westbound ramp as result of the intersection now being a T-intersection STOP sign control. 5. The merge control with acceleration lane option should be revisited by MTO and all efforts should be put towards providing a free flow westbound access ramp. Finally, following the filing of the TESR for 30-day public review, the Town intends to submit a request for Bump-up.</p>	<p>includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards.</p> <ul style="list-style-type: none"> <li>A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17.</li> <li>The intersection of Highway 34 and the W-N/S (off-ramp) / N/S-E (on-ramp) is a different configuration and permits more turning movements than the intersection of County Road 17 and the W-N/S ramp (off-ramp) / N/S-W ramp (on-ramp). The Highway 417 intersection permits all turning movements for each leg of the intersection (i.e. left turns, right turns and through movements are permitted at all four legs of the intersection). The intersection of County Road 17 permits through movements in the eastbound and westbound direction, a westbound right turn, and a southbound right turn. Refer to the attached sketch for permitted turning movements at the County Road 17 intersection.</li> <li>To clarify, the N/S-W ramp (on-ramp) is only for vehicles coming from Highway 34 heading westbound on County Road 17. The W-N/S ramp (off-ramp) is for vehicles coming from County Road 17 heading northbound or southbound on Highway 34. The existing N/S-E (on-ramp) and E-N/S ramps (off-ramp) will remain in place as per existing conditions. See figure below for clarity.</li> </ul> <p>Attached a figure with the response illustrating the interchange configuration.</p>
33	05/24/2019	Resident	<ul style="list-style-type: none"> <li>Concerned that the proposed design will create a hazardous situation, with proper exit/entry lanes being needed due to the high volume of heavy truck traffic.</li> <li>Provided the example of the situation at the HWY 417 HWY 34 junction, which has seen many serious accidents and has only recently been improved for safety reasons.</li> </ul>	<p>Sent letter response via email:</p> <ul style="list-style-type: none"> <li>In response, we would like to reiterate that the conversion of the N/S-W Ramp (on-ramp) from an acceleration lane to a stop condition with a right turn onto County Rd 17 (westbound) meets the current roadway geometric design standards for the observed traffic volumes, has a sight distance of 600m (minimum desirable is 350m) and the posted speed along County Road 17 will be reduced from 90km/h to 70 km/h. The stop condition with a right turn onto County Road 17 allows trucks/motorists to wait for a gap in traffic before proceeding and also eliminates an additional lane that would otherwise be required on the Highway 34 Overpass at County Road 17 which would increase the cost of construction and possibly have environmental and property impacts. The existing W-N/S Ramp (off-ramp) speed change lane, which includes a taper and deceleration lane, will be re-configured with a right turn lane with a total length of 145 m which meets the current roadway geometric design standards. A traffic analysis was completed during the functional design stage for this interchange configuration. It was concluded that all movements operated at acceptable levels of service under 2017 traffic volumes. Delays to the right turn vehicles from the N/S-W ramp to County Road 17 westbound will experience an average of approximately 10 seconds per vehicle with very low queuing, indicating that vehicles will be able to find gaps in traffic on County Road 17 to make this turn. Historic traffic counts were reviewed in the functional design phase and a 2% growth rate was established based on the historical volumes. Using this growth rate, it was determined that this intersection would operate adequately until 2065, at which time traffic signals would be warranted and additional lanes on County Road 17 might be required to accommodate the forecasted traffic volume. An Environmental Assessment would be required at that time to determine the preferred approach for the intersection and for County Road 17. If you require additional consultation regarding this matter, please reach out to the MTO Project Manager Brian Utigard: <a href="mailto:Brian.Utigard@ontario.ca">Brian.Utigard@ontario.ca</a></li> </ul>

2.2.8 MTAC Meetings

A Municipal Technical Advisory Committee (MTAC) was established with Public Works and Emergency Medical Services (EMS) staff from the Town of Hawkesbury, Township of Champlain, the UCPR and the OPP. The Project Team met with the MTAC at key project milestones to discuss project specific issues and ensure municipal interests were considered as the design progressed. Two initial MTAC meetings were scheduled immediately following contract award on May 24th, 2017 and July 24<sup>th</sup>, 2017 to introduce the study, confirm requirements, and solicit feedback on the functional design (developed by others). Subsequent MTAC meetings were scheduled to review the proposed preliminary and detail design and develop the environmental mitigation strategy (including measures to address potential traffic impacts during construction). A list of MTAC representatives is included in the contact list. MTAC meeting notes are included in **Appendix E**. MTAC meetings were held on the dates in **Table 5**.

Table 5: MTAC Meeting Dates

Municipal Technical Advisory Committee Meetings	
<i>Meetings</i>	<i>Date</i>
Meeting 1a	May 24, 2017
Meeting 1b	July 24, 2017
Meeting 2	November 30, 2017
Meeting 3	September 20, 2018

The recommended construction methodology, detour route, bridge designs and County Road 17/Highway 34 interchange configuration were presented at MTAC Meeting 3 with representatives from the Town of Hawkesbury, Township of Champlain, UCPR, Ontario Provincial Police (OPP) and EMS present. There were no objections made to the proposed design.

2.2.9 Additional Meetings with Town/Township/Counties

In addition to the meeting with MTAC, there were meetings and correspondence between MTO, Jacobs and Town/Township/County representatives, as detailed in **Table 6**.

Table 6: Additional Meetings and Correspondence

Additional Meetings and Correspondence	
<i>Meetings</i>	<i>Date</i>
Meeting between MTO, Town of Hawkesbury and Township of Champlain <ul style="list-style-type: none"> <li>Project design concerns were further discussed</li> </ul>	April 15, 2019
Meeting between MTO, Jacobs and UCPR <ul style="list-style-type: none"> <li>Discussion of other options for the interchange configuration</li> <li>UCPR indicated that they would conduct a Third-Party Engineering Review of project</li> </ul>	November 6, 2019
Third-Party Engineering Review submitted to MTO <ul style="list-style-type: none"> <li>Report recommended a reduction in design speed to 60 km/h in order to accommodate a channelized right-turn</li> </ul>	November 21, 2019
MTO responded to Third-Party Engineering Review <ul style="list-style-type: none"> <li>Due to technical and economic constraints, MTO reaffirmed the proposed design (speed reduction on CR 17 and stop controlled intersection on the N/S W ramp) as the preferred alternative.</li> </ul> See <b>Appendix F</b> for MTO's full response to the Review.	February 6, 2020

### 2.2.10 Council Presentations and Correspondence

In collaboration with the MTAC representatives, three council presentations were delivered, one to each of the Town of Hawkesbury, the Township of Champlain and the UCPR to present the Recommended Plan and obtain endorsement for the required short duration road closures, posted speed limit reductions and by-law exemptions. Presentations were given during council meetings on the dates shown in **Table 7**.

Table 7: Council Presentation Dates

Presentations to Council		
<i>Audience</i>	<i>Date</i>	<i>Location</i>
Town of Hawkesbury	February 11, 2019	600 Higginson Street, Hawkesbury ON K6A 1H1
Township of Champlain	March 5, 2019	948 Pleasant Corner Road, Vankleek Hill, ON K0B 1R0
United Counties of Prescott & Russell	March 13, 2019	59 Court Street, L'Orignal, ON K0B 1K0



At all three presentations, concerns with the proposed interchange configuration were raised by members of council and the Mayors, specifically related to the westbound on-ramp (N/S-W ramp) which replaces the existing free-flow ramp with a stop-controlled T-intersection (right turn only). It was explained that this interchange was originally designed with the intent of County Road 17 to be a part of the Trans-Canada highway. However, when Highway 417 was constructed and became the main east-west corridor through the region, the plan to expand County Road 17 to a freeway was no longer intended. As a result, the existing layout of the interchange, which includes free-flow ramps, is not required based on roadway classification and traffic volumes. It was also explained that the design meets the requirements of the MTO Geometric Design Standards for Ontario Highways and will result in significant cost savings compared to a design with free-flow ramps. The design can support the calculated/projected traffic volumes until 2065, at which time (if necessary), traffic signals can be installed to improve traffic operations at this location. Additionally, should traffic volumes increase to the point where County Road 17 does require widening to 4 lanes, the proposed bridge types can be widened. On April 15<sup>th</sup>, 2019 a meeting was held with representatives from the Town of Hawkesbury, Township of Champlain, the UCPR and the MTO Project Team to further discuss the proposed interchange configuration. A follow-up letter was then sent to the Mayors of Hawkesbury and Champlain on April 25, 2019 from MTO to explain the rationale behind eliminating other ramp configuration alternatives that were considered earlier in the detail design phase. Another letter was sent to the Mayor of the Town of Hawkesbury on May 13, 2019 from MTO, in response to an email received on April 25, 2019, to address comments and concerns raised. These letters and other relevant documents/correspondence are located in **Appendix F**.

### 2.2.11 Indigenous Consultation

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Consultation with Indigenous communities including First Nations and Metis was carried out in accordance with the Provincial Environmental Office Info-Bulletin Consultation with Aboriginal Peoples (December 2009). A list of identified Indigenous communities that could be potentially impacted by the works is included in the contact list (**Appendix B**). Letters were sent to representatives on the Indigenous contact list at: Study Commencement and Online PIC; at the Online PIC Update; and at Study Completion (TESR filing). No responses were received. Indigenous notification letters are included in **Appendix B**.

## 3.0 Existing Conditions

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### 3.1 Structures

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#### ***Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0)***

The existing structure is a three-span slab on variable depth reinforced concrete T beam bridge, oriented in the southeast-northwest direction, that was constructed in 1955. It supports four lanes of vehicular traffic (two general purpose lanes and two speed change lanes) along County Road 17. The bridge spans Hawkesbury Creek in the center span and CNR tracks in the eastern span. The structure has no skew to County Road 17 and is on a 4°47' skew to the CNR tracks with a vertical clearance from the top of CNR tracks to underside of girders of 7.22 m. The bridge superstructure is supported by a reinforced concrete counterfort wall at the east abutment, five reinforced concrete columns at each pier and a buried reinforced concrete substructure at the west abutment. The abutments and piers are all supported by shallow foundations. Reinforced concrete retaining walls are cast integrally with the east abutment.

A major rehabilitation was conducted in 1987 which included replacement of the parapets and curbs with barriers and replacement of the deck with a new 200 mm concrete deck slab including new binder course, waterproofing and asphalt wearing surface. Patch repairs to the girders, diaphragms, pier columns and west pier footing were also completed.

The most recent rehabilitation was conducted in 2008, which generally involved substantial patching of the soffit, underside of girders, diaphragms and abutment walls.

#### ***County Road 17 Underpass (Site No. 27X-0051/B0)***

The existing structure is a single-span cast-in-place reinforced concrete rigid frame bridge, oriented in the southeast-northwest direction, that was constructed in 1955. It supports four lanes of vehicular traffic (two general purpose lanes and two speed change lanes) along County Road 17. The bridge spans over Highway 34 with a clear span length equal to 17.98 m and has a 7°57' skew. Details of the foundations supporting the bridge are unknown because the original drawings are not available at this time.

The structure has undergone several rehabilitations throughout its life which included replacing the original metal railing system with concrete parapets and two tube steel railing, extensive patch repairs to the deck soffit, fascia, abutments, wingwalls and retaining walls and replacement of the asphalt and waterproofing system. The most recent rehabilitation was conducted in 2008, which generally involved patching of the concrete curbs.

#### ***Condition Assessment***

A structural site investigation of both bridges was conducted on November 7<sup>th</sup>, 2017. The investigation was limited to a general visual inspection of the accessible bridge elements to confirm the findings of a previous Ontario Structure Inspection Manual (OSIM) inspection (conducted by others on June 22, 2016). The condition of both bridges was found to be generally fair with localised areas in poor condition. See typical conditions in **Figure 4, Figure 5, Figure 6 and Figure 7.**



Figure 4: Typical condition of CNR Overhead



Figure 5: Typical condition of Site No. 27-50 from below



Figure 6: Typical condition of County Road 17 Underpass



Figure 7: Typical condition of Site No. 27-51 from below

## 3.2 Natural Environment

### 3.2.1 Methodology

Preliminary terrestrial and aquatic existing conditions were assessed during the functional design phase and were documented in the *Terrestrial Ecosystem Existing Conditions Report, Mega 6 Bridges, Hawkesbury Creek – CNR Overhead (Site No. 27-50) & Highway 34 Overpass at County Road 17 (Site No. 27-51) W.P. 4098-13-01, WSP, 2017* and the *Fish and Fish Habitat Existing Conditions Report, Mega 6 Bridges, 27-50 Hawkesbury Creek CNR Overhead W.P 4098-10-01, 27-51 Highway 34 Overpass at County Road 17 W.P. 4203-15-00, WSP, 2017*. Existing conditions were confirmed during detail design and documented in the *Hawkesbury Bridge Replacements, Assignment 14, GWP 4203-15-00 Terrestrial Ecosystem Impact Assessment Report, Dillon, 2019* and the *Fish and Fish Habitat Impact Assessment Report, Hawkesbury Bridge Replacements, Assignment 14, GWP 4203-15-00, Dillon, 2019 (Appendix G)*.

### ***Functional Design Phase***

During the functional design phase, the Ministry of Natural Resources and Forestry (MNRF) Kemptville District office was contacted for information on Species at Risk (SAR) and provincially designated natural areas. SAR are species designated under the provincial Endangered Species Act, 2007 (ESA) or under the federal SAR Act as either Extirpated, Endangered, Threatened or Special Concern depending on level of risk. Examples of provincially designated natural areas are:

- Area of Natural and Scientific Interest;
- Provincially Significant Wetland;
- Environmentally Significant Area;
- Provincial Park; and
- Conservation Area.

MNRF's Natural Heritage Information Centre (NHIC) online database was also searched for records of designated natural areas and species of conservation concern within one kilometer of the study area. Species of conservation concern (SCC) are SAR and provincially rare species. Species ranked by the NHIC as S1, S2 or S3 are considered provincially rare.

MNRF responded on August 6, 2015. They indicated that no SAR were known in the vicinity of the bridge but that there are significant woodlands and unevaluated wetlands nearby. The site locations do not fall within the jurisdiction of a Conservation Authority. The NHIC online database contains a record for one SAR, spiny softshell (*Apalone spinifera*) and no provincially rare species or designated natural areas.

Field investigations were conducted by WSP during the functional design stage on June 8, 2015 and included classification of vegetation communities defined using the Ecological Land Classification (ELC) for Southern Ontario. Investigations also included a search for wildlife, wildlife habitat and evidence of wildlife (e.g. tracks, scat, dens). Efforts were made to identify plant and wildlife SAR while in the field, and to search for migratory bird nests on the structures and adjacent to the structures.

Various sources of background data were consulted to develop an inventory of the aquatic environment in Hawkesbury Creek and its tributary within the project limits. The MNRF was contacted on August 6 and December 14, 2015 to provide available fish and fish habitat information. Other methods of obtaining information included:

- Topographic mapping, drainage maps and aerial photography;
- Fisheries and Oceans Canada (DFO) SAR distribution mapping;
- NHIC Biodiversity Explorer Database;
- Discussions with Kemptville MNRF Biologists; and
- Field surveys including habitat mapping and fisheries community sampling.

Prior to fish community investigations, a License to Collect Fish for Scientific Purposes was obtained from the MNRF Kemptville District for the Hawkesbury Creek (SN 27-50). Fish community sampling was undertaken on October 1st, 2015 in accordance with the protocol. All fish captured were released unharmed back into the watercourse.

### ***Detailed Design Phase***

During the detail design phase, background information on the existing terrestrial and aquatic conditions such as the functional design stage reports, the MNRF Kemptville district, their online mapping tool and the NHIC as well as various wildlife atlases were reviewed.

Field investigations were conducted by Dillon biologists on May 31<sup>st</sup>, 2017 and terrestrial and aquatic natural resources were verified. Confirmation of terrestrial ecosystem existing conditions included the following:

- Confirmation of ELC communities that were identified in the Terrestrial Ecosystem Existing Conditions Report (WSP 2017) using accepted protocols in Ontario;
- A migratory bird nest search;
- Documentation of incidental wildlife and wildlife habitat encountered in the field;
- A Butternut Health Assessment (BHA) for identified Butternut trees in the Terrestrial Ecosystem Existing Conditions Report (WSP 2017); and
- Documentation of sensitive/rare species and/or SAR and/or associated habitat encountered in the field.

A detailed description of the existing terrestrial and aquatic conditions in the study area are included in **Appendix G**.

#### **3.2.2 Physiography**

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The Hawkesbury Creek and CNR Overhead and County Road 17 Underpass sites are located within the Russell and Prescott Sand Plains physiographic region. This region is characterized by a group of large sand plains separated by clays of the lower Ottawa Valley. The site is located at the interface of a sand plains physiographic landform to the west of Highway 34 and a till plains physiographic landform to the east. The surficial deposits are very shallow over exposed Paleozoic bedrock of the Rockcliffe Formation, which consists of middle Ordovician limestone, dolostone, shale, arkose and sandstone.

#### **3.2.3 Vegetation Communities**

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The study area is located in the Upper St. Lawrence Forest Region. The area lies in a lowland through which the waters of the Great Lakes system drain. It is a transitional zone between the southern deciduous forests of eastern North America and mixed deciduous-conifer forest. In this region the dominant forest cover is composed of Sugar Maple and Beech with Red Maple, Yellow Birch, Basswood, White Ash, Largetooth Aspen, and Red and Bur Oaks. Local occurrences of White Oak, Red Ash, Grey Birch, Rock Elm, Blue-Beech, and Bitternut Hickory can also be found. In settled areas American Elm is particularly common. Butternut, Eastern Cottonwood, and Slippery Elm can be found sporadically in river valleys. Poorly-drained areas frequently contain hardwood swamps dominated by Black Ash. In general, broadleaved forests can be found in areas with deep calcareous soils, while conifers are more dominant on shallow, acid or eroding materials. Common coniferous species include Eastern Hemlock, Eastern White Pine, White Spruce and Balsam Fir. Stands of eastern White Pine and Red Pine can be found on coarse textured soils. Wetter sites may contain Black Spruce and Eastern White Cedar. Eastern White Cedar is also found on dry, rocky and stony sites.

Extensive settlement and clearing have taken place over much of this forest region. The study area is surrounded by low density residential and commercial land associated with the town of Hawkesbury. The



southeast quadrant of the CNR overhead contains a large, paved lot with a farm road access to the riparian forested areas and a wooden watercourse crossing structure.

During the detail design stage, Ecological Land Classification (ELC) was completed for the study area based on aerial photograph interpretation and field observations to confirm the ELC communities identified in the Terrestrial Ecosystem Existing Conditions Report, WSP 2017 during the functional design phase. Overall, field investigations were consistent with previous findings. **Table 8** and **Figure 8** describe existing vegetation communities in detail.

**Table 8: ELC Description of Vegetation Communities**

Species	Description	Location
Fresh-Moist White Elm Lowland Deciduous Forest Type (FOD7-1)	The canopy was dominated by White Elm ( <i>Ulmus americana</i> ) and Manitoba Maple ( <i>Acer negundo</i> ), with occasional Hybrid Poplar ( <i>Populus canadensis</i> ), Black Cherry ( <i>Prunus serotina</i> ), sparse Trembling Aspen ( <i>Populus tremuloides</i> ) and Black Ash ( <i>Fraxinus nigra</i> ). The dense subcanopy was abundant with Common Buckthorn ( <i>Rhamnus cathartica</i> ) with occasional young Trembling Aspen. The moderately dense shrub layer was abundant with Black Cherry saplings, and occasional Red Raspberry ( <i>Rubus idaeus</i> ), Riverbank Grape ( <i>Vitis riparia</i> ), Sugar Maple ( <i>Acer saccharum</i> ) saplings, Honeysuckles ( <i>Lonicera</i> sp.), and Alternate-leaved Dogwood ( <i>Cornus alternifolia</i> ). The ground layer was moderately dense, containing occasional abundant Thicket Creeper ( <i>Parthenocissus vitacea</i> ), Avens ( <i>Geum</i> sp.), and occasional Sensitive Fern ( <i>Onoclea sensibilis</i> ). A Butternut was found in the east unit of this vegetation type, at the boundary of a unit of Forb Mineral Meadow Marsh Type.	Located southwest of the Hawkesbury Creek structure along the riverbanks of Hawkesbury Creek
Dry Fresh Poplar Deciduous Forest Type (FOD3-1)	This vegetation type had a semi-closed canopy abundant with Eastern Cottonwood ( <i>Populus deltoides</i> ) and a subcanopy of occasional White Elm ( <i>Ulmus americana</i> ) with sparse young Sugar Maple. The moderately dense shrub layer was abundant with Riverbank Grape and contained occasional Common Buckthorn. The dense ground layer was abundant with Kentucky Bluegrass ( <i>Poa pratensis</i> ) and Riverbank Grape with occasional Tall Goldenrod ( <i>Solidago altissima</i> ), Canada Anemone ( <i>Anemone canadensis</i> ) and Poison Hemlock ( <i>Conium maculatum</i> ).	Found southwest of the Hawkesbury Creek and CNR Overhead
Dry Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	This ecosite had a dense canopy abundant with White Elm and Sugar Maple, with occasional Basswood ( <i>Tilia americana</i> ), Black Cherry, Large Tooth Aspen ( <i>Populus grandidentata</i> ), and sparse Black Ash on the riverside slopes. A single Butternut ( <i>Juglans cinerea</i> ) was found in this unit, south of County Road 17, at the edge of the deciduous swamp (SWD) found along the riverbanks. The dense shrub layer was abundant with Nannyberry ( <i>Viburnum lentago</i> ), Virgin's Bower ( <i>Clematis virginiana</i> ) and contained occasional Staghorn Sumac ( <i>Rhus typhina</i> ). The dense ground layer was abundant with Field Horsetail ( <i>Equisetum arvense</i> ), and occasional Coltsfoot ( <i>Tussilago farfara</i> ), with sparse Virginia Strawberry ( <i>Fragaria virginiana</i> ).	Found along the east banks of Hawkesbury Creek, north and south of the County Road 17 Underpass
Dry Fresh Sugar Maple Beech Deciduous Forest Type (FOD5-2)	This vegetation type had a dense canopy dominated by abundant Sugar Maple with occasional American Beech ( <i>Fagus grandifolia</i> ), Black Cherry, and White Elm. The shrub layer contained occasional Choke Cherry ( <i>Prunus virginiana</i> ), Honeysuckles, and Common Buckthorn. The variable	Found in the southwest quadrant of the Hawkesbury Creek

Species	Description	Location
	<p>ground layer contained sparse areas with occasional Red Trillium (<i>Trillium erectum</i>), Jack-in-the-Pulpit (<i>Arisaema triphyllum</i>) and areas dense with ferns such as Ostrich Fern (<i>Matteuccia struthiopteris</i>), Sensitive Fern (<i>Onoclea sensibilis</i>), and Interrupted Fern (<i>Osmunda claytoniana</i>). Two Butternut trees were found at the edge of this unit and the Forb Mineral Meadow Marsh (MAM2-10).</p>	<p>and CNR Overhead</p>
<p>Fresh Moist Poplar Deciduous Forest Type (FOD8-1)</p>	<p>This vegetation type had a moisture regime and ground flora. The canopy was moderately dense and abundant with Eastern Cottonwood and Trembling Aspen, with occasional Manitoba Maple and Black Ash. The shrub layer contained abundant Common Buckthorn. The ground layer was abundant with Canada Anemone, Poison Hemlock, and Canada Goldenrod, with occasional Sedges (<i>Carex</i> spp.), Tall Agrimony (<i>Agrimonia gryposepala</i>), and Red Baneberry (<i>Actaea rubra</i>). There were also patches of this vegetation type in the northeast quadrant of the County Road 17 Underpass. They contained a canopy of abundant Trembling Aspen and occasional Balsam Poplar (<i>Populus balsamifera</i>) and White Elm. Common Buckthorn, Tatarian Honeysuckle (<i>Lonicera tatarica</i>) and Red-osier Dogwood (<i>Cornus stolonifera</i>) were found in the understory and Red Raspberry and Flat-top Fragrant Goldenrod (<i>Euthamia graminifolia</i>) in the ground cover. Next to the culvert adjacent to Highway 34 were patches of Coltsfoot on the bank and watercress (<i>Nasturtium</i> sp.) in the watercourse.</p>	<p>Northwest quadrant of the Hawkesbury Creek and CNR Overhead, immediately adjacent to FOD3-1</p>
<p>Dry to Moist Old Field Meadow Type</p>	<p>Few trees and shrubs existed in this vegetation type, however, sparse young Manitoba Maple and White Elm were found in these units. The dense ground layer contained abundant Canada Anemone, Tall Goldenrod, Kentucky Bluegrass, and Hog Peanut (<i>Amphicarpaea bracteata</i>), with occasional Cow Vetch (<i>Vicia cracca</i>), Red Raspberry, White Clover (<i>Trifolium repens</i>), Rose (<i>Rosa</i> sp.), Thicket Creeper, Riverbank Grape, Bouncing Bet (<i>Saponaria officinalis</i>), and Poison Hemlock. Other common species of cultural meadows were found including: Kentucky Bluegrass, Wild Parsley (<i>Pastinaca sativa</i>), Red Clover (<i>Trifolium pratense</i>), Smooth Brome (<i>Bromus inermis</i>), Burdock (<i>Arctium minus</i>), Creeping Thistle (<i>Cirsium arvense</i>), Common Milkweed (<i>Asclepias syriaca</i>), Wild Carrot (<i>Daucus carota</i>), and Field Horsetail but, in lesser amounts. An inclusion of Sumac Mineral Cultural Thicket type (CUT1-1) was observed in the unit on the south edge of County Road 17, west of Hawkesbury Creek. This inclusion was dominated by a dense shrub layer of Staghorn Sumac. Other inclusions occurred in the drainage ditches of the southeast and northeast quadrants of the County Road 17 Underpass. They were dominated by Broad-leaf Cattail (<i>Typha latifolia</i>) and also contained occasional Purple Loosestrife (<i>Lythrum salicaria</i>).</p>	<p>Found in all quadrants</p>
<p>Mineral Cultural Thicket Ecosite (CUT1)</p>	<p>Although the unit could not be observed in detail, the shrub layer was abundant with Manitoba Maple and Staghorn Sumac with a ground layer consistent with the previously described flora in the Old Field Meadow units (CUM1-1).</p>	<p>West of the CNR tracks, adjacent to a residential lot in complex with Old Field Meadow</p>



Species	Description	Location
Coniferous Plantation Ecotie (CUP3)	These small units of planted landscape trees were dominated by tall White Spruce trees ( <i>Picea glauca</i> ); the ground layer vegetation was consistent with the adjacent Old Field Meadow units (CUM1-1). The White Spruce trees were accompanied by a large patch of Staghorn Sumac.	Southeast quadrant of the County Road 17 Underpass
Residential Rural Property (CVR 4)	The vegetation on this property was landscaped trees and gardens and was not inventoried as a part of the natural terrestrial ecosystem.	Residential property found northwest of the County Road 17 Underpass.
Deciduous Swamp (SWD)	This vegetation type contained small deciduous swamp units with moderately dense canopy and occasional Black Ash and Large Tooth Aspen. The dense subcanopy was abundant with Domestic Apple ( <i>Malus pumila</i> ) and occasional White Elm and sparse Manitoba Maple. The dense shrub layer contained occasional Staghorn Sumac, Red Raspberry, Riverbank Grape, Virginia Creeper, Virgin's Bower, Nannyberry, young Manitoba Maple, and Common Buckthorn. The ground layer was abundant with Canada Goldenrod ( <i>Solidago canadensis</i> ), Sensitive Fern, Ostrich Fern, Poison Hemlock, and Canada Anemone, with occasional Tall Meadow-rue ( <i>Thalictrum pubescens</i> ), Red Baneberry, and Field Horsetail.	Low-lying areas in the floodplains to Hawkesbury Creek, south of CR 17.
Alder Organic Thicket Swamp Type (SWT3-1)	The sparse canopy contained White Elm, Manitoba Maple, and Red Ash. The dense shrub layer was dominated by Speckled Alder ( <i>Alnus incana</i> subsp. <i>rugosa</i> ) with occasional Riverbank Grape and sparse Staghorn Sumac and Nannyberry. The ground layer was abundant with Dwarf Raspberry ( <i>Rubus pubescens</i> ), and contained occasional Spotted Touch-me-not ( <i>Impatiens capensis</i> ), Canada Goldenrod, and Current ( <i>Ribes sp.</i> ), with sparse Thicket Creeper, Graceful Sedge ( <i>Carex gracillima</i> ), other Sedges ( <i>Carex spp.</i> ), Avens, and seedlings of Red Osier Dogwood ( <i>Cornus stolonifera</i> ). A soil sample taken in this location found greater than 40 cm of Organic humic soils.	Located in the floodplain next to Hawkesbury Creek north of CR 17
Reed Canary Grass Mineral Meadow Marsh Type (MAM2-2)	Few trees or shrubs existed in this unit, save some young White Elm and occasional Speckled Alder, Common Buckthorn, Riverbank Grape, sparse Tartarian Honeysuckle ( <i>Lonicera tatarica</i> ), and European Highbush Cranberry ( <i>Viburnum opulus</i> subsp. <i>opulus</i> ). The ground layer was dominated by Reed Canary Grass ( <i>Phalaris arundinacea</i> ), with abundant Poison Hemlock, Canada Goldenrod and occasional Bouncing Bet, Red Baneberry, Sensitive Fern, Early Meadow Rue ( <i>Thalictrum dioicum</i> ), Spotted Touch-me-not, and Spotted Joe-Pye Weed ( <i>Eupatorium maculatum</i> ). A soil sample taken in this location found stony mineral soils underlying a 2 cm organic litter layer.	Located in the western floodplain to Hawkesbury Creek, north of CR 17
Ostrich Fern Forb Mineral Meadow Marsh Type (MAMM2-7)	The ground layer here was abundant with Ostrich Fern, Bracken Fern ( <i>Pteridium aquilinum</i> ), Field Horsetail, and Virgin's Bower, with occasional Interrupted Fern, and Canada Goldenrod with sparse Poison Hemlock and Reed Canary Grass.	North of CR 17 in a drainage area west of the CNR tracks.

Species	Description	Location
Forb Mineral Meadow Marsh Type (MAM2-10)	This vegetation type was variable in composition by unit. In all units trees and shrubs were sparse with only sparse White Elm, Speckled Alder, Staghorn Sumac, Virgin's Bower, and Tatarian Honeysuckle. The ground layer was dense with forbs including abundant Canada Goldenrod, Poison Hemlock, Spotted Touch-me-not and Reed Canary Grass with occasional Bouncing Bet, Sensitive Fern, Early Meadow-rue, Ostrich Fern, Red Trillium, Jack-in-the-pulpit, Avens, Bedstraw ( <i>Galium sp.</i> ) with sparse Stinging Nettle ( <i>Urtica dioica</i> ), Northern Water Horehound ( <i>Lycopus americanus</i> ), and Blue Flag ( <i>Iris versicolor</i> ).	Found in the Hawkesbury Creek floodplain, both north and south of CR 17
Cattail Organic Shallow Marsh Type (MAS3-1)	Sparse shrubs of Nannyberry were found in the shrub layer. The ground layer was dominated by Cattails ( <i>Typha angustifolia</i> and <i>T. latifolia</i> ) with abundant Reed Canary Grass and occasional Sensitive Fern. Standing water was observed at ground level at the time of field investigations. A soil auger taken in this unit found 50 cm of organic mesic soils over clay.	North of CR 17 between the CNR line and Hawkesbury Creek
Deciduous Woodland	This ELC community was not identified during the functional design phase, but was observed during the detail design field investigations to contain a strand of box elder, Elm and poplar species.	Southwest quadrant of the study area



Figure 8: Ecological Land Classification (ELC) Mapping of Vegetation Communities, WSP, 2017



### **Vegetation Significance and Species At Risk**

During the functional design phase, the potential for significant woodlands in the study area was confirmed by the Kemptville MNRF and several units of unevaluated wetland were identified.

Four Butternut trees were observed in the study area (refer to **Figure 8**). These Butternut trees considered SAR, were located approximately 31 m, 95 m, 83 m and 84 m from the Hawkesbury Creek and CNR Overhead structure, respectively. After following protocols with the MNRF, they were evaluated and deemed non-retainable. During the detail design field investigations by Dillon in 2017, seven Butternut trees and one Butternut hybrid were identified within the study area. After following MNRF protocols, the trees were also deemed non-retainable. No further action is required.

### **3.2.4 Wildlife Communities**

The presence of Hawkesbury Creek enhances wildlife opportunity in the study area by increasing habitat diversity and offering a corridor for movement. The mix of forests, thickets, meadows and marshes along the creek is habitat preferred by many wildlife species. Due to the proximity of urban development, however, wildlife use is limited to species tolerant of disturbed conditions. Species observed during field investigations are indicated below.

#### **Birds**

During the initial field investigations, two forest edge species, Eastern Phoebe (*Sayornis phoebe*) and American Robin (*Turdus migratorius*), were seen at the Hawkesbury Creek and CNR Overhead structure tending nests attached to the underside of the bridge. There were also two inactive Eastern Phoebe nests under the bridge. Eastern Phoebe and American Robin are designated migratory birds under the *Migratory Birds Convention Act* (MBCA), which provides them with protection for their nests and nesting activity. No nests were found under the County Road 17 Underpass. This bridge has a smooth underside and offers minimal opportunities for bird nesting.

Other forest edge species noted include American Crow (*Corvus brachyrhynchos*), Blue Jay (*Cyanocitta cristata*), Great-crested Flycatcher (*Myiarchus crinitus*), Least Flycatcher (*Empidonax minimus*), and a Red-Eyed Vireo (*Vireo olivaceus*) that was sitting on a nest containing eggs. Several thicket species were present including Nashville Warbler (*Oreothlypis ruficapilla*), Yellow Warbler (*Setophaga petechia*) and American Redstart (*Setophaga ruticilla*). The American Redstart, a species that prefers thickets near watercourses, was exhibiting nesting behavior northwest of the Hawkesbury Creek and CNR Overhead structure. The marshes contained a Common Yellowthroat (*Geothlypis trichas*) and a Song Sparrow (*Melospiza melodia*). Upstream on Hawkesbury Creek was a Mallard (*Anas platyrhynchos*) with young. Other species observed south of the study area that may occur near the bridge include American Goldfinch (*Carduelis tristis*), Gray Catbird (*Dumetella carolinensis*), Blue-headed Vireo (*Vireo solitarius*), Common Grackle (*Quiscalus quiscula*) and Mourning Dove (*Zenaida macroura*).

During the 2017 detail design field investigations, ten bird species were observed in the study area and included:

- Red-winged Blackbird (*Agelaius phoeniceus*)
- American Goldfinch (*Carduelis tristis*)
- Northern Flicker (*Colaptes auratus*)
- Gray Catbird (*Dumetella carolinensis*)

- Yellow-bellied Flycatcher (*Empidonax flaviventris*)
- Common Yellowthroat (*Geothlypis trichas*)
- Baltimore Oriole (*Icterus galbula*)
- Song Sparrow (*Melospiza melodia*)
- Eastern Phoebe (*Sayornis phoebe*)
- Magnolia Warbler (*Setophaga magnolia*)
- Yellow Warbler (*Setophaga petechia*)
- Chipping Sparrow (*Spizella passerina*)
- Warbling Vireo (*Vireo gilvus*)
- Red-eyed Vireo (*Vireo olivaceus*)

A survey for migratory bird nests was conducted by a Dillon biologist on May 31<sup>st</sup>, 2017. No nests were observed within the vegetated areas of the ROW or on the Hawkesbury Creek and CNR Overhead or County Road 17 Underpass. As there has been a lag period of greater than two years between the completion of the surveys in 2017 and the commencement of construction, re-survey of the structures is recommended to confirm these areas remain unoccupied.

### **Reptiles**

A Snapping Turtle (*Chelydra serpentina*) was observed during the functional design phase field investigations on a sandy bar at the edge of Hawkesbury Creek approximately 90 m upstream of the bridge. No turtle nests were seen during the survey but nesting may be possible on the road and rail embankments. There are rocks along the river and woody debris piles along the access road that may be used by snakes; however, no snakes were observed during the survey.

### **Amphibians**

The wetlands, meadows and forests provide habitat for amphibians and an American Toad (*Anaxyrus americanus*) was seen in the thicket swamp by the upstream rail bridge. A Green Frog (*Lithobates clamitans*) was heard south of the study area, a species also likely to occur in marshes within the study area.

### **Mammals**

A Red Fox (*Vulpes vulpes*) was seen during initial field investigations in the southwest quadrant of the County Road 17 Underpass. It displayed territorial behavior before disappearing south of the study area, possibly to a den. There were dens in the road embankments of both south quadrants of the County Road 17 Underpass that likely belong to Woodchuck (*Marmota monax*). Tracks of a Northern Raccoon (*Procyon lotor*) were found along the creek. One or more of these species could be using trails found in the study area that connect the forest to the bridge abutments and road embankments.

### **Insects**

A Canadian Tiger Swallowtail (*Papilio canadensis*) was seen during initial field investigations foraging over the meadow areas.

### ***Terrestrial Wildlife Significance and Species At Risk***

As noted above, during the functional design phase a Snapping Turtle was observed 90 meters upstream of the Hawkesbury Creek and CNR Overhead bridge. This species is currently listed as Special Concern under the Ontario Endangered Species Act, 2007 and Special Concern under the federal SAR Act. It has also been designated as a Specially Protected Reptile under the Ontario Fish and Wildlife Conservation Act, 1999, and is further protected through the Provincial Policy Statement under the Ontario Planning Act.

The Spiny Softshell turtle identified in the NHIC database was also assessed for its potential to be impacted by the proposed works. While their preferred habitat of sandy bars and basking areas are limited in the study area and no species were observed, it was noted that this species may still be present in the study area. The Spiny Softshell is currently listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as threatened and is protected under the Ontario Fish and Wildlife Conservation Act, 1999.

Other SAR that were not observed but that may have potential habitat within or adjacent to the study area includes the Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-Colored Bat and Barn Swallow.

### **3.2.5 Aquatic Communities**

#### ***Hawkesbury Creek - Fish Community***

Sampling of this watercourse was carried out on October 15, 2015 by MMM Group using minnow traps within the Right of Way (ROW). The aquatic habitat was found to support a fish community consisting of two baitfish species (Common Shiner/*Luxilus Cornutus* and Longnose Dace/*Rhinichthys Cataractae*) that are common in Ontario. Overall, the fish community sampled was consistent with what would be expected within the aquatic habitat present. Based on the field survey, it appears that Hawkesbury Creek within the assessed area supports direct fish use with potential habitat for these common species to carry out their daily life cycles. There were abundant mussel shells observed along the right bank approximately 25 meters downstream of the structure. These species were identified as Fat Mucket (*Lampsilis siliquoidea*) and Giant Floater (*Pyganodon grandis*). Both species are common in Ontario and are not at risk.

Recent correspondence with the MNRF confirmed that Hawkesbury Creek has moderate fish habitat sensitivity and is managed for a combined warmwater/coolwater fish community that includes Carp, Minnow, Northern Pike, Muskellunge, Smallmouth Bass, White Sucker Sunfish and Sucker fish species.

#### ***Hawkesbury Creek - Fish and Fish Habitat***

Hawkesbury Creek flows in a northerly direction towards the Ottawa River with the confluence approximately 2.0 km downstream of the Hawkesbury Creek and CNR Overhead at County Road 17. The creek channel is illustrated in **Figure 9**.

Upstream of the Hawkesbury Creek and CNR Overhead, Hawkesbury Creek flows as a defined channel and is fairly homogenous throughout. At the time of survey, there was sufficient flow observed (turbid waters) and morphology was a mix of runs (60%) and riffles (40%). The average wetted width was 10 m and depth averaged 1 m.

Downstream the watercourse flows relatively straight under the existing bridge. The piers are beyond the active channel and (assumed) bankfull channel. The banks under the bridge are fairly steep and the channel is lined with large boulders. There is erosion noted throughout this reach and there is minor vegetation growth, dominated by cultural species, under the bridge. There are deck drains present on the bridge that directly discharge into Hawkesbury Creek.

Approximately 100 meters downstream of the bridge, a weir is present. At the time of survey, it was difficult to see the weir as flow was substantial. This could pose as a seasonal barrier to fish movement upstream during periods of low flow.

### ***Tributary of Hawkesbury Creek – Fish Community***

Fish community sampling was carried out on October 1, 2015 using dip nets. The aquatic habitat was found to support a fish community consisting of Young of the Year (YOY) baitfish species. Fish were only collected at the culvert outlet of the off-ramp. Given the barrier present at Highway 34, it is likely that these baitfish species are restricted to the upstream reaches where they are able to carry out their daily life cycles. Overall, given the permanency of the feature and the baitfish species observed, the Tributary of Hawkesbury Creek supports direct fish use.

### ***Tributary of Hawkesbury Creek – Fish and Fish Habitat***

The Tributary of Hawkesbury Creek appears to be a permanently flowing watercourse which flows in an east to west direction, approximately 90 m north of the County Road 17 Underpass. It flows parallel to County Road 17, originating east of the off-ramp to Highway 34 in a wetland feature. It then flows under the off-ramp and the on-ramp (to County Road 17 Westbound) through an approximately 35 m long box culvert. It then flows for approximately 135 m through the interchange loop and under Highway 34 through a box culvert. It likely discharges into Hawkesbury Creek, approximately 130 m downstream, however this was not field-verified due to limited access to private property. Within the upstream assessed reach, the Tributary of Hawkesbury Creek flows westerly through a defined flow path with undefined banks through most of the channel. There is abundant watercross throughout the channel, indicating the reach is supported by groundwater inputs and flows are likely to be permanent.

As the flow path approaches the culvert inlet at Highway 34, there is a steep step – pool sequence over bedrock and tree roots. The wetted width of this drop was approximately 0.75 m. The drop extends over 25 m in length and is approximately over 2 m in height. The channel widens substantially at the culvert inlet of Highway 34 as the box culvert is approximately 2 m in width. Sheet flow was observed within the culvert. Watercross is present within the channel at this location and at the culvert inlet and outlet at Highway 34. Highway drainage along the ditches drain into the channel.

Fish were observed only within the uppermost upstream reaches i.e. at the culvert outlet of the off-ramp. Both the densely choked channel and the steep drop likely act as a barrier to fish movement.

Downstream of the County Road 17 Underpass was not assessed as the culvert outlet and channel are bounded by private residences and permission to enter was not obtained. However, it was noted that the channel narrows substantially from the culvert outlet, approximately 2 m within the culvert to roughly 0.5 m. The channel appears to be more open within this reach as compared to what was observed in the upstream reaches. From the culvert outlet, watercross was observed within the channel.

### ***Aquatic Species at Risk***

Consultation with the Kemptville MNRF determined the River Redhorse (*Moxostoma carinatum*), a species listed as Special Concern provincially and federally, as potentially being present. A review of the DFO aquatic SAR mapping suggests that no aquatic SAR are present in the vicinity of the study area but does indicate the potential presence of Channel Darter (*Percina copelandi*; federally Threatened) downstream at the Ottawa River and mouth of Hawkesbury Creek.





**MTO LARGE VALUE RETAINER - EAST REGION**  
 ASSIGNMENT No. 5 - HAWKESBURY

**KEY ENVIRONMENTAL FEATURES**  
 FIGURE 2

- Direction of Flow
- Butemut Locations
- Road
- Railway
- Watercourse
- Candidate Turtle Nesting Habitat
- Woodlands
- Wetlands
- Coolwater Thermal Regime - Moderate Fish Habitat Sensitivity (MNR October 2017)
- Candidate Amphibian Breeding Habitat

0 10 20 40 m SCALE 1:1,500

MAP DRAINING INFORMATION:  
 DATA PROVIDED BY MNR

MAP CREATED BY: LK  
 MAP CHECKED BY: JW  
 MAP PROJECTION: NAD 1985 UTM Zone 17N



PROJECT: 17-0180  
 STATUS: DRAFT  
 DATE: 2017-11-24

Source: Esri, DeLorme, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, AeroGRID, IGN, and the GIS User Community

FILE LOCATION: I:\GIS\175180 MTO Large Value Retainer\mxd\hawkeshury\Pa\_keyEnvFeatures.mxd

Figure 9: Primary Natural Features

### 3.2.6 Designated Substances and Contaminants

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A Designated Substances Survey (DSS) of the County Road 17 Underpass was completed September 20, 2017 by Golder Associates. While only the south side of the County Road 17 Underpass (Site No. 27X-0051/B0) was accessible for assessment, it is assumed that the findings apply to the north side and to the adjacent Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0) as well. The focus of the DSS was the eleven designated substances, as defined in Ontario Regulation 490/09 *Designated Substances* (O. Reg. 490/09) made under the Ontario *Occupational Health and Safety Act*, R.S.O. 1990 Chapter O.1, as amended (OHSA). Substances surveyed included acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. The full DSS report can be found in **Appendix H**.

#### ***Asbestos-Containing Materials***

A total of 18 samples of suspect asbestos-containing materials (ACMs) were collected at the site and submitted for asbestos content analysis representing six (6) homogeneous materials. Homogeneous materials sampled included two (2) joint materials, one (1) leveling material, one (1) cementitious parging material, and one (1) caulking material.

Based on the analytical results, the following materials were identified to be ACMs and any repair, removal, or disturbance must be conducted in accordance with *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*, as amended (O. Reg. 278/05):

- The overpass curb/rail wall joint material – 40% Chrysotile; and
- The drain pipe caulking – 35% Chrysotile.

Electrical and/or other embedded conduits were not observed within the immediate vicinity of the site; however, they may be concealed underground or within structural elements. Suspect ACMs may exist within such conduits and should be assumed to be asbestos-containing unless proven otherwise by laboratory testing.

The County Road 17 Underpass and Hawkesbury Creek and CNR Overhead are equipped with two drains each; one on the south and one on the north side for a total of four (4) drainpipes. On the County Road 17 Underpass, only the south drain was accessible during the site assessment. Attempts were made to open the drain cover; however, the cover was sealed by weathering and debris. Suspect ACMs may be encountered within the drains on both bridges and must be assumed to be asbestos-containing unless proven otherwise by laboratory testing.

The concrete asphalt at the sites are presumed to be silica-containing materials. Activities that may cause disturbance to these materials, such as demolition, must be conducted in accordance with OHSA and MOL Silica Guideline.

No other designated substances, as defined in O. Reg. 490/09 under the OHSA, were observed at the site.

## 3.3 Social/Economic Environment

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### 3.3.1 Land Use

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The Hawkesbury Creek and CNR Overhead and County Road 17 Underpass bridges are located in the Town of Hawkesbury, Township of Champlain and the UCPR. The bridges are located within an area of commercial, residential and open space land use. Per Schedule A of the 2010 Official Plan for the Town of Hawkesbury, the

land immediately Northwest of the bridges is a Residential Policy Area and the land immediately Northeast is a Community Commercial Policy Area, which is intended for retail and service commercial development largely dependent on local and passing vehicular traffic. The area located on the south side of County Road 17 is part of Township of Champlain and is included in the Prescott-Russell Official Plan jurisdiction (see **Figure 10**). The southeastern portion of the study area is considered a Rural Policy Area and the southwestern portion is designated a Trade and Industry Policy Area per Schedule A of the Official Plan.

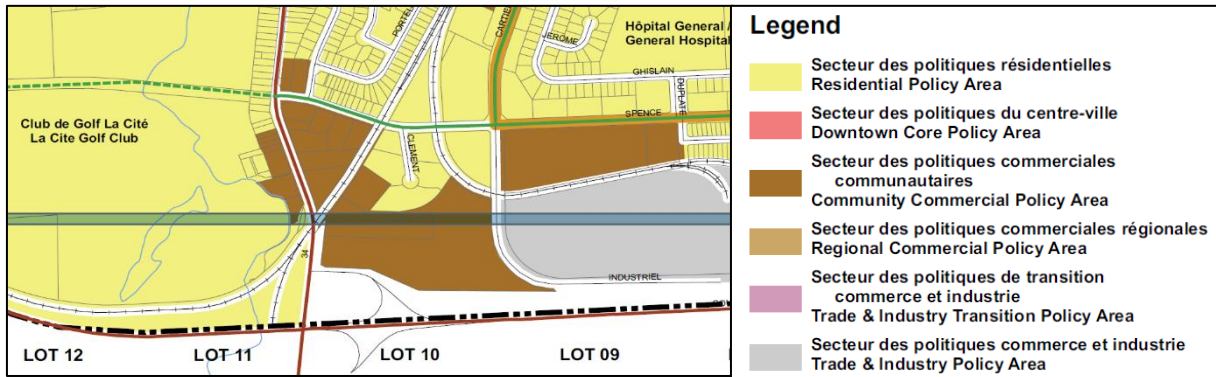


Figure 10: Land use designations adjacent to the study area (starred). [Source: Prescott-Russell Official Plan]

### 3.3.2 Municipal Noise By-Law

The Town of Hawkesbury noise By-law No. 59-2010 permits the operation of construction equipment or construction activities on Monday to Friday from 7:00 a.m. to 9:00 p.m.; on Saturday from 8:00 a.m. to 6:00 p.m.; and on Sunday from 9:00 a.m. to 6:00 p.m. At various stages of construction, certain activities will be taking place outside of those hours that will create noise. While municipal noise by-laws do not apply to provincial transportation projects (including MTO and MTO agents [i.e. contractors]) and therefore a noise exemption permit is not required for this project, MTO is still required to ensure operations do not result in an ‘adverse effect’ under the Environmental Protection Act. MTO recognizes the impact noise can have on a community, and all reasonable attempts will be made to work within local noise bylaws. Where this is not feasible (e.g. overnight work is required), MTO will work within the spirit of the local bylaw and continue to provide clear and consistent communication with the municipality.

### 3.3.3 Transportation Network

County Road 17 is an undivided, rural arterial carrying two lanes of traffic (one eastbound and one westbound) with a posted speed limit of 90 km/h. The posted speed will be permanently reduced to 70 km/h throughout the project limits prior to construction, as approved by the Municipality and endorsed by OPP and EMS. Over the Hawkesbury Creek and CNR Overhead and County Road 17 Underpass, County Road 17 consists of two general purpose traffic lanes and two speed change lanes for the eastbound off-ramp (W-N/S) and westbound on-ramp (N/S-W). The 2017 AADT on County Road 17 is 6,880 vehicles/day.

Highway 34 is an undivided, urban arterial road carrying four lanes of traffic (two northbound and two southbound) with a posted speed limit of 60 km/h. The 2010 AADT on Highway 34 is 17,200 veh/day.

The County Road 17 and Highway 34 interchange is located within the project limits. The existing interchange is a Parclo A-B with a stop-controlled intersection at the south ramp terminal and a signalized intersection at the north ramp terminal on Highway 34. Only the W-N/S and N/S-W ramps will be modified as part of this project. The existing W-N/S ramp has a posted speed of 50 km/h, and the N/S-W ramp is unposted.

The Canadian National Railway (CNR) Mileage 19.65 on the Vankleek Subdivision is located to the west of Highway 34 and crosses below the Hawkesbury Creek and CNR Overhead. It also crosses Highway 34 north of the project limits. The spur line services the Ivaco Rolling Mills factory to the northwest. Locomotive traffic volumes within the project limits is approximately one (1) train every two days.

### 3.3.4 Utilities

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#### ***Enbridge***

Within the bridge construction limits there is an existing 100 mm diameter Enbridge gas main that runs north/south along the west side of Highway 34. The utility alignment is tangent, except for the crossing below the County Road 17 embankment, where it meanders around the County Road 17 Underpass west abutment. The gas main is concrete encased under the County Road 17 embankment.

#### ***Bell / Cogeco***

There is an existing underground Bell duct structure running north/south under the east curb of Highway 34. There are both Bell and Cogeco cables in the duct structure. The duct structure is located close to the west abutment of the existing County Road 17 Underpass and is being relocated prior to construction.

#### ***Hydro One***

There are existing underground and overhead Hydro One cables within the vicinity of the County Road 17 and Highway 24 interchange. The overhead lines run east/west and are located on the north side of County Road 17. The hydro poles and aerial lines are located outside of the bridge construction limits except for one pole that has a guy wire support located within the proposed construction limit for the County Road 17 Underpass structure. The guy wire support is being relocated prior to construction. The underground hydro cables run north/south and are located just east of Highway 34. The underground cables run within the bridge construction limits.

#### ***Water***

There is an existing 400 mm diameter watermain that runs north/south on the west side of Highway 34. The watermain is owned and operated by the Town of Vankleek Hill. The watermain connects to an existing pump station located in the south east quadrant of the County Road 17 and Highway 34 intersection. The watermain runs outside of the bridge construction limits.

## 3.4 Cultural Environment

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### 3.4.1 Cultural Heritage

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A Cultural Heritage Evaluation Report (CHER) was completed in May of 2017 for the County Road 17 Underpass and surrounding area. Through rigorous archival research, field investigation, and evaluation, the CHER determined that the site is not of cultural heritage value or interest (scoring 32 out of 100 possible points on the MTO bridge evaluation criteria) and that the surrounding area is not considered a cultural heritage landscape or of cultural heritage value or interest. From these results it was determined that no further cultural heritage conservation measures are required. The Hawkesbury Creek and CNR Overhead was also previously evaluated and found to have no cultural heritage value or interest.

### 3.4.2 Archaeology

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A Stage 1 Archeological Assessment was carried out in August 2017 to determine archaeological potential in the study area.

Much of the study area has been previously disturbed by the construction of Country Road 17 and the Highway 34 interchange. However, in accordance with the Ontario Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists (2011), areas located within 100 meters from historic transportation corridors that have not been previously disturbed do exhibit archaeological potential and required further investigation. The complete Stage 1 Archaeological Assessment Report is included in **Appendix I**.

A subsequent Stage 2 Archeological Assessment was carried out in April 2018 on areas located within 100 meters from the historic Canadian National Railway corridor running underneath County Road 17 in the study area. A test pitting survey was conducted and revealed no artifacts or archeological features (see **Figure 11**). The following recommendation was made by the licensed archeologist that no further archeological work is recommended in the study area.



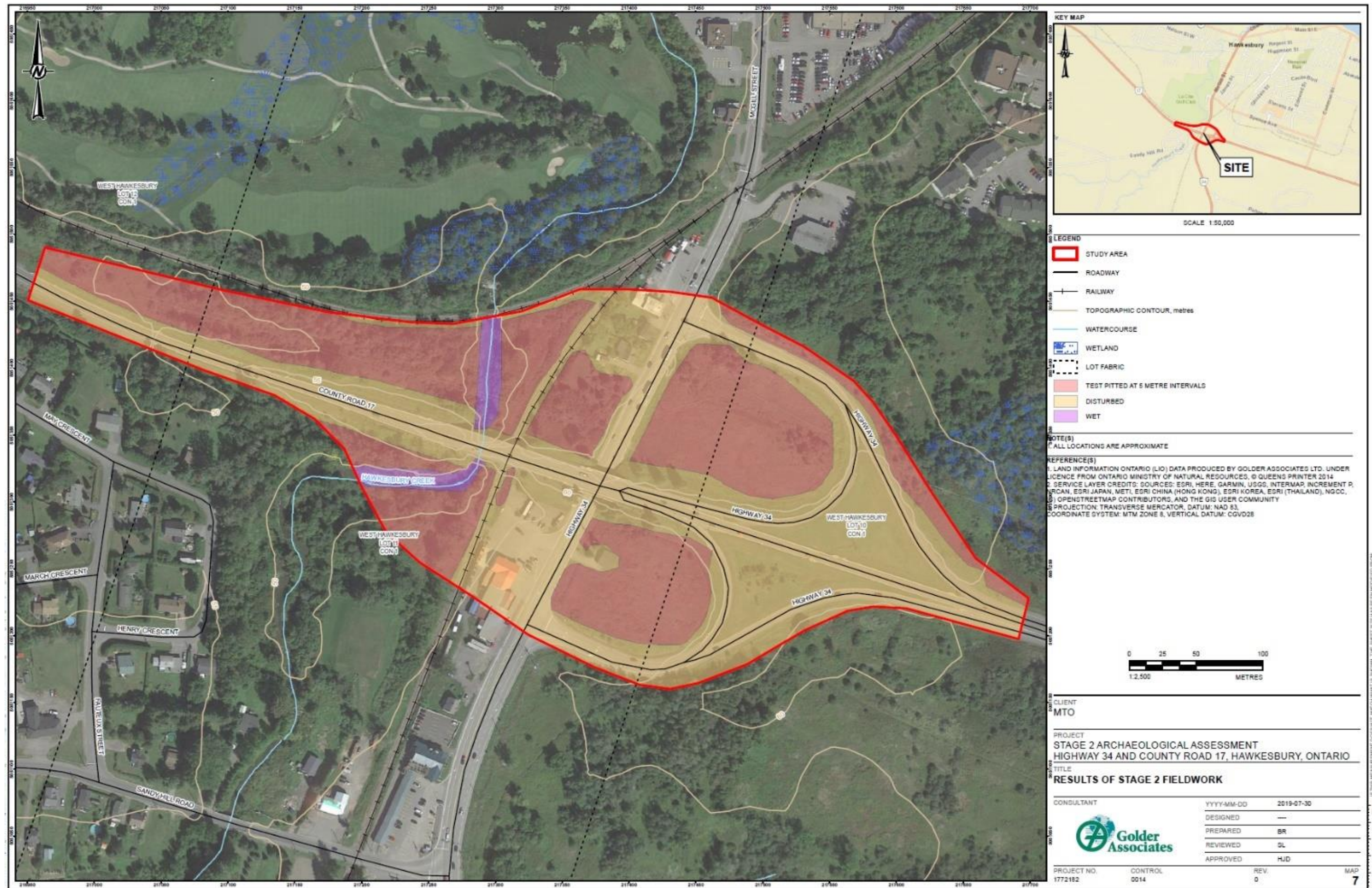


Figure 11: Area of Archeological Potential



## 4.0 Project Needs Assessment and Justification

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### 4.1 Problem and Opportunity

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The Hawkesbury Creek and CNR Overhead structure has undergone several rehabilitations throughout its lifetime. These include a major rehabilitation in 1987, involving replacement of the parapets and curbs with barriers and replacement of the bridge deck with new binder course, waterproofing and asphalt wearing surface. Patch repairs to the girders, diaphragms, pier columns and west pier footing were also completed. In 2008, substantial patching of the soffit, underside of girders, diaphragms and abutment walls was completed.

The County Road 17 Underpass has also undergone numerous rehabilitations, which included replacing the original metal railing system with concrete parapets and two tube steel railing, extensive patch repairs to the deck soffit, fascia, abutments, wingwalls and retaining walls and replacement of the asphalt and waterproofing system. The most recent rehabilitation was conducted in 2008 and involved patching of the concrete curbs.

A condition assessment of the bridges was carried out in December of 2016 and determined that there are localized areas of poor condition on both structures. Examples of deterioration of the bridges include:

- Severe scaling and medium cracking of the substructures
- Corrosion and bulging of the bearings
- Rusting of the expansion joints
- Abrasions on the barrier walls
- Rusting/cracking of the girders and diaphragms
- Medium scaling with efflorescence of the deck soffit

Based on the condition assessment, it has been determined that both structures are nearing the end of their useful service life and require major rehabilitation or replacement. Furthermore, recent traffic analysis has determined that the existing speed change lanes on County Road 17 are no longer required, presenting the opportunity to construct the new bridges with a reduced overall cross-section width.

### 4.2 Evaluation of Alternatives to the Undertaking

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The Class EA Process requires the careful consideration and evaluation of planning alternatives to ensure that all potential scenarios and their associated impacts have been assessed. For this assignment, three reasonable planning alternatives were identified and evaluated.

#### 4.2.1 Do Nothing – Not Recommended

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A consideration of the “do nothing” approach was a reasonable starting point for assessment and provided the project team with a baseline for which the effects of other alternatives could be realized and compared. However, this option was quickly discarded as a feasible alternative because it does not address the current structural deterioration of the bridges, which has been identified as a primary problem in need of a practical solution.

#### **4.2.2 Structural Rehabilitation - Not Recommended**

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Rehabilitating the bridges was also considered as a planning alternative. While further rehabilitation of the bridges could postpone the need for complete bridge replacement, this would only represent a temporary solution. While initially, rehabilitation efforts would result in short-term cost savings, in the longer-term, the need for continued maintenance, further rehabilitation and ultimately, replacement, would result in higher overall costs. This option was therefore not recommended.

#### **4.2.3 Structural Replacement – Recommended**

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After careful consideration and evaluation, it was determined that complete bridge replacement is the optimal solution to address the existing structural deterioration of the bridges. Replacement provides benefits such as a 75-year design life, increased durability, reduced overall life-cycle costs, improved profile of County Road 17, widened peripheral views for traffic traveling along Highway 34 and reduced overall traffic impacts.

## 5.0 Generation and Assessment of Design Alternatives

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A three-stage process was used to evaluate and select a preferred design for the Hawkesbury Bridge Replacements. First, a reasonable range of Functional Design alternatives (focused on overall structural configuration) were developed for evaluation. Once a preferred Functional Design alternative was selected, the study team developed and evaluated Preliminary Design alternatives (focused on construction staging). The third step involved the identification and evaluation of Detail Design alternatives (focused on the configuration of the interchange of CR17 and Highway 34). A reasoned argument decision making process was applied to identify and determine the preferred design alternative (s) based on an assessment of the advantages, disadvantages, and associated trade-offs. Criteria considered included:

- Social/Cultural Environment:
  - Traffic
  - Property
  - Safety
  - Archaeology/Heritage
  - Noise
- Natural Environment:
  - Aquatic and terrestrial ecosystems
  - Contaminated materials
- Technical Considerations:
  - Construction
  - Demolition
  - Geology
  - Utilities
  - Cost

### 5.1 Functional Design

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Three structural configuration alternatives were developed as part of the evaluation process in a technical memorandum prepared by others in June 2017 (*Site No. 27-50 & 27-51 – Hawkesbury Creek & CNR Overhead and Highway 34 Overpass, Final Structural Replacement and Staging Alternatives Memorandum*). These included:

- Alternative 1: *One bridge* – A single, 3 span continuous structure over Hawkesbury Creek, the CNR and Highway 34.
- Alternative 2: *Two bridges* – A two span continuous bridge over Hawkesbury Creek and CNR, and a single span reinforced concrete rigid frame structure over Highway 34
- Alternative 3: *Three bridges* – A Precast Concrete Arch bridge over Hawkesbury Creek, a single span bridge over CNR, and a single span reinforced concrete rigid frame structure over Highway 34

After an evaluation of the advantages and disadvantages of each alternative, it was determined that Alternative 2 was the preferred structural configuration. **Table 9** summarizes the evaluation of structural configuration alternatives. The full alternatives memorandum report can be found in **Appendix J**.

Table 9: Structural Design Alternatives Evaluation

SUMMARY EVALUATION OF STRUCTURAL CONFIGURATION ALTERNATIVES			
Impacts	Alternative 1: One Bridge	Alternative 2: Two Bridges	Alternative 3: Three Bridges
<p>Social/Cultural Environment</p> <ul style="list-style-type: none"> <li>-Traffic</li> <li>-Property</li> <li>-Safety</li> <li>-Archaeology/Heritage</li> <li>-Noise</li> </ul>	<p>Due to the overall bridge length, this alternative would likely require a conventional approach to staged construction, resulting in a permanent alignment shift of CR 17. This would result in:</p> <ul style="list-style-type: none"> <li>-Longer term single lane closures on CR17 ❌</li> <li>-Additional property acquisition to the north and permanent right-of-way (ROW) over CN tracks ❌</li> <li>-Increased potential for noise impacts from longer construction duration ❌</li> </ul>	<p>Implementation of Alternative 2 would allow for accelerated bridge replacement via lateral slide which maintains the existing roadway alignment. This option:</p> <ul style="list-style-type: none"> <li>-Minimizes the duration of single lane closures ✅</li> <li>-Requires two to four-week full closure of CR17 and numerous weekend closures of Hwy 34 ❌</li> <li>-Avoids property impacts to the north and only requires a temporary right-of-way (ROW) easement for construction over CN tracks ✅</li> <li>-Enhances safety for vehicles and construction workers ✅</li> <li>-Reduces overall impacts to traffic ✅</li> <li>-Decreases overall noise impacts from shorter construction duration ✅</li> </ul>	<p>-Like Alternative 1, this alternative would likely require a conventional staged construction approach, resulting in a permanent alignment shift of CR 17. This would result in:</p> <ul style="list-style-type: none"> <li>-Longer term single lane closures on CR17 ❌</li> <li>-Additional property acquisition to the north and permanent right-of-way (ROW) over CN tracks ❌</li> <li>-Increased potential for noise impacts from longer construction duration ❌</li> </ul>
<p>Natural Environment</p> <ul style="list-style-type: none"> <li>-Aquatic and terrestrial ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>-Alignment shift to the north would permanently impact the surrounding environment and require extensive stripping to accommodate embankment widening ❌</li> </ul>	<ul style="list-style-type: none"> <li>-Maintaining the existing alignment would reduce the overall footprint of construction and the associated impacts to the natural environment ✅</li> </ul>	<ul style="list-style-type: none"> <li>-Alignment shift to the north would permanently impacts the surrounding environment and require extensive stripping to accommodate embankment widening ❌</li> </ul>
<p>Technical Considerations:</p> <ul style="list-style-type: none"> <li>-Construction</li> <li>-Demolition</li> <li>-Geology</li> <li>-Utilities</li> </ul>	<ul style="list-style-type: none"> <li>-Long spans may require temporary bents during erection ❌</li> <li>-Conventional staged construction presents increased risks in the absence of original drawings</li> </ul>	<ul style="list-style-type: none"> <li>-Potential vibration concerns for shallow steel superstructures ❌</li> <li>-Perched abutment eliminates the requirement for large roadway protection schemes ✅</li> <li>-Existing abutment footings</li> </ul>	<ul style="list-style-type: none"> <li>-Concrete arch and large portions of the RSS wall can be fully installed before existing structure removals ✅</li> <li>-Conventional staged construction presents increased risks in the absence of original drawings for the</li> </ul>

SUMMARY EVALUATION OF STRUCTURAL CONFIGURATION ALTERNATIVES			
Impacts	Alternative 1: One Bridge	Alternative 2: Two Bridges	Alternative 3: Three Bridges
	for the existing structures. <input type="checkbox"/> -Removal of existing embankment <input type="checkbox"/> -Semi-integral or integral abutments feasible but not recommended <input type="checkbox"/> -Relocation/protection of Hydro, Gas and watermains <input type="checkbox"/> -Approximate average 690 mm grade raise required <input type="checkbox"/>	may be left in place <input checked="" type="checkbox"/> -Approximate average grade raise of 300 mm over Highway 34 <input type="checkbox"/> -Semi integral or integral abutments are feasible <input checked="" type="checkbox"/> -Hydro, Gas, Bell and watermains require protection/relocation <input type="checkbox"/>	existing structures. <input type="checkbox"/> -Reduced vertical clearance during construction may require long detours for truck traffic <input type="checkbox"/> - Large roadway protection systems required for half-half staged construction <input type="checkbox"/> -Semi integral or integral abutments are feasible <input checked="" type="checkbox"/> -Hydro, Gas, Bell and watermains require protection/relocation <input type="checkbox"/> -Grade raise not required <input checked="" type="checkbox"/>
Cost:	-The highest cost alternative <input type="checkbox"/>	-The mid-range cost alternative <input checked="" type="checkbox"/>	-The lowest cost alternative <input checked="" type="checkbox"/>
Summary:	Alternative 1 is the most expensive structural configuration, will require the largest bridge area, and requires an approximate average grade raise of 690 mm. As this option does not provide any significant advantages and results in a permanent roadway alignment shift of 8.2 m to the north, it is not recommended.	Alternative 2 is less expensive than Alternative 1 and provides an opportunity to maintain the existing roadway alignment by using accelerated bridge replacement techniques. This is the recommended structural configuration.	Alternative 3 will require a complicated roadway protection system and will likely require long detours for truck traffic during construction. With a comparable price point to Alternative 2 and a permanent roadway alignment shift of 8.2 m, this option is not preferred.
Recommendation:	NOT PREFERRED	PREFERRED	NOT PREFERRED

## 5.2 Preliminary Design

Two construction staging alternatives were evaluated during the preliminary design phase.

### 5.2.1 Alternative 1 – Conventional Staged Construction (Not Recommended)

The functional design presented in the report, “Site No. 27-50 & 27-51 – Hawkesbury Creek & CNR Overhead and County Road 17 Underpass, Final Structural Replacement and Staging Alternatives Memorandum” (dated June 13, 2017) (located in **Appendix J**), outlines details of a staging alternative consisting of conventional staged construction for the replacement of Hawkesbury Creek and CNR Overhead and County Road 17 Underpass bridges. The existing bridges are replaced by two new structures with a reduced two (2) lane cross-

section along a tangent roadway alignment that is permanently shifted 8.2 m to the north from existing (see **Figure 12**). The total length of County Road 17 roadway that will be impacted by the horizontal alignment permanent shift is approximately 1.0± km.

This is a reasonable staging alternative; however, due to the condition of the existing structures, the capacity of certain structural elements is suspect and may require strengthening and/or stability support. Furthermore, original drawings for the County Road 17 Underpass bridge are not available at this time which may warrant a conservative functional analysis during detail design to develop a conceptual temporary support system for the structure while partially demolished, which would be costly. An extensive destructive testing program may also be necessary to confirm the condition of suspect structural components. The major concerns are deck edge support during demolition and unbalanced thrust load acting on the abutment stems of the rigid frame structure following partial removal. All of this may amount to a level of risk potentially deemed unacceptable by the Contractor. A temporary support system for the County Road 17 Underpass would likely reduce the vertical clearance during staged construction.

This staging alternative would require a significant protection system to construct the new Hawkesbury Creek & CNR Overhead east abutment and remove the existing one.

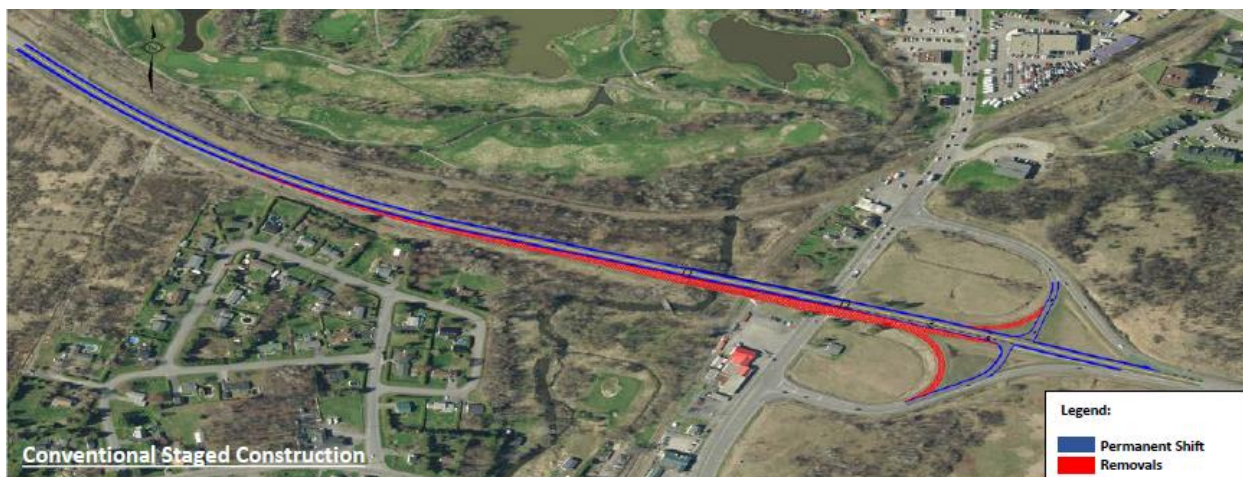


Figure 12: Conventional Staged Construction Alternative

### 5.2.2 Alternative 2 – Lateral Slide (Recommended)

The recommended bridge replacement methodology is a lateral slide (also known as slide-in-bridge or jack-and-slide). A lateral slide is preferred over conventional staged construction for the following reasons:

- Maintains the existing alignment of CR 17 whereas a conventional replacement would require an alignment shift, resulting in greater impacts to property and the environment;
- Minimizes overall impacts to traffic and avoids long-duration lane closures and detour routes over multiple construction seasons;
- Final product is of higher quality as most of the structure is built “off-line and without longitudinal construction joints;
- The site conditions are suitable for this type of construction methodology (geometry, local geology, right-of-way);



- It is economically viable because the costs are comparable to a conventional replacement at this site; A comparison of recent tendered bridges of similar size indicates that a typical bridge built in two stages is around 30% more expensive than the same bridge built in a single stage.
- Minimizes impacts to locomotive traffic and simplifies negotiations with CNR;
- Eliminates risks associated with staged demolition and unknown existing conditions (original bridge drawings not available);
- Enhances motorist and construction worker safety because most of the work is completed “off-line” and during the full closure of CR 17; and
- Public inconvenience and societal costs are minimized.

The first phase of construction involves relocation and protection of utilities, and installation of temporary shoring and support systems. Footings for the temporary support system are located adjacent to and oriented parallel with the new foundations and support the primary frame members, bracing members, sliding track system and new superstructures.

The second phase involves building the new superstructures on temporary supports adjacent to the existing bridges and parallel with CR 17. While the superstructures are under construction, the pier footing and column for the CNR O/H will be built. Using short duration lane closures along CR 17, the new abutment foundations are constructed behind the existing abutments and through the existing roadway. Following completion of the new superstructures, pier and abutment foundations, CR 17 and Hwy 34 will be closed to traffic near the project site so that the existing bridges can be removed by in-situ demolition, which is the standard in Ontario and typically the most rapid method of removing an existing bridge, usually in one or two days. Once the material is cleared from site and the top of the new, pre-constructed foundations are daylighted, the new superstructures are moved to their final position (see **Figure 13**).

A trial slide, involving limited travel (approximately 500 mm) of the superstructure, will be performed in advance of sliding the bridges into their final position. This will verify static and dynamic friction values, jacking force requirements and allow the Contractor to correct any issues with the sliding system before the full slide.

After the slide and prior to reopening CR 17 to traffic, the connection between superstructure and substructure is made which forms an integral abutment and an integral pier. Approach tie-ins to the roadway, waterproofing and paving are completed after the barrier walls at the deck ends are constructed.

The full closure of CR 17 will last between two and four weeks and Hwy 34 will be closed for up to three weekends. An illustration of the proposed replacement structures is depicted in **Figure 18**.

Some of the challenges associated with a lateral slide at this site include:

- Limited right-of-way (ROW) adjacent to the existing bridges for temporary supports that the new bridge superstructures can be built on and access for construction equipment/vehicles;
- The presence of existing overhead hydro wires and underground utilities (gas main, water main, telecommunications ducts and street lighting) that had to be coordinated with roadway protection and require monitoring and/or relocation;
- Working over an active rail corridor which requires significant coordination with the rail operator for negotiating new ROW agreements, booking flagging services, approval of at-grade crossings for

construction vehicles, designing shoring systems for excavations adjacent to the tracks and, specifying track protection/monitoring requirements.

The MTO has used the lateral slide methodology for bridge replacements in the past, with three bridges replaced by lateral slide in the last decade as part of accelerated bridge construction projects. The MTO and Jacobs engineers on the project have collective knowledge of over 20 accelerated bridge replacements and incorporated lessons learned from those projects. With this approach to replacing both bridges, durability and quality are not compromised in order to gain acceleration.

**Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0)**

**County Road 17 Underpass (Site No. 27X-0051/B0)**

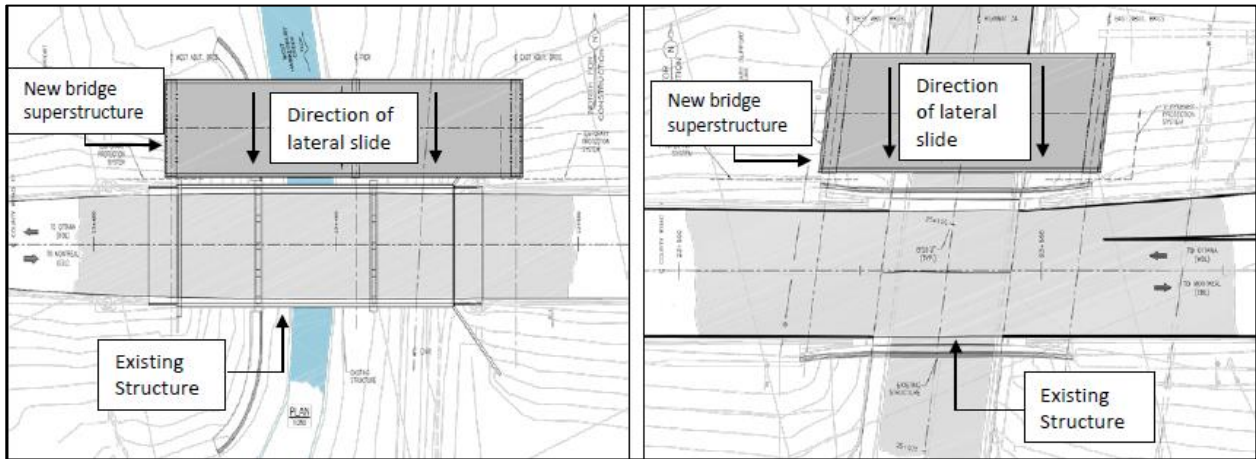


Figure 13: Staging Alternative 2: Lateral Slide

5.2.3 Evaluation of Alternatives

A summary of the evaluation of Construction Staging alternatives is included in **Table 10**. Based on this evaluation, Alternative 2 – Lateral Slide is recommended as it maintains the existing County Road 17 alignment (avoiding property and environmental impacts), reduces overall traffic impacts (compared to conventional staged construction), enhances safety for road users and construction workers, will likely result in a higher quality product and has the lowest cost risk. It also avoids the need to negotiate permanent right of way with CN.

Table 10: Construction Staging Alternatives Evaluation

SUMMARY EVALUATION OF CONSTRUCTION STAGING ALTERNATIVES		
Impacts	Alternative 1: Conventional Staged	Alternative 2: Lateral Slide
Social/Cultural Environment	-Has a greater overall impact to traffic during construction ☒	-Reduces overall impacts to traffic during construction ☑
-Traffic	-Avoids full closure of CR17 ☑	-Requires full closure of CR17 for two to four weeks and closures of Hwy 34 near the bridges on numerous weekends ☒
-Property	-Alignment shift requires additional property to the north and permanent right-of-way (ROW) over CN tracks ☒	-Maintaining the existing alignment avoids property impacts to the north and only
-Safety		
-Noise		

## SUMMARY EVALUATION OF CONSTRUCTION STAGING ALTERNATIVES

<b>Impacts</b>	<b>Alternative 1: Conventional Staged</b>	<b>Alternative 2: Lateral Slide</b>
	<ul style="list-style-type: none"> <li>-Original drawings for Highway 34 are not available at this time and capacity/stability for construction staging cannot be determined ☒</li> <li>-Longer construction duration increases potential noise impacts ☒</li> </ul>	<ul style="list-style-type: none"> <li>requires a temporary right-of-way (ROW) easement for construction over CN tracks ☑</li> <li>-Construction off-line (of CR17) increases safety for vehicles and construction workers ☑</li> <li>-Shorter overall construction duration decreases noise impacts ☑</li> </ul>
<p>Natural Environment</p> <ul style="list-style-type: none"> <li>-Aquatic and terrestrial ecosystem</li> <li>-Contaminated materials</li> </ul>	<ul style="list-style-type: none"> <li>-Alignment shift to the north permanently impacts the surrounding environment and requires extensive stripping to accommodate embankment widening ☒</li> </ul>	<ul style="list-style-type: none"> <li>-Maintaining the existing alignment reduces the permanent footprint from construction and the associated impacts to the natural environment ☑</li> </ul>
<p>Technical Considerations:</p> <ul style="list-style-type: none"> <li>-Construction</li> <li>-Demolition</li> <li>-Geology</li> <li>-Utilities</li> </ul>	<ul style="list-style-type: none"> <li>-Staged construction will result in construction joints in the new structures – potentially reducing long term durability ☒</li> <li>-The construction industry has more experience replacing structures with conventional construction ☑</li> <li>-Risk damaging the portion of existing structure that is intended to remain and support traffic during construction ☒</li> <li>-The alignment shift may require permanent relocation of numerous utilities ☒</li> </ul>	<ul style="list-style-type: none"> <li>-Off-line construction and use of prefabricated components may result in improved quality of final structures ☑</li> <li>-Fewer contractors have experience replacing bridge structures via lateral slide compared to conventional staged construction ☒</li> <li>-Stability of existing structures is not a concern because they do not need to support traffic while partially demolished ☑</li> <li>-Maintaining the existing alignment minimizes the risk of unanticipated utility impacts ☑</li> </ul>
<p>Cost:</p>	<ul style="list-style-type: none"> <li>-Potential for lower total costs than Alternative 2 ☑</li> </ul>	<ul style="list-style-type: none"> <li>-Potential for higher overall costs than Alternative 1 ☒</li> </ul>
<p>Summary:</p>	<p>While the overall duration of construction (and associated traffic impacts) is increased, this option does avoid full closure of CR17 and Hwy 34 during construction. However, the permanent shift of CR17 requires significant embankment widening and results in greater property and environmental impacts. The absence of original drawings for the existing structures also increases the risk associated with staged demolition.</p>	<p>The lateral slide is a non-traditional method for replacing structures and involves full road closures of both CR17 and Hwy 34. However, building the new bridges off-line reduces the overall impacts to traffic, property, environment and safety risks associated with the conventional staged construction alternative.</p>
<p>Recommendation:</p>	<p>NOT PREFERRED</p>	<p>PREFERRED</p>

### 5.3 Detail Design

Two revised interchange configuration options were evaluated during the functional design phase carried out by MMM Group. At that time, it was concluded that the interchange layout was not required based on roadway classification and traffic volumes on County Road 17.

One of the options proposed construction of a four-leg roundabout located east of the bridges, replacing the existing speed change lanes. The option would require significant changes to the County Road 17 geometry and a speed reduction in order to navigate the roundabout safely.

The other option proposed a stop condition T-Intersection (right turns only), modified slightly to minimize the risk of vehicles turning the wrong way on County Road 17, to replace the existing free-flow westbound on-ramp (N/S-W). The existing eastbound off-ramp (W-N/S) was to be modified by reducing the length of the speed change lane and maintaining the right turn taper with a parallel lane. The other ramps to the east (westbound off-ramp [E-N/S] and eastbound on-ramp [N/S-E]) would maintain existing conditions as free flow auxiliary lanes. This was identified as the preferred alternative.

During the preliminary and detail design phases Jacobs reviewed various interchange configuration options, including those evaluated by MMM Group.

Three options for the westbound on-ramp (N/S-W) were evaluated in detail:

- 1) Maintain existing free-flow interchange ramp (**Figure 14**);
- 2) Merge control with acceleration lane (**Figure 15**); and
- 3) Stop condition T-Intersection, right turns only/no acceleration lane (**Figure 16**).



Figure 14: Maintain existing free-flow interchange ramp

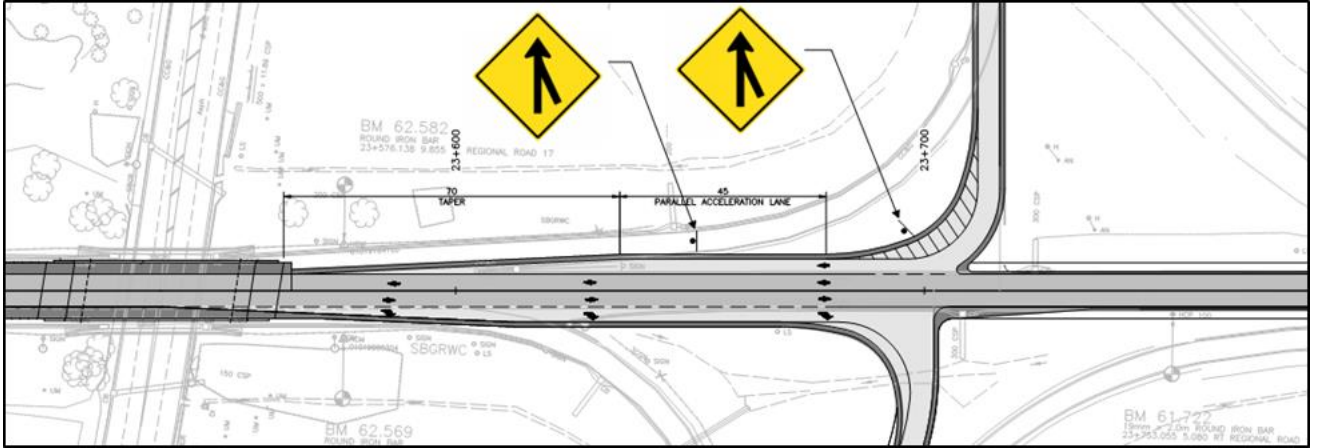


Figure 15: Merge control with acceleration lane

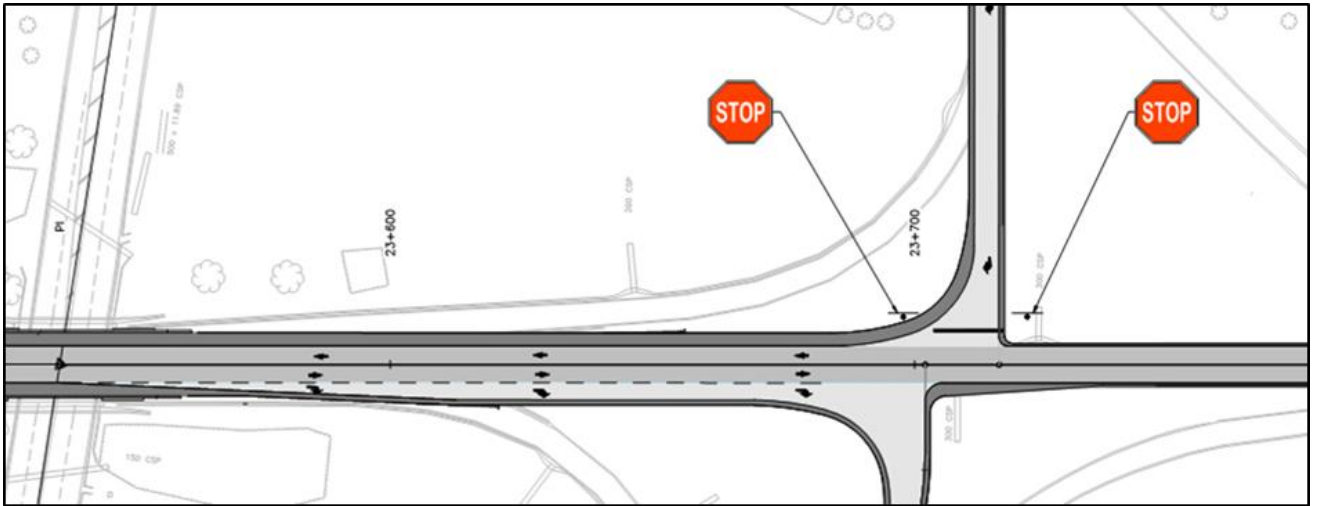


Figure 16: Stop control with T-intersection

A summary of the evaluation of Interchange Configuration Options is included in **Table 11**.

Table 11: Interchange Configuration Options Evaluation

SUMMARY EVALUATION OF INTERCHANGE CONFIGURATION OPTIONS			
Impacts	Option 1: Maintain existing free-flow interchange ramp	Option 2: Merge control with acceleration lane	Option 3: Stop control with T-intersection
Social/Cultural Environment -Traffic -Property -Safety -Archaeology and Heritage	-Increases overall impacts to traffic from prolonged construction period needed to build a wider bridge and modify existing intersection -Results in significant property impacts ❌	-Reduces overall impacts to traffic from shorter construction period needed to build a two-lane bridge -Avoids additional property requirements -Shorter construction	-Reduces overall impacts to traffic from shorter construction period needed to build a two-lane bridge -Avoids additional property requirements -Shorter construction duration to



## SUMMARY EVALUATION OF INTERCHANGE CONFIGURATION OPTIONS

<b>Impacts</b>	<b>Option 1: Maintain existing free-flow interchange ramp</b>	<b>Option 2: Merge control with acceleration lane</b>	<b>Option 3: Stop control with T-intersection</b>
<p>-Noise</p>	<p>-Longer construction duration to build a wider bridge results in increased noise impacts ❌</p> <p>-Local vehicular traffic is used to navigating the existing ramps ✔️</p> <p>-Based on consultation feedback the public and Town/Township/County is in support of maintaining this configuration ✔️</p> <p>-Tight turning radius and skew angle for vehicles navigating the ramps ❌</p> <p>-Not warranted based on highway classification and observed traffic volumes ❌</p>	<p>duration to build a two-lane bridge decreases overall noise impacts ✔️</p> <p>-Vehicles and trucks will not have adequate space to get up to speed prior to the merge ❌</p> <p>-Provides public with an alternative form of free flow ramp ✔️</p> <p>-Meets minimum sight distance requirements ✔️</p> <p>-Does not meet the minimum required acceleration lane length for free flow conditions ❌</p>	<p>build a two-lane bridge decreases overall noise impacts ✔️</p> <p>- The driver stopped on the N/S-W ramp has more than the minimum required sight distance to look the east to determine when it is safe to enter the intersection. ✔️</p> <p>-Does not provide a free flow ramp configuration or an acceleration lane ❌</p> <p>-Trucks can navigate the movement without crossing the center line</p> <p>-Exceeds minimum sight distance requirements by providing 600 m of sight distance (minimum required is 250 m) ✔️</p> <p>-Meets the current roadway geometric standards based on observed traffic volumes, sight distance and posted speed limit ✔️</p>
<p>Natural Environment</p> <p>-Aquatic and terrestrial ecosystem</p> <p>-Contaminated materials</p>	<p>-Larger environmental footprint and more potential impacts ❌</p>	<p>-Smaller environmental footprint compared to Option 1 and less impact on the natural environment ✔️</p>	<p>-Smaller environmental footprint and less potential impacts ✔️</p>
<p>Technical Considerations</p> <p>-Construction</p> <p>-Demolition</p> <p>-Geology</p> <p>-Utilities</p>	<p>-Wider bridge deck to support additional speed change lane resulting in an additional line of girders, more foundation elements and larger foundation elements. ❌</p> <p>-May impact the feasibility of proposed construction methodology (lateral slide) ❌</p> <p>-Conflicts with existing utilities ❌</p>	<p>-Narrower bridge deck compared to Option 1, resulting in fewer girders and fewer/smaller foundation elements ✔️</p>	<p>-Narrower bridge deck compared to Option 1, resulting in fewer girders and fewer/smaller foundation elements ✔️</p>



SUMMARY EVALUATION OF INTERCHANGE CONFIGURATION OPTIONS			
Impacts	<i>Option 1: Maintain existing free-flow interchange ramp</i>	<i>Option 2: Merge control with acceleration lane</i>	<i>Option 3: Stop control with T-intersection</i>
Cost:	-Will result in an extra \$2.0M to \$3.1M in construction costs to either widen the bridge or reconfigure the interchange ☒	-Will not result in additional construction costs to widen the bridge ☑	-Will not result in additional construction costs to widen the bridge ☑
Recommendation	NOT PREFERRED	NOT PREFERRED	PREFERRED

Although Option 1 is preferred by the Town/Township/Counties, it was ruled out because it is not required based on roadway classification and traffic volumes. Both bridges would have to be wider to accommodate the speed change lane required for a free-flow ramp which would add approximately \$3.0 million to the overall construction costs. Construction duration would be prolonged, the increased footprint of the interchange might result in property/environment impacts and the proposed construction methodology (lateral slide) might not be possible. **Appendix K**, the Impact Assessment of the N/S-W and E-N/S Ramp Realignment, provides additional details on the technical, schedule and cost impacts of this option.

Option 2 provides approximately 115 meters of taper and acceleration lane length controlled by merge signs as recommended in Ontario Traffic Manual (OTM) Book 6. Although the minimum sight distance requirements are satisfied, the speed change lane is not long enough for a free flow (unsigned) acceleration lane. Larger vehicles might not be able to get up to speed before merging onto County Road 17 which could potentially result in accidents.

Although Option 3 is not preferred by the Town/Township/County, the design meets current geometric design standards for Ontario highways and is the most economical option. The levels of service are predicted to be adequate for the ramp to function without significant traffic delays.

Jacobs recommends the following:

- Eastbound off-ramp (W-N/S) with a reduced speed change lane length with a right turn taper and parallel lane to replace the existing free flow ramp;
- Eastbound on-ramp (N/S-E) to remain a free flow auxiliary lane;
- Westbound off-ramp (E-N/S) to remain a free flow auxiliary lane; and
- Westbound on-ramp (N/S-W) a stop condition T-Intersection (right turns only) to replace the free flow ramp.

The recommended interchange configuration, with permitted turning movements and permanent posted speed limit reductions, is shown in **Figure 17**.

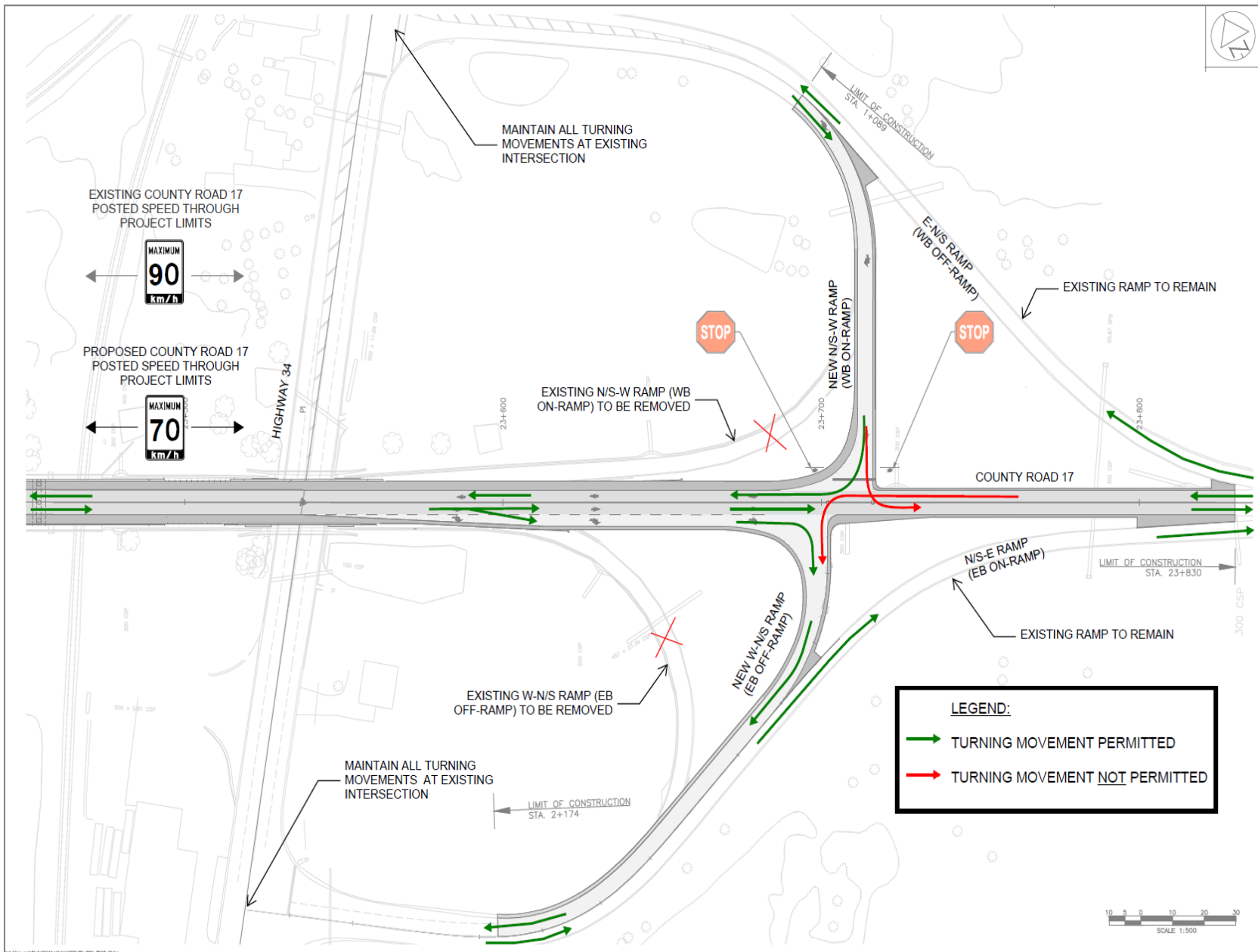


Figure 17: Recommended interchange configuration

## 6.0 The Recommended Plan

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### 6.1 Features of the Recommended Plan and Implementation

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#### 6.1.1 General Bridge Arrangement

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The new Hawkesbury Creek and CNR Overhead will be 71.0 m long (38 m over Hawkesbury Creek; 33 m over CNR tracks), 13 m wide, two-span concrete slab-on-steel I-girder bridge using 350 AT ACR Steel with modified integral abutments supported by concrete caissons and a pier supported by a spread footing located between the Hawkesbury Creek and CNR tracks. The structure will carry two lanes of traffic along County Road 17 (eastbound and westbound) with 2.5 m wide shoulders on the north and south sides.

The new County Road 17 Underpass will be a 36.0 m long, 13 m wide, single span concrete slab-on-steel I-girder bridge using 350 AT ACR Steel with modified integral abutments supported by concrete caissons. The overall span length will be increased from 18.0 m to 36.0 m, which will improve sight lines and permit future widening of Highway 34 (if required). This structure carries two lanes of traffic along County Road 17 (eastbound and westbound) with 2.5 m wide shoulders on the north and south sides.

The new bridges are designed in accordance with CSA-S6-14 Canadian Highway Bridge Design Code and other relevant codes, standards & guidelines.

General Arrangement drawings of the new structures are included in **Appendix L**.

#### 6.1.2 Alignment and Profile

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As the lateral slide construction staging alternative has been recommended, the existing alignment of County Road 17 will be maintained. The vertical profile for the replacement structures will need to be raised marginally (maximum 500 mm) in order to provide the minimum vertical clearance of 7.010 m over CNR tracks and also to provide the minimum vertical clearance of 5.000 m over Highway 34. An illustration of the new bridges in their final position (plan and elevation views) is shown in **Figure 18**.

#### 6.1.3 Cross-Section

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The proposed cross-section of the new replacement structures are as follows:

- North Barrier Wall 0.500 m
- Shoulder: 2.500 m
- Traffic Lanes: 2 @ 3.500 m
- Shoulder: 2.500 m
- South Barrier Wall 0.500 m

Total width 13.0 m

An illustration of the cross-section for Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0) and County Road 17 Underpass (Site No. 27X-0051/B0) are shown in **Figure 19** and **Figure 20**, respectively.

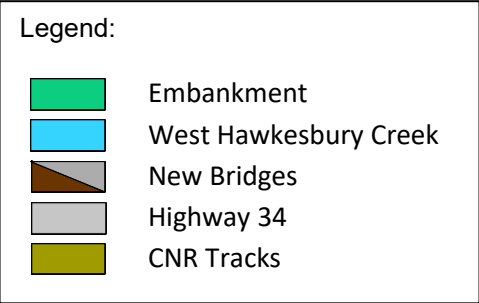
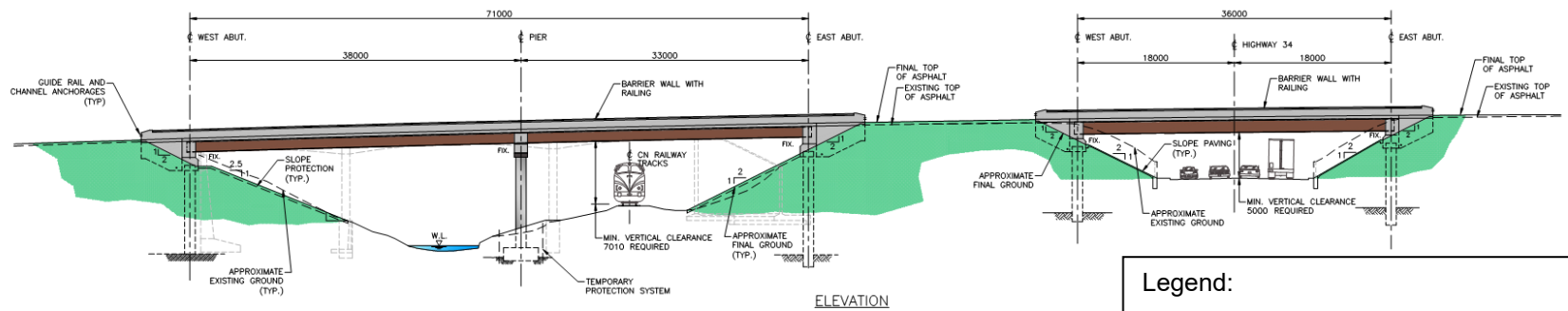
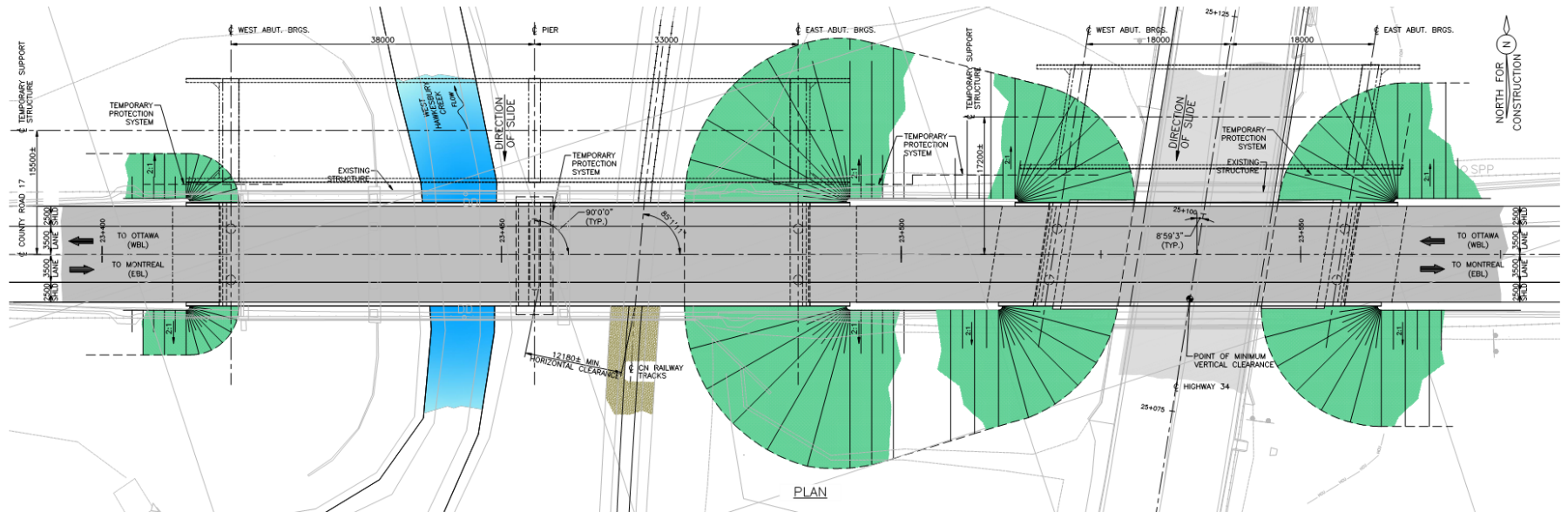


Figure 18: Illustration of new bridges in their final position

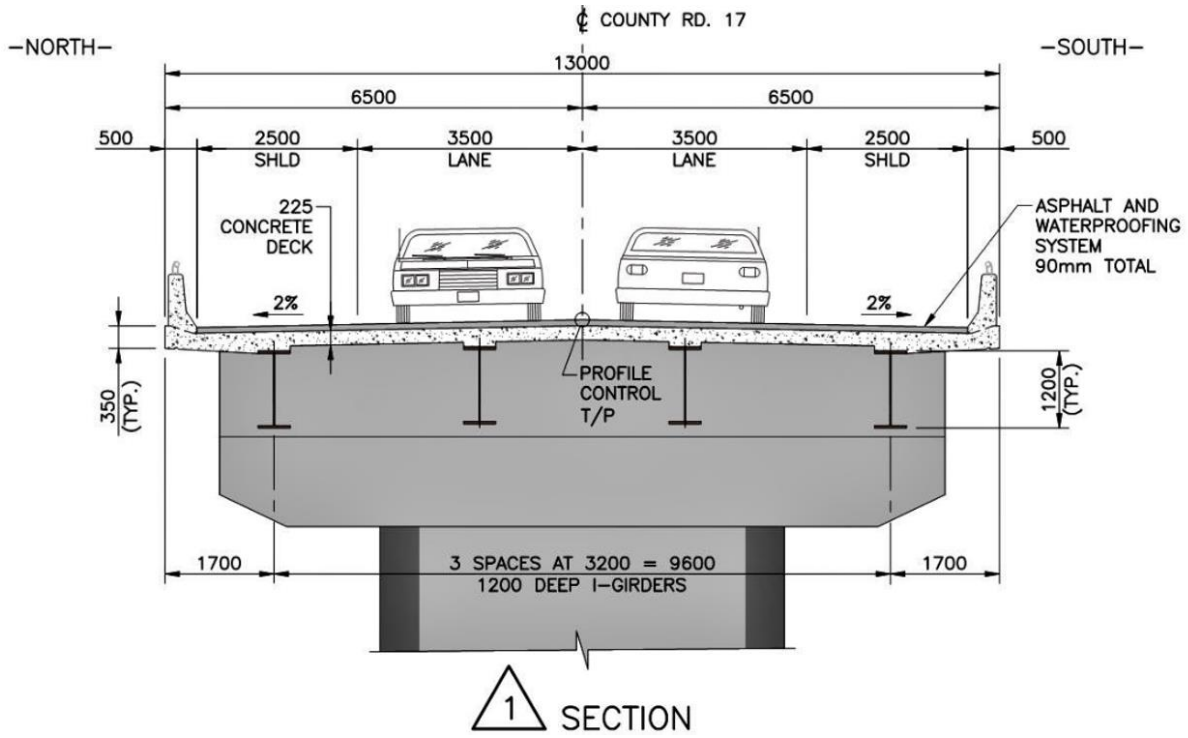


Figure 19: Illustration of Hawkesbury Creek and CNR Overhead (Site No. 27X-0050/B0) Cross-Section

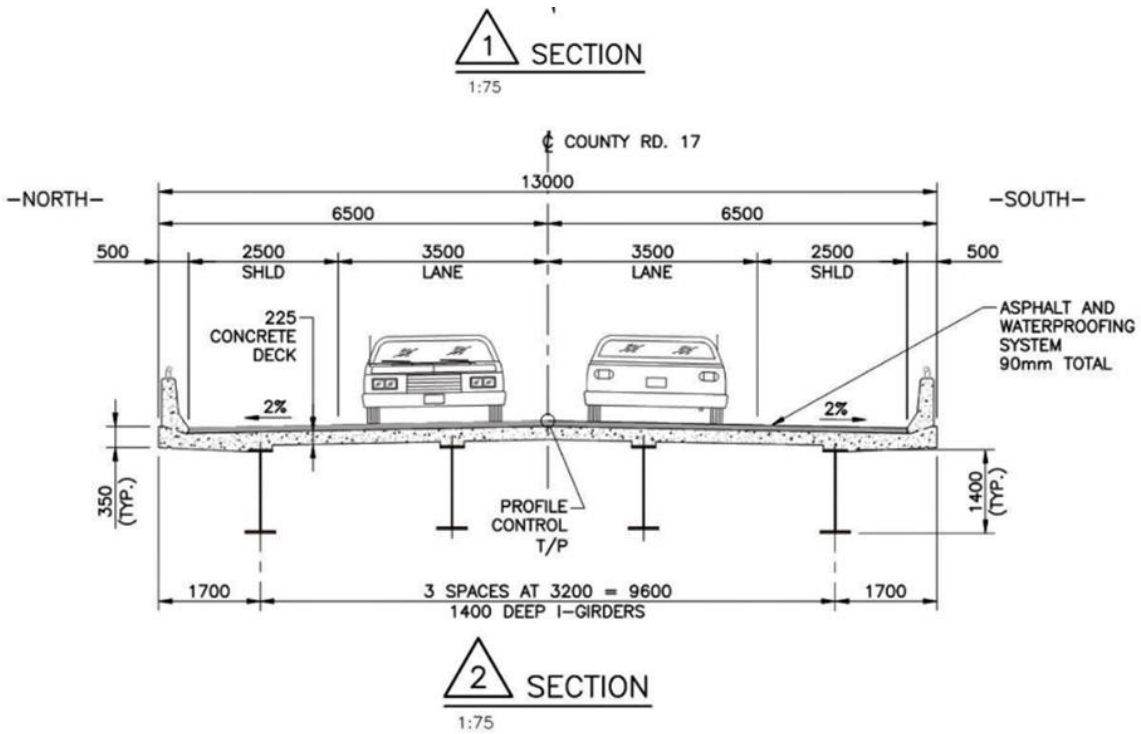


Figure 20: Illustration of County Road 17 Underpass (Site No. 27X-0051/B0) Cross-Section

### 6.1.4 Interchange Modifications

The proposed design includes a new intersection of CR17 and the Highway 34 N/S-W and W-N/S ramps. The W-N/S ramp (off-ramp) will be facilitated via a channelized right turn including a right turn lane designed in accordance with Section E.7.2 of the MTO Geometric Design Standards for Ontario Highways (GDSOH), as shown in **Figure 21**. The N/S-W ramp (on-ramp) is facilitated by a stop control T-Intersection, and no acceleration lane is provided. The design speed for County Road 17 is 90 km/h as noted in the Design Criteria. The current posted speed of County Road 17 through the project limits is 90 km/h, however, it was agreed with the MTO, the Town of Hawkesbury, Township of Champlain, UCPR, OPP and EMS that the posted speed would be permanently reduced throughout the project limits to 70km/h.

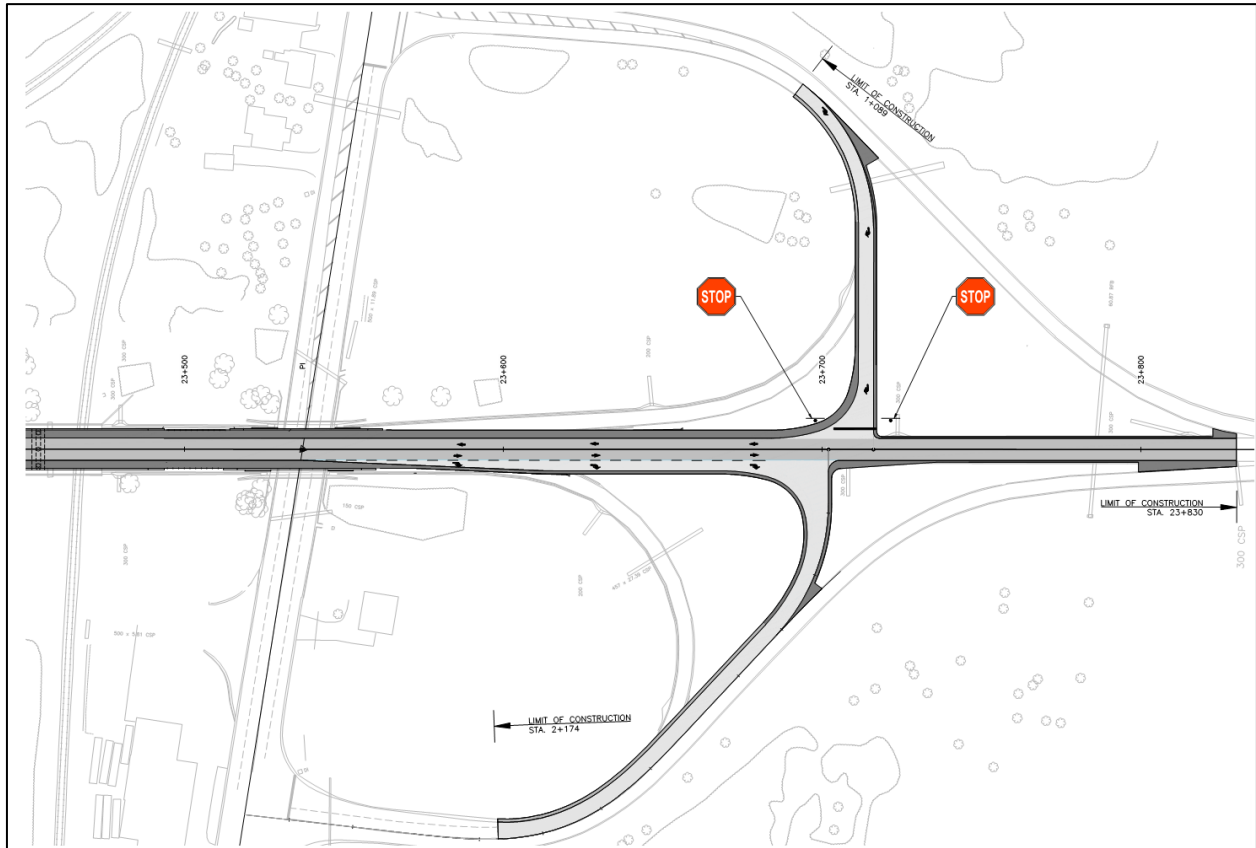


Figure 21: County Road 17 and Highway 34 Interchange Modifications

### 6.1.5 Utilities

#### *Enbridge*

The Enbridge gas main located in the vicinity of the County Road 17 Underpass west abutment will be protected during construction, including vibration monitoring as required. The gas main will be located within the bridge construction limits and in close proximity to the temporary support structures. Diligent coordination between the Contract Administrator, Enbridge, and the Contractor will be required during construction.



***Bell / Cogeco***

The existing underground Bell duct structure under the east curb of Highway 34 will be relocated to accommodate the removal of the existing structure. It will be relocated to the east, and will be installed under the County Road 17 embankment via trenchless methods in advance of construction of the Hawkesbury Bridge Replacements. There are existing Cogeco cables within the Bell duct structure, which will be re-cabled within the new Bell duct structure.

***Hydro One***

The existing Hydro One underground conduits located east of Highway 34 will be protected during construction. The existing guy wire supporting the hydro pole in the northwest quadrant of the County Road 17 and Highway 34 intersection will be removed and replaced with three temporary guy wires located outside of the proposed work zone in advance of construction of the Hawkesbury Bridge Replacements. Once construction of the Highway 34 structure is complete, the guy wires will be reinstated to existing conditions.

***Water***

A 400 mm diameter watermain owned and operated by the Town of Vankleek Hill, located west of the County Road 17 Underpass east abutment will be protected during construction, including vibration monitoring as required.

**6.1.6 Property**

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A standard grade separation reconstruction agreement between CNR and MTO in accordance with the Railway Safety Act is required to replace the existing Hawkesbury Creek & CNR Overhead structure.

**6.1.7 Construction Traffic Management**

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To accommodate the lateral slide, County Road 17 will be closed completely for 2 to 4 weeks. During the closure, County Road 17 traffic will be detoured along County Road 4 heading east-west through Hawkesbury Main Street and heading north-south along Tupper Street. Traffic Impacts along the detour routes are displayed on **Figure 22**. The additional expected travel time for vehicles along the detour route is 9 minutes. To mitigate additional delays as a result of increased traffic along Main Street, pavement marking modifications are proposed at the intersection of Main Street and McGill Street, and at Main Street and John Street. It is also recommended to temporarily bag the traffic signals at Main Street and William Street, and install temporary traffic signals at Main Street and Tupper Street.

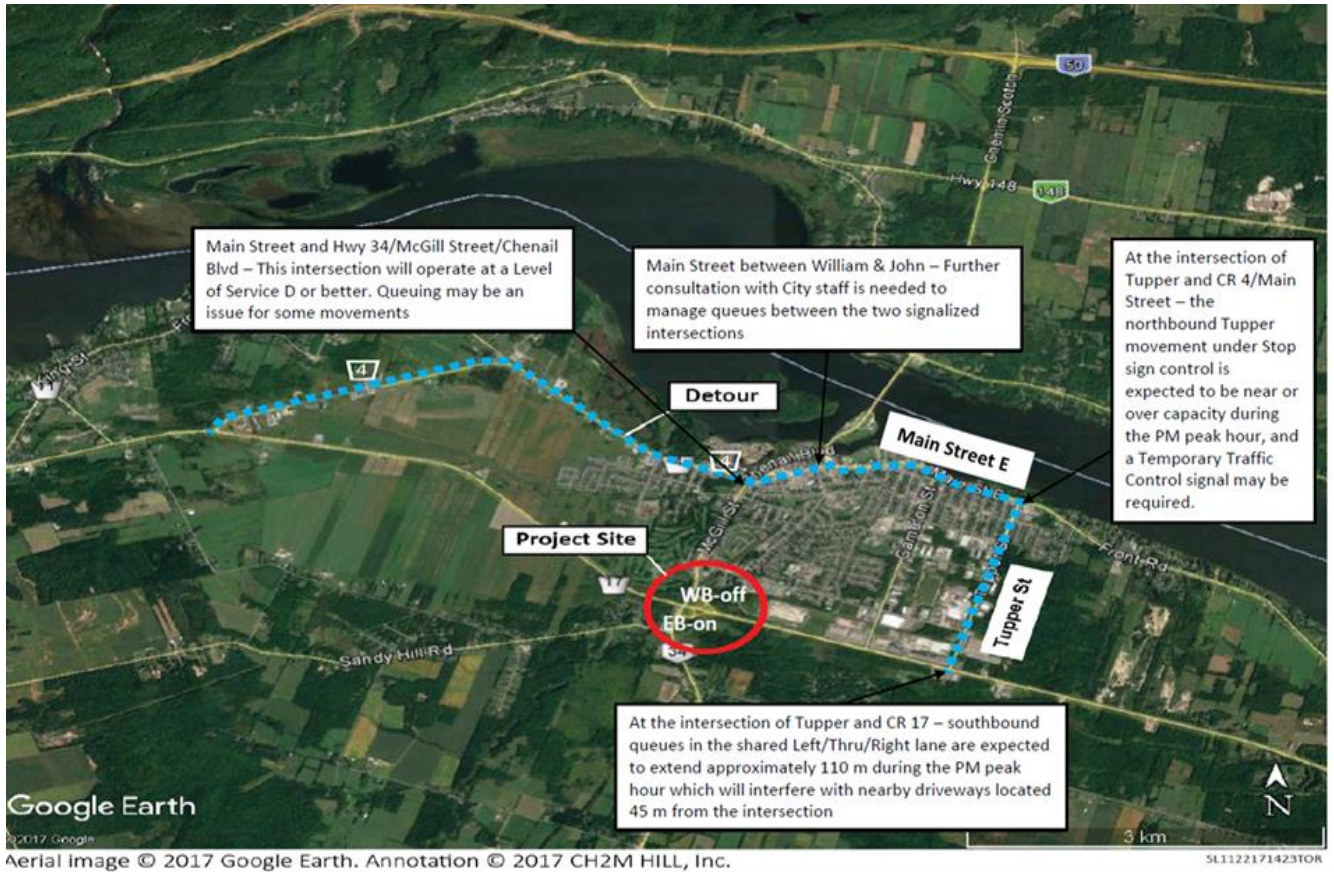


Figure 22: County Road 17 Traffic Detour Route

Throughout construction, Highway 34 near the construction site will be closed for 2-3 weekends in the vicinity of the bridges, to permit girder erection, formwork installation, rapid demolition of existing structures and lateral slide of new bridge superstructures. During the weekend closures of Highway 34, traffic will be detoured to a temporary bypass east of Highway 34 to maintain north-south traffic movements along Highway 34 (see **Figure 23**). Signage will be installed to direct traffic during the various stages of construction. Highway 34 will remain open to local traffic throughout the closures.





Figure 23: Highway 34 Traffic Detour Route (temporary bypass)

Bilingual Advanced Notification Signage will be installed near the County Road 17 and Highway 34 interchanges at least two (2) weeks in advance of construction to notify motorists/commercial vehicles of the road closures (see **Figure 24**). They will also be installed at strategic locations, such as along Highway 417, to maximize the number of motorists that receive the message. The signs will notify motorists of expected delays due to construction, as well as to provide advanced notice of the detour so that motorists can adjust their travel routes and times accordingly.

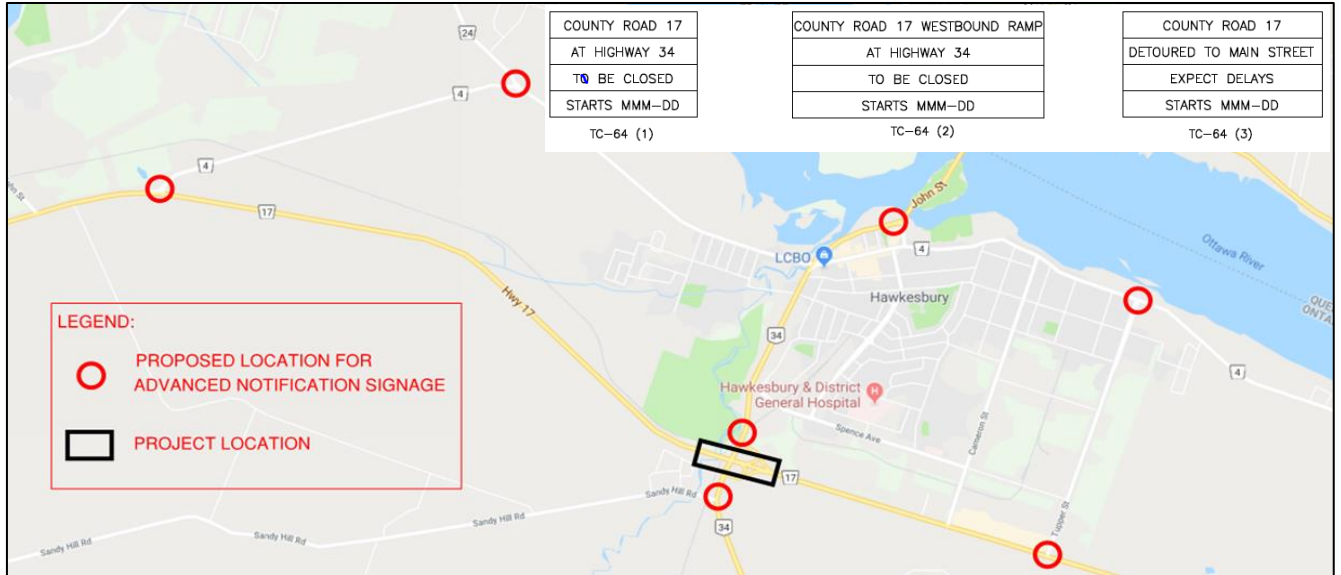


Figure 24: Advanced Notification Signage along Traffic Detour Route

## 6.2 Environmental Effects, Mitigation and Commitments

### 6.2.1 Anticipated Environmental Impacts

#### 6.2.1.1 Anticipated Impacts to the Terrestrial Environment

Works associated with the replacement of the Hawkesbury Creek and CNR Overhead & County Road 17 Underpass have the potential to:

- Increase erosion and sedimentation of lands adjacent to the construction area
- Cause indirect effects to non-retainable Butternut trees located outside of the vegetation removal area
- Remove 0.19 ha of woodland, 0.55 ha of meadow and 0.004 ha of wetland habitat
- Increase vulnerability of areas cleared of vegetation to invasion by non-native species
- Result in a loss and/or disruption to wildlife and/or wildlife habitat. Examples may include:
  - Temporary decrease in potential marginal migratory bird nesting habitat in areas cleared of woodland and meadow vegetation within the Study Area
  - Potential destruction of migratory bird nests, eggs or young in vegetated areas prior to and during construction (e.g., site preparation)
  - Temporary disruption to wildlife movement and wildlife avoidance of habitat areas adjacent to Hawkesbury Creek during replacement due to disturbance associated with construction activity
  - Harm or temporarily harassment of herptiles, which include Species of Conservation Concern that could move along riparian habitat or in-water through the Study Area during construction (e.g. Snapping Turtle, Northern Map Turtle and Northern Ribbonsnake).





Figure 25: Terrestrial Constraints and Impact Zones within the Study Area

### 6.2.1.2 Aquatic Environment

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Works associated with the replacement of the Hawkesbury Creek and CNR Overhead & County Road 17 Underpass have the potential to impact fish and fish habitat in the following ways:

- Riparian vegetation clearing resulting in an increase in erosion potential, change in shade cover and loss of external nutrient and energy inputs;
- Removal of aquatic vegetation, if present, resulting in a loss of habitat structure and cover, including changed sediment concentrations, water temperature, food supply, nutrient concentration and dissolved oxygen levels;
- Removal of accumulated debris and riparian vegetation that is important for cover and food production;
- Potential mortality, entrapment or entrainment of fish in machinery (e.g., by-pass pumps, screens) or materials (e.g., dams, barriers) used during construction;
- Disruption of fish passage and interruption of critical life stages (e.g., spawning, migration)
- Potential partial constriction of flow through the placement of materials or structures in the water;
- Siltation at the site and sedimentation to downstream fish habitat; and
- Introduction of deleterious substances to the watercourse, including concrete/other construction debris and petroleum products from heavy machinery.

### 6.2.1.3 Social/Economic Environment

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Works associated with the replacement of the Hawkesbury Creek and CNR Overhead & County Road 17 Underpass and the rerouting of traffic during construction have the potential to impact the social/economic environment in the following ways:

- Possible disturbance of sites containing archeological potential
- Temporary disturbance to nearby residents and businesses during construction from noise and dust impacts
- Single lane and complete road closures will result in temporary disruptions to local traffic and Emergency Management Services (EMS). County Road 17 will be closed completely for 2 to 4 weeks. During the closure, County Road 17 traffic will be detoured along County Road 4 heading east-west through Hawkesbury Main Street and heading north-south along Tupper Street. The additional expected travel time for vehicles along the detour route is 9 minutes. Highway 34 near the construction site will be closed for 2-3 weekends in the vicinity of the bridges. During the weekend closures of Highway 34, traffic will be detoured to a temporary bypass east of Highway 34 to maintain north-south traffic movements along Highway 34.

### 6.2.1.4 Contamination

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Potential impacts to contaminated materials as a result of the replacement of the Hawkesbury Creek and CNR Overhead & County Road 17 Underpass includes:

- Possible disturbance of asbestos-containing materials (ACMs) at the project site in the overpass curb/rail wall joint material and in the drain pipe caulking on the County Road 17 Underpass
- Possible airborne exposure to silica dust from disturbance of concrete and asphalt



## 6.2.2 Proposed Mitigation

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### 6.2.2.1 Terrestrial Environment

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To protect the terrestrial environment during construction works, the following mitigation measures and commitments will be implemented:

- As there has been a lag period of greater than two years between the completion of the survey for migratory bird nests (conducted on May 31<sup>st</sup>, 2017) and the commencement of construction, re-survey of the structures will be performed to confirm these areas remain unoccupied.
- Develop and implement an erosion and sediment control plan, monitor and repair deficiencies;
- Vegetation removals will be minimized to the extent possible and will be completed outside the breeding bird period (April 1 to August 31);
- Tree felling and grubbing procedures will be followed;
- Areas temporarily cleared of vegetation to facilitate bridge construction will be stabilized (e.g., vegetated/seeded) prior to removal of erosion and sedimentation control measures;
- A dewatering plan (if applicable) will be prepared in accordance with environmental best management practices;
- Temporarily disturbed vegetated areas will be re-vegetated to minimize invasion and colonization by non-native species and increase shade/cover for wildlife;
- Exclusion fencing will be installed in select areas to exclude wildlife from the work area;
- The Contractor will be provided a fact sheet and encounter protocol for sensitive wildlife species;
- Work will be confined to the designated construction areas; and
- If wildlife is encountered in the construction area, work will be temporarily suspended until the animal is out of harm's way.

### 6.2.2.2 Aquatic Environment

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A summary of mitigation measures and commitments to prevent harm to fish and fish habitat during bridge replacement works include:

- To protect sensitive life stages/processes of resident fish, in-water work can occur between **July 16** and **March 14** (no in-water works between March 15 and July 15), of any given year to protect spring spawning species including Bass species
- Appropriate erosion and sediment control measures will be installed around the work area to prevent migration of loose soils and accumulated sediment downstream or to adjacent areas
- Effective sediment and erosion control will follow MTO's *Environmental Guide for Erosion and Sediment Control During Construction of Highway Projects* (MTO 2007), including keeping required clearing and grubbing to a minimum and installing silt fence along watercourse banks and around fill placement areas
- Handling of fuel, excess materials and debris will be properly managed on-site and removed as per the standard construction practices necessary to protect watercourses

- All materials used or generated (e.g., organics, soils, woody debris, temporary stockpiles, construction debris, etc.) will be temporarily stored, handled and disposed of during site preparation, construction and clean-up in a manner that prevents entry into the river
- All disturbed terrestrial riparian areas will be restored to preconstruction conditions with a native grass seed mix and stabilized to prevent erosion.

### 6.2.2.3 Social/Cultural Environment

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To reduce impacts to the social/economic environment during construction works, the following mitigation measures and commitments have been developed and will be implemented:

- A Stage 2 archeological assessment has been completed. No archeological features or presence of sub surface archaeology was found in the study area and no further archeological investigations are required. However, in the event that deeply buried archaeological deposits are discovered in the course of construction, the Ministry of Tourism, Culture and Sport (416-314-1177) shall be notified immediately. Should previously undocumented archaeological resources be discovered, they may be new archaeological sites 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 consultant archaeologist to carry out a determination of their nature and significance.
- In the event that human remains are encountered during construction, the Cemeteries Regulation Unit of the Ministry of Consumer Service (1-800-889-9768) shall be notified. In situations where human remains are associated with archaeological resources, the Ministry of Tourism, Culture and Sport shall also be contacted to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.
- Encourage noise mitigation measures to minimize impacts to local residences and businesses.
- The Contractor will be required to maintain equipment in good operating condition and avoid unnecessary idling.
- Short duration road closures will occur during off-peak periods.
- Full road closures will be timed to avoid major community events.
- Full closure of County Road 17 and Highway 34 for the removal of existing bridges and construction of new bridges, within the vicinity of the project site, and associated detours will be advertised in advance and include appropriate signage.
- Notification of road closures and associated detours will go directly to EMS.

### 6.2.2.4 Contamination

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To reduce possible impacts to the disturbance of contaminated materials at the project site, the following mitigation measures and commitments will be followed:

- Any repair, removal, or disturbance of ACM's within the bridge structures will be conducted in accordance with Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations, as amended (O. Reg. 278/05)

- Disturbance of silica containing materials will be conducted in accordance with the Ontario Health and Safety Act (OHSA) and the Ministry of Labour (MOL) Silica Guideline to minimize the spread of dusts

### 6.2.3 Summary Table of Environmental Concerns and Commitments

**Table 12** outlines potential impacts to the natural, social and cultural environment from the bridge replacements, the agencies of concern, and the mitigation measures developed to minimize impacts.

Table 12: Summary of Environmental Concerns and Commitments

Environmental Concerns and Commitments				
I.D. #	Issue/Concern/ Potential Effect	Concerned Agencies	I.D. #	Proposed Mitigation/Protection/Monitoring
<b>Natural Environment</b>				
1.0 Terrestrial Environment				
1.1	Loss and/or disruption to wildlife and/or habitat	MNRF RRCA MECP Town of Hawkesbury	1.1.1	<ul style="list-style-type: none"> <li>-Exclusion fencing will be installed in select areas immediately adjacent to the work area at the Hawkesbury Creek.</li> <li>-If wildlife is encountered in the construction area, work will be temporarily suspended until the animal is out of harm's way</li> <li>-If reptiles and amphibians are persistently found in the construction zone, and allowing them to vacate in accordance with the wildlife encounter protocol described herein is found to delay construction activity, a Scientific Wildlife Collectors Permit under the Fish and Wildlife Conservation Act, 1997 may be sought by a qualified professional in order to complete wildlife salvages and transport these herptiles to an alternative habitat location</li> <li>-If a turtle nest is encountered during construction, a qualified biologist will extract the nest and transport the eggs to a suitable wildlife care facility such as a turtle trauma center.</li> </ul>
1.2	Increasing erosion of and sedimentation of lands adjacent to the study area Increased vulnerability of areas cleared of vegetation to invasion by non-native species	MNRF RRCA MECP Town of Hawkesbury	1.2.1	<ul style="list-style-type: none"> <li>-Minimize vegetation removal to the extent possible</li> <li>-Follow tree felling and grubbing procedures as outlined in OPSS 201, Construction Specification for Clearing, Close Cut Clearing, Grubbing</li> <li>-Areas temporarily cleared of vegetation to facilitate bridge construction will be stabilized (e.g., vegetated/seeded) prior to removal of erosion and sedimentation control measures</li> <li>-Disturbed vegetated areas along Hawkesbury Creek will be re-vegetated to minimize invasion and colonization by non-native species and increase shade/cover for wildlife</li> <li>-Develop and implement an erosion and sediment control (ESC) plan to mitigate impacts on riparian habitat. These measures should contain the construction area</li> </ul>

Environmental Concerns and Commitments			
I.D. #	Issue/Concern/ Potential Effect	Concerned Agencies	I.D. # Proposed Mitigation/Protection/Monitoring
			<ul style="list-style-type: none"> <li>-Minimize the disturbance of existing well-vegetated ditches and grassed slopes</li> <li>-Protect undisturbed slopes and sensitive ditching with silt fence and temporary flow check dams. These measures should remain in place until exposed soils are stabilized</li> <li>-Place erosion control blanket on 2:1 slopes where height warrants its use</li> <li>-Place appropriately sized rip rap and geotextile at new and existing storm sewer outlets</li> <li>-Erosion and sediment control measures shall be monitored regularly and/or after every 10 mm or greater rainfall event as they could require periodic cleaning, maintenance and/or re-construction. If deficiencies are found, they should be repaired and/or replaced promptly</li> <li>-Grading, placement of topsoil and seeding specifications will be implemented to decrease erosion potential and promote suitable vegetation regeneration</li> <li>-The site shall be stabilized prior to removal of erosion and sediment control measures</li> <li>-A dewatering plan (if applicable) will be prepared in accordance with environmental best management practices.</li> </ul>
1.3	<p>Potential destruction of migratory bird nests, eggs or young</p> <p>Temporary decrease in potential marginal migratory bird nesting habitat</p>	MNRF RRCA MECP Town of Hawkesbury	<p>1.3.1 - As there has been a lag period of greater than two years between the completion of the survey for migratory bird nests (conducted on May 31st, 2017) and the commencement of construction, re-survey of the structures will be performed to confirm these areas remain unoccupied.</p> <p>-Construction activities, including site preparation and vegetation removals, will be completed outside the breeding bird period (April 1 to August 31)</p> <p>-Vegetation removal can occur during the restricted period if a qualified Avian Biologist conducts a nest search of the area prior to work commencing and determines that active nests are not observed in proximity to the work area. Should active nests be found, a buffer must be applied to the area around the nest until the young have left the nest. This could result in delays to the construction contract</p> <p>-If breeding birds and/or nests are encountered, works will not continue in the location of the nest until after August 31 or as soon as it has been determined that the young have fledged and left the nest.</p>
1.4	Potential indirect effects	MNRF RRCA	1.4.1 -Confine work to the designated construction areas

Environmental Concerns and Commitments			
I.D. #	Issue/Concern/ Potential Effect	Concerned Agencies	I.D. # Proposed Mitigation/Protection/Monitoring
	to non-retainable Butternut trees Harm or temporarily harass SCC and SAR (Butternut, Spiny Softshell, Snapping Turtle)	MECP Town of Hawkesbury	<p>-Workers shall be vigilant and check work areas and machinery for the presence of reptiles prior to each day of construction</p> <p>-Measures shall be put in place to prevent these species from entering construction areas. These measures shall include the installation of temporary wildlife exclusion fencing in proximity to the creek to exclude herptiles from the general construction area.</p> <p>-Temporary wildlife exclusion fencing will be installed just prior to construction and left in place during the turtle active season (April 15 - October 1).</p> <p>-Exclusion fences shall be included on contract drawings and specifications.</p> <p>-Exclusion fencing installed for herptiles should follow guidelines set out on the MNRF's SAR Branch Best Practices Technical Note on Reptile and Amphibian Exclusion Fencing (MNRF 2013) in order to provide the most effective protective function and prevent mortality to herptiles</p> <p>-If these species are encountered in the construction area, work will be temporarily suspended until the animal is out of harm's way. If the species persists in the work area, a person qualified to handle herptiles will be contacted to relocate the animal</p> <p>-Any SAR sightings will be reported to MNRF's NHIC.</p>
2.0 Fish and Fish Habitat			
2.1	Loss of aquatic habitat	MNRF RRCA MECP Town of Hawkesbury	2.1.1 -All disturbed terrestrial riparian areas will be restored to preconstruction conditions with a native grass seed mix and stabilized to prevent erosion;
2.2	Disruption to fish passage and critical life stages	MNRF RRCA MECP Town of Hawkesbury	2.2.1 -To protect sensitive life stages/processes of resident fish, in water work will occur between July 16 and March 14, of any given year
2.3	Siltation at the site and sedimentation downstream	MNRF RRCA MECP Town of Hawkesbury	2.3.1 -Appropriate erosion and sediment control measures will be installed around the work area to prevent migration of loose soils and accumulated sediment downstream or to adjacent areas; -Effective sediment and erosion control will follow MTO's Environmental Guide for Erosion and Sediment Control During

<b>Environmental Concerns and Commitments</b>				
<i>I.D. #</i>	<i>Issue/Concern/ Potential Effect</i>	<i>Concerned Agencies</i>	<i>I.D. #</i>	<i>Proposed Mitigation/Protection/Monitoring</i>
				Construction of Highway Projects (MTO 2007), including keeping required clearing and grubbing to a minimum and installing silt fence along watercourse banks and around fill placement areas;
2.4	Introduction of deleterious substances in the watercourse	MNRF RRCA MECP Town of Hawkesbury	2.4.1	-Handling of fuel, excess materials and debris will be properly managed on-site and removed as per the standard construction practices necessary to protect watercourses; and -All materials used or generated (e.g., organics, soils, woody debris, temporary stockpiles, construction debris, etc.) will be temporarily stored, handled and disposed of during site preparation, construction and clean-up in a manner that prevents entry into the river
<b>Social/Cultural Environment</b>				
<b>4.0 Archaeology</b>				
4.1	Possible disturbance of sites containing archaeological potential	MTCS Indigenous Communities Town of Hawkesbury		-A Stage 2 archeological assessment has been completed. No archeological features or presence of sub surface archaeology was found in the study area and no further archeological investigations are required. However, in the event that deeply buried archaeological deposits are discovered in the course of construction, the Ministry of Tourism, Culture and Sport (416-314-1177) shall be notified immediately. Should previously undocumented archaeological resources be discovered, they may be new archaeological sites 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 consultant archaeologist to carry out a determination of their nature and significance.  -In the event that human remains are encountered during construction, the Cemeteries Regulation Unit of the Ministry of Consumer Service (1-800-889-9768) shall be notified. In situations where human remains are associated with archaeological resources, the Ministry of Tourism, Culture and Sport shall also be contacted to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.



<b>Environmental Concerns and Commitments</b>				
<b>I.D. #</b>	<b>Issue/Concern/ Potential Effect</b>	<b>Concerned Agencies</b>	<b>I.D. #</b>	<b>Proposed Mitigation/Protection/Monitoring</b>
<b>5.0 Noise</b>				
5.1	Temporary disturbance to nearby residents and businesses during construction	Local Residents Town of Hawkesbury		<ul style="list-style-type: none"> <li>-The contractor will be encouraged to adhere to the local noise control by-laws with exception to the 2-4 week full closure period when the bridges will be removed and replaced.</li> <li>-The Contractor will be required to maintain equipment in good operating condition and avoid unnecessary idling.</li> </ul>
<b>6.0 Traffic</b>				
6.1	Single lane and complete road closures resulting in temporary disruptions to local traffic, residents located along the detour routes and EMS	Local Residents Town of Hawkesbury EMS OPP	6.1.1	<ul style="list-style-type: none"> <li>-Short duration road closures will occur during off-peak periods.</li> <li>-Full road closures will be timed to avoid major community events.</li> <li>-All road closures and associated detours will be advertised in advance and include appropriate signage.</li> <li>-Notification of road closures and associated detours will go directly to EMS</li> </ul>

## 7.0 Monitoring

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Monitoring will be conducted by an independent on-site Contract Administrator (CA Consultant), retained by MTO, to ensure that environmental protection measures, as outlined in this study and in the contract package, are being followed during construction. This includes making sure that the implementation of mitigation measures and key design features is in line with commitments made to external agencies during the planning and design stage.

It is the responsibility of the CA Consultant to evaluate the effectiveness of the mitigation plan to confirm that individual mitigation measures are adequately addressing the anticipated impact and that additional mitigation measures are provided for any unanticipated environmental impact that may arise during construction. Should problems develop during construction, it is the responsibility of the CA Consultant to contact MTO and the necessary agencies.

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