AMHERST ISLAND FERRY TERMINALS STUDY

G.W.P. 4067-09-00

TRANSPORTATION ENVIRONMENTAL STUDY REPORT

JANUARY 2014

Ontario

URS

TRANSPORTATION ENVIRONMENTAL STUDY REPORT

PRELIMINARY DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT GROUP 'B'

G.W.P. 4067-09-00

Amherst Island Ferry Terminals Study

Loyalist Township, County of Lennox and Addington

Prepared by:

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Ce document hautement spécialisé n'est disponible qu'en Anglais en vertu du règlement 671/92 qui en exempte l'application de la Loi sur les services en français. Pour de l'aide en français, veuillez communiquer avec Heather Edwardson, ministère des Transports, au (905) 704-2210.

JANUARY 2013

The Public Record

To provide opportunities for public review, copies of this Report are available at the following locations:

Ministry of Transportation
Eastern Region
1355 John Counter Boulevard
Kingston, ON K7L 5A3

Amherst Island Public School
5955 Front Road
Stella, ON K0H 2S0

Loyalist Township
Clerk's Office
263 Main Street
Odessa, ON K0H 2H0

Amherstview Public Library
322 Amherst Drive
Amherstview, ON K7N 1S9

Interested persons are encouraged to review this document by the end of the public review period. If after consulting with the Project Team, you have unresolved concerns, you have the right to request of the Minister of the Environment (Ferguson Block, 11th Floor, 77 Wellesley Street West, Toronto, ON, M7A 2T5) a Part II Order (i.e. "bump-up"). This may lead to the preparation of an individual environmental assessment. The decision on your request rests with the Minister.

A copy of your Part II Order request is to be forwarded to the following parties:

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If no outstanding concerns are brought forward by the end of the public review period, this project will be considered to have met the requirements of the Class EA, and may proceed to detailed design, or a subsequent design-build model for delivery of both detail design and construction.

Executive Summary

The Ontario Ministry of Transportation (MTO) has undertaken a Preliminary Design and Class Environmental Assessment Study for operational improvements at the Millhaven and Stella Terminals to permit end-loading of vehicles. The study further examined improvements to Highway 33 access and both the Millhaven and Stella Terminals, including parking and marshalling areas, washrooms, pedestrian shelters, site lighting, passenger messaging, provisions for an automated fare collection system and operations and storage building requirements. The existing winter ferry operation system (i.e. bubbler system) was also examined and recommendations developed.

The current Amherst Island ferry service is a side-loading operation. This creates delay for travellers (during loading and unloading) and limits the size of vehicles the ferry can accommodate. The loading operations can be improved by eliminating the need to reverse and manoeuvre to board and exit the ferry.

The current ferry service also does not provide any protective shelter and has very limited amenities for passengers, does not have office space at either terminal, has inadequate storage facilities for ferry operations and has limited vehicle marshalling and long term parking space.

Additionally, there is no secondary loading ramp in the event of a failure of the primary ramp and the existing ice mitigation system (bubbler system) has poor functionality.

Figure E-1: Study Area

Government agencies, Aboriginal Communities, Loyalist Township, interest groups and utility companies were notified by letter at the beginning of the study in November 2011. The general public was notified via newspaper advertisements and posters at both terminals and on the vessel of the study. One round of Public Information Centres was held for this study in August 2012.

Meetings were held with the affected property owners and Loyalist Township at key milestones of the study.

Alternatives for terminal conversion and the associated improvements were generated and evaluated. The preferred alternatives were identified based on consideration of the natural, socio-economic and cultural environments, as well as engineering and cost considerations. The Technically Preferred Alternative was further refined based on MTO design requirements, as well as Loyalist Township and public input.

The Recommended Plan (refer to **Chapter 8** for more details) includes the following improvements:

- Both the Millhaven and Stella Terminals will be reconstructed to permit end-loading of vehicles for the ferry;
- New hydraulic primary ramps will be installed at both terminals as well as new secondary ramps for backup conditions. The secondary ramps comprise granular material that can be graded to the required elevation, similar to the existing ramps;
- The Millhaven and Stella berthing piers will be extended lake-ward by 75 m and 70 m, respectively, from the current dock to a maximum length of 84 m (at the Stella Terminal);
- Dredging and rock removal will be required at both terminals. At Millhaven, there will be ≈630 m^3 of overburden removal and ≈1,420 m^2 of rock removal. At Stella, there will be ≈2,130 m^3 of overburden removal and ≈3,260 m^2 of rock removal;
- The marshalling area at the Millhaven and Stella Terminals will be expanded to accommodate at least 42 and 36 passenger cars, respectively;
- The number of parking spaces will be increased to at least 26 at the Millhaven Terminal and 35 at the Stella Terminal;
- Terminal buildings, including public washrooms and storage facilities will be constructed at both terminals;
- The Stella Terminal will include an office and amenities for ferry staff, which is planned to be LEED certified;
- Provisions will be made to accommodate a future automated fare system at the Stella Terminal;
- The existing winter ferry operation system (i.e. bubbler system) will be replaced with new bubbler systems at both berths only; and
- Other improvements include site lighting, passenger messaging and pedestrian amenities.

The recommended alternative for the Millhaven Terminal will not require the purchase of private property. The recommended alternative for the Stella Terminal has resulted in the acquisition of one residential property west of Stella 40 Foot Road in close proximity to the Terminal. In addition, land owned by Loyalist Township west of Stella 40 Foot Road will also be required to accommodate the recommended improvements to the Stella Terminal. Mitigation measures have been identified and will be employed during implementation of the recommended terminal improvements to reduce or avoid environmental impacts. Refer to **Chapter 9** for a description of the potential environmental impacts and corresponding mitigation measures.

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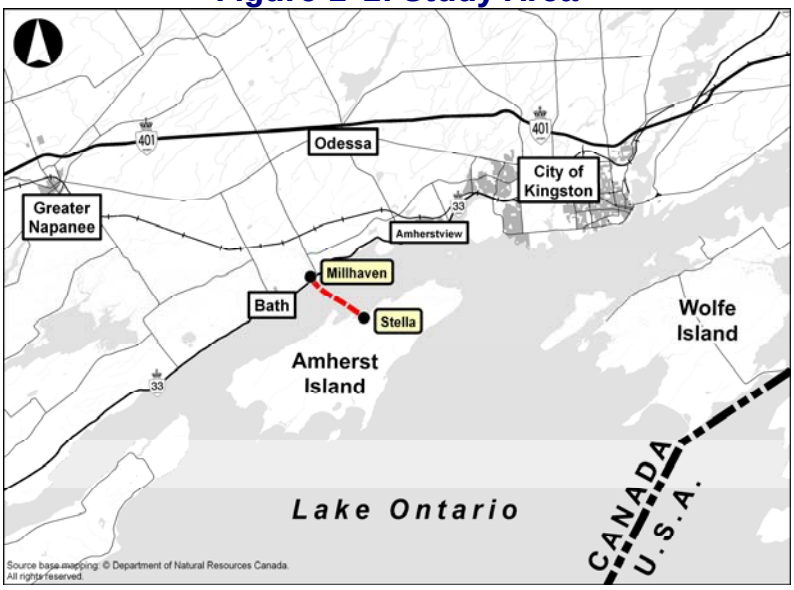
1. OVERVIEW OF THE PROJECT

1.1. Study Background and Location

URS Canada Inc. (URS) was retained by the Ontario Ministry of Transportation (MTO) to undertake a Preliminary Design and Class Environmental Assessment Study for operational improvements at the Amherst Island Ferry Terminals at Millhaven and Stella to permit end-loading of vehicles. The study further examined improvements to Highway 33 access and both the Millhaven and Stella Terminals, including parking and marshalling areas, washrooms, pedestrian shelters, site lighting, passenger messaging, provisions for an automated fare collection system, as well as operations and storage building requirements. The existing winter ferry operation system (i.e. bubbler system) was also examined and recommendations developed.

Figure 1-1: Study Area



1.2. Study Purpose, Objectives, and Scope

The purpose of this study is to examine reconstruction of the Amherst Island Ferry Service, Millhaven and Stella Terminals to permit end-loading of vehicles and associated improvements. This project involved:

- Identifying existing conditions within the study areas adjacent to each ferry terminal;
- Developing alternatives to convert (to ferry end-loading) and improve both terminals;
- Assessing and evaluating alternatives based on impacts to the natural, socio-economic and cultural environments, as well as considering engineering and costs;
- Presenting alternatives and the Technically Preferred Alternative at Public Information Centres (PICs);
- Refining the Technically Preferred Alternative based on stakeholder input;

- Confirming a Recommended Plan;
- Preparing the preliminary design of the Recommended Plan;
- Developing mitigation measures to minimize or avoid potential environmental impacts; and
- Defining commitments to future work to be initiated during future design and construction.

After completion of this Preliminary Design Study, MTO will initiate a design-build process whereby a single entity provides both design and construction services for the ferry terminal improvements.

1.3. Study Process

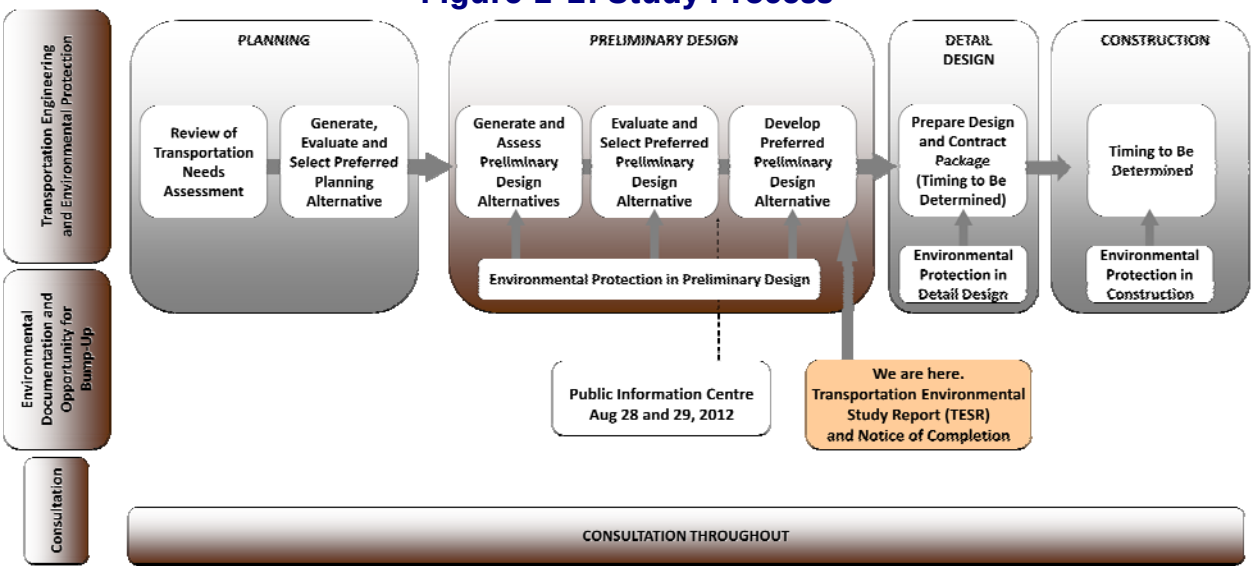
This study followed the approved planning process for a Group 'B' project under the *Class Environmental Assessment for Provincial Transportation Facilities (2000)* (Class EA). **Figure 1-2** shows an overview of the Class EA process for Group 'B' projects. The study process provided opportunities for public, Loyalist Township and external agency review at key project milestones, as well as for a continuous, evolving approach to the technical work involved.

"Study Commencement" involved notifying government agencies, Aboriginal Communities, Loyalist Township, interest groups and members of the public that the study had been initiated and their involvement was encouraged. This involved placing an advertisement in local newspapers, displaying posters at both terminals and on the vessel, and mailing notification letters to potentially interested and affected stakeholders. Interested parties were advised to contact the Project Team for further information and/or to be placed on the project mailing list. See **Chapter 3** for additional information on the consultation that was carried out for the project.

After documenting the existing conditions within the study areas, the Project Team developed alternatives for conversion of the docking facilities and other improvements to the terminals as well as alternatives for winter ferry operations (i.e. bubbler system). The need for terminal conversion and improvements, the assessment and evaluation of alternatives, the Technically Preferred Alternative and the proposed mitigation strategies were presented at Public Information Centres (PICs) in August 2012.

This Transportation Environmental Study Report (TESR), which documents the process that was followed leading to the selection of the Recommended Plan, has been prepared and made available for a 30-day public review. If there are no outstanding concerns after the 30-day review period, the project will be considered to have met the requirements of the Class EA and may proceed to detailed design or a subsequent design-build model for delivery of both detail design and construction.

Figure 1-2: Study Process



1.4. General Description of the Recommended Plan

The Recommended Plan (refer to **Chapter 8** for more details) includes the following improvements:

- Both the Millhaven and Stella Terminals will be reconstructed to permit end-loading of vehicles for the ferry;
- New hydraulic primary ramps will be installed at both terminals as well as new secondary ramps for backup conditions. The secondary ramps comprise granular material that can be graded to the required elevation, similar to the existing ramps;
- The Millhaven and Stella berthing piers will be extended lake-ward by 75 m and 70 m, respectively, from the current dock to a maximum length of 84 m (at the Stella Terminal);
- Dredging and rock removal will be required at both terminals. At Millhaven, there will be ≈630 m^3 of overburden removal and ≈1,420 m^2 of rock removal. At Stella, there will be ≈2,130 m^3 of overburden removal and ≈3,260 m^2 of rock removal;
- The marshalling area at the Millhaven and Stella Terminals will be expanded to accommodate at least 42 and 36 passenger cars, respectively;
- The number of parking spaces will be increased to at least 26 at the Millhaven Terminal and 35 at the Stella Terminal;
- Terminal buildings, including public washrooms and storage facilities will be constructed at both terminals;
- The Stella Terminal will include an office and amenities for ferry staff, which is planned to be LEED certified;
- Provisions will be made to accommodate a future automated fare system at the Stella Terminal;
- The existing winter ferry operation system (i.e. bubbler system) will be replaced with new bubbler systems at both berths only; and

- Other improvements include site lighting, passenger messaging and pedestrian amenities.

2. ENVIRONMENTAL ASSESSMENT PROCESS

2.1. The Ontario Environmental Assessment Act

The purpose of Ontario's *Environmental Assessment* (EA) *Act* is to help protect and conserve Ontario's environment by confirming that projects subject to the EA Act follow a planning process leading to environmentally sound decision-making.

For projects subject to the EA Act, an environmental assessment involves identifying and planning for environmental issues and effects prior to implementing a project. The process allows reasonable opportunities for public involvement in the decision-making process of the project. An EA document is prepared by the proponent of the project and is subject to review by the public and government agencies.

The *MTO Class Environmental Assessment for Provincial Transportation Facilities* (2000) (Class EA) is approved under the *Ontario Environmental Assessment Act*. The Class EA is a principle based environmental planning process for various projects that MTO undertakes. The principles that MTO adheres to are:

- Transportation engineering;
- Environmental protection;
- Consultation;
- Evaluation;
- Documentation; and
- Environmental clearance.

Provided MTO follows the principles and the planning process of the Class EA, no formal approval is required under the *Ontario Environmental Assessment Act*. This Study has complied with the requirements of the MTO Class EA for a Group "B" project. For a greater understanding of the environmental assessment (EA) planning process, visit www.mto.gov.on.ca (Publications – Environmental Standards and Practices).

2.2. Federal Approvals and Permits

In July 2012, the Government of Canada released new regulations required to implement the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The CEAA 2012 establishes a federal environmental assessment process focused on major projects that have a greater potential to have significant adverse effects on areas within federal jurisdiction. The types of activities to which the new Act applies ("designated projects") are identified in the regulations.

The proposed improvements to the Millhaven and Stella Terminals are not listed as "designated projects" under the CEAA 2012 and therefore CEAA approvals are not required for this undertaking.

This project has been undertaken in accordance with the *2006 MTO / DFO* (Department of Fisheries and Oceans) */ MNR* (Ministry of Natural Resources) *Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings* (the Protocol). DFO is responsible for reviewing MTO projects, determining whether the *Fisheries Act* applies and issuing a Fisheries Act authorization if required. All alternatives considered aside from "Do Nothing" entailed lake infill to varying degrees. The process of assessing the risk to fish and fish habitat is determined through consideration of the scale or severity (extent, magnitude, duration) of residual effects and the sensitivity of the fish habitat potentially affected in accordance with DFO's Risk Management Framework and MTO's Environmental Guide for Fish and Fish Habitat (Guide).

The potential impacts of the proposed ferry terminal improvements, construction and associated activities were assessed in accordance with the Guide, and considered all potentially relevant condition changes in relation to the improvement construction and all associated works. The extent, duration and intensity of the potential impacts were considered specifically in relation to the sensitivity of the fish and fish habitat. Based on this assessment, the proposed improvements at both the Millhaven and Stella Terminals are likely to create a Medium to High risk to fish and fish habitat and result in a HADD to fish habitat. A submission will be delivered to DFO indicating the level of impact to fish habitat and conceptual mitigation and compensation measures in order to seek a 'draft' acceptance of the project. Formal HADD forms and a detailed habitat compensation strategy will be submitted to DFO during the next phase of this project when specific and detailed construction phases and timelines are available.

A letter was sent to Transport Canada seeking a 'pre-submission review' of the project in order to obtain a level of assurance that when a formal application under the *Navigable Waters Protection Act* (NWPA) is prepared and submitted during the next phase of this project (Design-Build), an approval will be forthcoming. Transport Canada confirmed that a formal application by the Design-Build Contractor should receive approval. [Note: The NWPA was amended in December 2012 with a scheduled implementation date of April 2014. The amendment creates both a new application procedure and a new *Navigation Protection Act*. This new legislation designates specific waterbodies in Canada that require formal approval for any structure that may be constructed. Lake Ontario is designated.]

2.3. Transportation Environmental Study Report

This Transportation Environmental Study Report (TESR) documents the following:

- Problems and opportunities;
- Generation, assessment and evaluation of alternatives;
- Recommended Plan for conversion of the docking facilities and other improvements to the terminals and the winter ferry operations (bubbler system);
- Summary of potential environmental effects and proposed mitigation measures; and
- Summary of consultation undertaken throughout the study.

A "Notice of Submission – Transportation Environmental Study Report" was placed in the Kingston Whig Standard, the Napanee Beaver and the Amherst Island Beacon to notify interested parties of the 30-day public review period for this TESR. Posters with information regarding this public review were displayed at the Millhaven and Stella Terminals. Letters were also sent to individuals on the project mailing list.

During the 30-day review period, interested parties are encouraged to bring their concerns regarding the project to the attention of the project consultant (URS) and MTO. After consulting with MTO's consultant and staff, if unresolved concerns are identified, individuals have the right to request the Minister of the Environment (Ferguson Block, 11th Floor, 77 Wellesley Street West, Toronto, ON, M7A 2T5) for a Part II Order ("bump-up") for this project. A Part II Order may lead to preparation of an individual EA. The decision rests with the Minister of the Environment. A copy of the Part II request is to be forwarded to both MTO and URS at the addresses below. If there are no outstanding concerns after the completion of the public review period, the project will be considered to have met the requirements of the Class EA.

Detailed background information, including supporting background study reports, is contained in the environmental study file. The Consultant Project Manager and Environmental Planner are available to discuss this information and can be contacted as follows:

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You may also contact the following MTO representatives:

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3. CONSULTATION

3.1. Public Consultation

3.1.1. Overview

Consultation was an integral part of this study and the Project Team recognized the important role that all stakeholders play in the successful completion of any study. Throughout the study, opportunities for public, Aboriginal Communities and external agency input were provided at key milestones. Loyalist Township was also an active participant in the consultation process and provided valuable insight for the generation and assessment of alternatives.

One of the primary objectives of this study was to make sure that, from the earliest planning stages, decisions were made only after considering all of the potential environmental impacts. Consultation with affected parties played an important role in this regard, in terms of identifying potential environmental impacts and the relative advantages and disadvantages associated with the alternatives examined, and providing a medium to communicate the Project Team findings to stakeholders.

There are five key features, which translate into a successful planning study. They are:

- Early consultation with affected parties;
- Consideration of all reasonable alternatives;
- Consideration of all aspects of the environment (i.e. natural, social, economic and cultural) as well as engineering considerations;
- Systematic evaluation of net environmental effects; and
- Clear and complete documentation of the planning process.

During this study, members of the public, Loyalist Township, emergency services, government agencies, Aboriginal Communities and other stakeholders were provided the opportunity to review and comment on the identified improvement alternatives, the evaluation of alternatives and the Technically Preferred Alternative, and the potential environmental impacts and proposed mitigation measures.

A mailing list of interested individuals was established and continuously updated throughout the study. The purpose of this list was to confirm that individuals who had an interest in the study were kept informed of upcoming events and the progress of the project.

The public was formally involved in the decision-making process by being invited to attend one round of Public Information Centres (PICs), held on August 28 and 29, 2012 in Millhaven and Stella, respectively. The format of the PICs was an informal drop-in centre with brief overview presentations given by the Project Team. Copies of the PIC displays and a comment sheet were available to individuals in attendance.

The following sections outline the details of the consultation process implemented for this project.

3.1.2. Notice of Study Commencement

A "Notice of Study Commencement" was published in both the Kingston Whig Standard and the Napanee Beaver on November 17, 2011, and in the December 2011 edition of the Amherst Island Beacon to inform area residents of the project and to invite them to contact the Project Team if they required information and/or to be placed on the project mailing list. Posters were also displayed at both the Millhaven and Stella terminals, and on the ferry. Notification letters were distributed on November 14, 2011 to individuals who had established contact with the Project Team, as well as external agencies, Aboriginal Communities, municipalities, utilities, emergency services and interest groups. A contact information form was attached to this initial correspondence, providing agencies an opportunity to express their concerns regarding the study. Copies of the commencement notification materials are provided in **Appendix A**.

3.1.3. Notice of Public Information Centre

One round of Public Information Centres (PICs) was held on August 28, 2012 at the Royal Canadian Legion in Millhaven, and on August 29, 2012 at St. Paul's Presbyterian Church in Stella on Amherst Island. A "Notice of Public Information Centre" was published in the Kingston Whig Standard and the Napanee Beaver on August 23, 2012, and made available on the Loyalist Township website. Posters were also displayed at both terminals. Letters were distributed on August 17, 2012 to individuals on the project mailing list. Newsletters were delivered via Canada Post's admail service to area residents on Amherst Island and in the Bath / Millhaven area.

3.1.4. Notice of Transportation Environmental Study Report Submission

Notification letters were mailed to stakeholders on the project mailing list to notify of the 30-day public review period for this Transportation Environmental Study Report (TESR). In addition, a "Notice of Submission – Transportation Environmental Study Report" was placed in the Kingston Whig Standard, the Napanee Beaver and the Amherst Island Beacon and posted on the Loyalist Township website. Posters notifying ferry users of the public review period were also displayed at both terminals.

3.2. External Agency and Aboriginal Consultation

3.2.1. External Agency Consultation

The Project Team consulted with the following agencies by mail in order to obtain study area information, seek their input and advise of the Study progress:

Governmental Agencies

- Corrections Canada, Millhaven Institution;
- Transport Canada;
- Canadian Environmental Assessment Agency;
- St. Lawrence Parks Commission;
- Ministry of Aboriginal Affairs;
- Aboriginal Affairs and Northern Development Canada;
- Ministry of the Environment – Regional and District Offices;
- Ministry of Energy and Infrastructure;
- Ministry of Natural Resources – Regional and District Offices;
- Ministry of Tourism, Culture and Sport;
- Ministry of Agriculture, Food and Rural Affairs;
- Ministry of Municipal Affairs and Housing;
- Ministry of Infrastructure; and
- Cataraqui Region Conservation Authority.

Elected Officials

- Scott Reid (MP – Lanark-Frontenac-Lennox and Addington); and
- Randy Hillier (MPP – Lanark-Frontenac-Lennox and Addington).

Municipalities

- Loyalist Township; and
- County of Lennox and Addington.

School Boards

- Tri-Board Student Transportation Services Inc.;
- Limestone District School Board; and
- Algonquin and Lakeshore Catholic District School Board.

Emergency Services

- County of Frontenac Paramedic Services;
- Loyalist Emergency Services; and
- Ontario Provincial Police.

Utilities

- Hydro One, Power Line Management;
- Union Gas Limited;
- Bell Canada;
- FCI Broadband;
- Allstream; and
- Veridian Connections.

Interest Groups

- Ontario Federation of Agriculture;
- Ontario Heritage Trust;
- Ontario Federation of Snowmobile Club, District 1;
- Frontenac Trails Committee;
- Eastern Ontario Trail Alliance;
- Kingston Naturalist Club;
- CORK Sail Kingston Inc.;
- Tourism Kingston;
- Windlectric Inc.; and
- Agriculture and Rural Development Agency.

At the outset of the study, external agencies were contacted by mail and asked to provide input relative to their mandate and to support the inventory of environmental conditions within the study area. Representatives from the agencies listed above were invited to attend an external agency meeting held in Millhaven on August 28, 2012 in order to review the PIC displays and discuss the project directly with the Project Team.

The Project Team held regular meetings with Loyalist Township throughout the study. The meeting minutes can be found in **Appendix A**. Correspondence with external agencies and a summary of input provided is in **Table 3-1** and documented in **Appendix A**.

3.2.2. Aboriginal Community Consultation

Notification letters were mailed to the following Aboriginal Communities:

- Mohawks of the Bay of Quinte;
- Association of Iroquois and Allied Indians; and
- Métis Nation of Ontario.

During the subsequent design-build stage of this undertaking, the above noted external agencies and Aboriginal Communities will continue to be contacted and consulted regarding design / construction details and commitments to future work outlined in this document, where appropriate and/or necessary.

Table 3-1: Summary of Issues Raised by External Agencies

External Agency	Issues / Concerns	Response
Loyalist Township	*Loyalist Township is a key stakeholder in this study. Multiple meetings were held with Loyalist Township throughout the study. Refer to **Appendix A** for meeting minutes.*	*Refer to **Appendix A** for meeting minutes.*
Algonquin Power (Windlectric Inc)	Currently working on designing wind project on Amherst Island. We are in conversation with the MTO regarding the ferry bubbler system.	Comment noted.
Hydro One	In our initial review, we can confirm that there are no Hydro One Transmission Facilities in the subject area. Please be advised that this is only a preliminary assessment based on current information. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.	Comment noted.
Tri-Board Student Transportation Services	We have one 30 passenger school bus that crosses in the morning and afternoon. Should not be a large impact on our organization.	Comment noted.
Union Gas Limited	I reviewed our records and we don't have any plant in that area. We have no concerns with this project.	Comment noted.
Frontenac Paramedic Services	FPS provides emergency land ambulance service to Amherst Island. We would need to know if there would be periods when the ferry would be out of service during the work to make sure we have alternate response capabilities i.e.: helicopter response from Ottawa or Toronto.	Comment noted.
Veridian Connections	Project is located outside Veridian's service area.	Comment noted. Contact removed.
Loyalist Township Emergency Services	We have a water supply point on Stella Dock now. This needs to be upgraded for ease of obtaining water for firefighting purposes 24/7. We have a fire station on the island. 1/2 km south of the dock. We keep a pumper, tanker and rescue unit on the island and also have 16 volunteer firefighters.	Comment noted.
County of Lennox and Addington	I acknowledge receipt of your letter dated November 14, 2011 regarding the Amherst Island Ferry Terminals - Preliminary Design Study. The County of Lennox and Addington does not have any comments or concerns regarding this matter. Staff has completed the Stakeholder Contact Information Form as requested and it is enclosed with this correspondence. None-the-less, please note that the County does not wish to continue to receive notices of project activities. The County appreciates the opportunity to comment at this time.	Comment noted and contact removed.
Ministry of Natural Resources	Peterborough District MNR has received your letter regarding the Schedule 'B' Class Environmental Assessment for proposed works associated with the Amherst Island Ferry Terminals Design Study located in the Town of Greater Napanee. We provide the following comments for your consideration: Based on a review of our best available information, there does not appear to be any natural heritage features within the project sites. Due to the proximity of the project sites to Lake Ontario, we recommend that appropriate sediment erosion control measures (e.g. silt fencing) be in properly installed prior, during and after construction. These measures should be installed between the proposed work areas and the shoreline bank to prevent any materials / sediment and minimize runoff from entering the lake. These measures should be maintained and inspected after every rainfall event. MNR may provide additional information and technical advice if details of the proposed location(s) and design(s) of the proposed works are circulated to our office. MNR Data and Information: We would like to inform you that MNR's natural heritage and natural resources data and information can be obtained through the Ministry's Land Information Ontario (LIO) website at: http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STDPROD_068994.html. A data sharing agreement is required to access data within the LIO database. The following link provides information about obtaining an agreement: http://www.mnr.gov.on.ca/en/Business/LIO/2ColumnSubPage/STEL02_167959.html You can also obtain Species at Risk occurrence information on our Natural Heritage Information Centre website: http://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/. In addition, the Species at Risk in Ontario (SARO) List can be obtained at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080230_e.htm NEW Environmental Registry posting regarding additional species to be added to SARO List in 2012 can be viewed at: http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE0ODY5&statusId=MTcyMjA3&language=en	Comment noted.

External Agency	Issues / Concerns	Response
	General information regarding MNR approvals: *Endangered Species Act* (ESA), 2007 Species listed as endangered or threatened on the Species at Risk in Ontario (SARO) List are protected under the ESA, 2007. Section 9(1) of the ESA, 2007 prohibits a person from killing, harming, harassing, capturing or taking a member of a species listed as endangered, threatened or extirpated on the SARO list. Section 10(1) of the ESA, 2007 prohibits the damage or destruction of habitat of a species listed as endangered or threatened on the SARO list. Should any Species at Risk or their habitat be potentially impacted by on site activities, MNR should be contacted immediately and operations should be modified to avoid any negative impacts to Species at Risk or their habitat until further discussions with MNR can occur regarding opportunities for mitigation. Please note that you may require a permit under the ESA, 2007 from our office, if any Species at Risk or their habitat is found within the study area. If any Species at Risk is found please contact the Species at Risk Biologist at the Peterborough District MNR office at 705-755-3104. *Lakes & Rivers Improvement Act* (LRIA) Please note that you may require a permit under the LRIA from our office if any dyking, dredging or damming activities are planned along or near watercourses or wetland areas. If near or in-water works are proposed, please contact Rick Topping, Senior Lands Technician, at the Kingston Area Office at 613-531-5703. *Public Lands Act* Except for federal canals and harbours, the beds of most lakes and streams are public land in Ontario. Please note that you may require a Work Permit under the PLA if you are proposing work in water or near shore (shoreline) areas below the spring high water mark. Please contact Rick Topping, Senior Lands Technician, at the Kingston Area Office at 613-531-5703. MTO / DFO / OMNR Fisheries Protocol, 2006 If any in-water works are proposed, we recommend contacting Monique Charette, Management Biologist, at 613-531-5715 or Monique.charette@ontario.cam for fisheries management information. Other Approvals It is the responsibility of the proponent to acquire all other necessary approvals from any other municipal, provincial or federal authority under other legislation. We recommend that you contact your local Conservation Authority, Department of Fisheries and Oceans, Ministry of the Environment, Ministry of Tourism and Culture, etc. If you have any specific questions regarding natural heritage and natural resource features as they relate to the study area and project proposal, please do not hesitate to contact the undersigned.	
Ministry of the Environment	Thank you for your November 14, 2011 letter to me concerning the above project. Your letter indicates that the study of the Amherst Island Ferry Terminals (Millhaven and Stella) will include examination of reconstruction of the terminals, improvements to Highway 33 access, improvements to parking and marshalling areas and winter ferry operations. The project is being planned as a Group B project in accordance with the Class Environmental Assessment for Provincial Transportation Facilities, 2000. Please provide copies of all future notices and a copy of the final documentation on compact disc only, to my attention. We request that a CD copy be mailed to this office for our records (providing a link to download the report will not meet our information requirements). We request that you do not send a hard copy of the report or specify on the final notice that the Regional or District MOE office will be a viewing location for the final documents. MOE staff recommend that the issues discussed below be considered during highway planning, design and construction. We are aware that many of these issues are typically addressed in detail through special provisions in the contract. The documentation prepared for this project should consider the following issues: 1) Noise impacts, both permanent and temporary, 2) Impacts to surface water due to construction in or near a watercourse, erosion, spills or highway operation, 3) Impacts to wells due to spills, extensive dewatering or highway operation, 4) Management of surplus materials, waste or contaminated soil. We recommend that complaint response protocols be developed to address reported well water disturbances, noise, dust and claims of property damage. Although some agencies are able to provide mapping information identifying areas of concern, MOE does not have this capability at this time. The onus is therefore on the proponent to collect information on the environment and assess potential impacts. If you would like specific information on a particular site, direct contact with staff in the District office may be appropriate. Similarly, contact with this office's Water Resources Unit may be appropriate if you are looking for information on a specific water course. This Ministry's Waste Disposal Site Inventory, dated June 1991, may also be helpful in identifying the locations of open and closed waste disposal sites in Ontario. MOE recommends that proponents contact the relevant agencies to determine whether there are potentially affected Aboriginal Communities in the project area. The up-to-date list of agency contacts is maintained on the Environmental Assessment and Approvals Branch website at the following link:	Comment noted.

External Agency	Issues / Concerns	Response
	http://www.ene.gov.on.ca/environment/en/industry/assessment_and_approvals/environmental_assessments/STDPROD_075743.html Once identified, it is recommended that you provide notification directly to the Aboriginal Communities who may be affected by the project and provide them with an opportunity to participate in the planning of the project. Thank you for bringing this project to our attention. If you have any questions about MOE requirements with respect to the above issues, please contact this office or the local District office.	
Ministry of Tourism, Culture and Sport	As part of the *Environmental Assessment Act* permit process, the Ministry of Tourism, Culture and Sport has an interest in the conservation of cultural heritage resources including archaeological resources, built heritage resources and cultural heritage landscapes. We have reviewed this environmental assessment project and find that the subject property is considered to have archaeological potential based on provincial archaeological potential criteria, as it is: • a known archaeological site or within 300 m of a known site • within 300 m of a primary water source (lakeshore, river, large creek) • within 300 m of a secondary water source (stream, spring, marsh, swamp) • within 300 m of an ancient water source (beach ridge, river bed) • historic transportation (road, rail, portage) • local knowledge An archaeological assessment by an archaeologist licensed under the *Ontario Heritage Act* is recommended for this project prior to any ground disturbances and/or site alterations. The assessment report(s) must be in compliance with the Ministry of Tourism and Culture's Standards and Guidelines for Consultant Archaeologists. Additionally, the undertaking of a marine archaeological assessment should be considered, as the area impacted is known to contain numerous shipwrecks. The licensed archaeologists will forward all completed archaeological assessment reports to the Ministry of Tourism, Culture and Sport for review by an Archaeological Review Officer. In the event that human remains are found, the local police must be notified immediately, followed at once by notification to this office.	Comment noted.
Ministry of Aboriginal Affairs	Thank you for your letter dated, November 14, 2011. Please be advised that MAA is in agreement with the communities / organizations you have already identified and been in contact with. As a best practice, MAA would suggest contacting the Métis Nation of Ontario community council of Ottawa in addition to the larger organization.	Comment noted.
Canadian Environmental Assessment Agency	Thank you for your correspondence and notification of the Public Information Centre. Regulation changes to the legislation have resulted in this project not being subject to the Act. No further correspondence is required.	Comment noted
Transport Canada	Thank you for the information regarding the above referenced project. We have reviewed the information, and note the following: Transport Canada is responsible for the administration of the *Navigable Waters Protection Act* (NWPA), which prohibits the construction or placement of any "works" in navigable waters without first obtaining approval. If any of the related project undertakings cross or affect a potentially navigable waterway, the proponent should prepare and submit an application in accordance with the requirements as outlined in the attached Application Guide and Form. Any questions about the NWPA application process should be directed to the Navigable Waters Protection Program at (519) 383-1863 or NWPontario-PENontario@tc.gc.ca. Please review the Minor Works and Waters (NWPA) Order, established to outline the specific standards and criteria under which Transport Canada considers a work as a minor and does not require an application under the NWPA. It is the responsibility of the applicant, prior to submitting an application to the Navigable Waters Protection Program for review, to assess whether their work meets the criteria, as described, and, therefore, falls within one of the excluded classes. An application will only be required if it is determined that the work cannot meet the criteria established for that particular "class" of excluded work. Transport Canada is also responsible for inspecting and auditing federally regulated railway companies that are subject to the *Railway Safety Act*. Transport Canada also regulates some provincial shorelines from the Province of Ontario that are part of an Agreement between the Federal Government and the Province of Ontario. The *Railway Safety Act*, with related regulations and rules, provides the legislative and regulatory framework for safe railway operations in Canada. The rail safety program develops, implements and promotes safety policy, regulations, standards and research, and in the case of railway grade crossings, subsidizes safety improvements. A list of all the Rail Safety legislations (the Act, Regulations, Rules, Guidelines, Policies and Standards) that applies to the federally regulated railways, can be found here: http://www.tc.gc.ca/eng/railsafety/legislation.htm. The Act also addresses the construction and alteration of railway works, the operation and maintenance of railway equipment and certain non-railway operations that may affect the safety of federally regulated railways. If a proposed railway work is of a prescribed kind, pursuant to the Notice of Railway Works Regulations, the proponent shall not undertake the work unless it has first given notice of the work in accordance with the regulation. More information related to railway works can be found online.	Comments noted

3.3. Public Consultation

3.3.1. Public Information Centres

One round of Public Information Centres (PICs) was held on August 28, 2012 at the Royal Canadian Legion in Millhaven from 4:00 p.m. to 8:00 p.m., and on August 29, 2012 at St. Paul's Presbyterian Church on Amherst Island from 3:30 p.m. to 7:30 p.m. An external agency meeting was held on August 28, 2012 from 3:00 p.m. to 4:00 p.m. at the Millhaven venue. The PICs were an informal, "open house" style event with MTO and URS staff available to address questions and concerns. A brief presentation was given at 5:00 p.m. and 7:00 p.m. to provide the attendees a brief overview of the project. The purpose of this PIC was to present and receive input on the assessment and evaluation of alternatives, the Technically Preferred Alternative and the proposed mitigation strategies. Refer to **Appendix B** for material presented.

A total of 77 individuals signed the visitor registry at the PICs (19 at the Millhaven PIC and 58 at the Stella PIC). Nineteen (19) written comments were received as a result of the PICs (three at the Millhaven PIC, nine at the Stella PIC, and seven submitted subsequent to the PICs). **Table 3-2** summarizes the key comments, issues and concerns raised from the PICs.

Table 3-2: Summary of Issues Raised at the Public Information Centres

Comment	Response
Supportive of the project.	Support is appreciated.
Questions regarding project construction timing, and comments that the project is required now.	Construction timing will be determined once all permits and approvals are in place, property acquired and utilities relocated.
Inquiries regarding property impact.	The Project Team acknowledges the impacts to the residence immediately adjacent to the proposed marshalling / parking area at Stella. Consultation with the property owners is ongoing. The Project Team is re-examining the preferred alternative for the Stella Terminal (Stella Alternative 5) to determine if Stella Alternative 1 (which requires acquisition of this property) is a better alternative in light of the property owners concerns. If Stella Alternative 1 is selected as the preferred alternative this will be described in the TESR to follow.
Inquiries regarding how this project will be paid for.	This project is funded by MTO and is considered an investment in the infrastructure for Amherst Island ferry operations.
Regarding the winter operation system, a continuous bubbler system is needed (for some attendees) and a full replacement is unnecessary (for other attendees).	Replacing the existing non-functioning bubbler system at both the berths and over the Lake Ontario crossing length has a high capital cost and as such, is not preferred. The preferred winter operation alternative is to replace the existing system with new bubbler systems at the berths only and to modify the ferry hull to permit crossing during ice conditions. Of note here, is the fact that the current bubbler system is not functioning over the entire length of channel and over the last number of years, the Amherst Island ferry has been navigating through the ice without

Comment	Response
	difficulty.
Higher horsepower for the vessel might be needed to accommodate the proposed hull modifications.	Comment noted. These issues have been explored and will be discussed further with regulatory agencies.
Information on shore wells locations.	Locations noted.
Features to accommodate fire trucks (taking water from the lake) to be incorporated into the Stella Terminal design.	Comment noted.
Inquiries regarding the relationship between this project and the proposed wind farm project.	This study does not relate to the wind farm project.
The desire to reinstate the public boat launch and construction of parking for cars with boat trailers.	The Technically Preferred Alternative includes expansion of long-term parking spaces to at least 20 at the Stella Terminal that would be available for boaters.
A dock adjacent to the public boat launch be constructed to facilitate launching.	Comment noted, however this initiative is beyond the scope of this study.
Concerns regarding ferry fares and comparisons to other local ferry operations that have free ferry service.	Comment noted. Ferry fares are determined by Loyalist Township and not within the scope of this study.
The necessity of this project as the Amherst Island Ferry only serves a relatively small population.	Comment noted. The current loading operation (side-loading) does not permit for loading large commercial vehicles or large farm equipment, nor is it ideal for vehicle loading and unloading. By converting the terminal docks to permit end-loading, access to the island by large commercial trucks and large farm equipment will be possible, ferry efficiency will be improved and ferry user satisfaction will be enhanced with the development of new passenger terminal buildings and amenities. These improvements will also allow the existing ferry service to meet growth demand for access to Amherst Island.
Concerns regarding the size of the terminal/storage buildings.	The Project Team has consulted Loyalist Township and the building size and long-term parking spots are considered reasonable and necessary.
Concerns regarding the evaluation criteria – not capturing the community as a whole.	Community impacts were captured by the factors in the Socio-Economic Environment category. In addition, Loyalist Township as a major contributor to the design was in a good position to consider the community perspective.
More analysis on aesthetics is needed.	Aesthetics was considered as part of the "Landscape Composition" factor. The preliminary design being carried forward will minimize to the extent possible any impacts to the aesthetic character of the site. The configuration of dock facilities will be designed with landscape features and building designs that complement the character of the area.
Concerns regarding traffic flow on the Millhaven side.	The Project Team has optimized the loading / unloading operations, recognizing the existing constraints of a limited land base. Once vehicles leave the ferry, drivers are required to abide

Comment	Response
	by the *Highway Traffic Act* and obey all signs / directions as are currently present at the site. Under the current ferry operation vehicles exiting the ferry must approach, stop and make safe turns onto Highway 33 and in this regard there will be no change.
Opposed to the recommended alternative at Stella due to property impact.	Opposition noted. Consultation with the property owners is ongoing. The Project Team is re-examining the preferred alternative for the Stella Terminal (Stella Alternative 5) to determine if Stella Alternative 1 (which requires buyout of this property) is a better alternative in light of the property owners concerns. If Stella Alternative 1 is selected as the preferred alternative this will be described in the TESR to follow.
Inquiries regarding the development of the Stella alternatives (i.e. dock configuration, wind, ice flow, etc.).	It is part of the environmental assessment process to develop, assess and evaluate all reasonable alternatives.
Inquiries regarding "Alternatives to the Undertaking".	Consistent with the Class EA, Alternatives to the Undertaking, which are broad-based alternatives that represent functionally different ways of addressing the identified problems and opportunities, were examined to determine which alternatives were considered reasonable in addressing the identified Problem Statement.

4. OVERVIEW OF EXISTING CONDITIONS

To support the examination of a reasonable range of alternatives, all significant features within the study area were identified to determine their sensitivity and potential for impacts associated with the recommended improvements to the Millhaven and Stella Terminals. Identifying significant features involved the collection of primary and secondary source data derived from surveys, field investigations, published and unpublished literature, government sources, and consultation with agencies and the public. The data collected was grouped in the following categories:

- Natural Environment;
- Socio-Economic Environment;
- Cultural Environment; and
- Transportation Infrastructure.

Information about the existing environmental features within the study area was collected from the following sources:

- Observations recorded during site visits;
- Aerial photos of the study area;
- Loyalist Township Official Plans;
- Cataraqui Region Conservation Authority (CRCA);
- Ministry of Agriculture, Food and Rural Affairs (OMAFRA);
- Statistics Canada;
- Canada Land Inventory;
- Ministry of Natural Resources (MNR);
- Natural Heritage Information Centre (NHIC);
- Department of Fisheries and Oceans (DFO);
- Kingston Field Naturalists; and
- Local residents.

4.1. Natural Environment

4.1.1. Topography and Drainage

According to the topographic map for the area (Bath 31 C/2), the dry land within the study area is relatively flat with a slight downward slope towards Lake Ontario. The elevation of the study area ranges from approximately 75 m (Lake Ontario at the ferry terminals) to 83 m above mean sea level (amsl) away from the shoreline.

4.1.2. Physiography

The *Physiography of Southern Ontario* presents the study area as being located within the Napanee Plain. The Napanee Plain is a flat-to-undulating plain of limestone from which the glacier stripped most of the overburden. The thin, discontinuous layer of drift is comprised of Glaciolacustrine Deposits consisting of silt and clay, minor sand and gravel, near shore and beach deposits. The thickness of the soil deposits of the Napanee Plain is only a few inches over much of the region, while some deeper glacial till occurs in the stream valleys and toward the north. According to the well records for the wells located within the study area, the thickness of the overburden soil is generally less than 1 m.

4.1.3. Geology

4.1.3.1. Quaternary Geology

MNR's *"Ontario Geological Survey Preliminary Map P. 2204, Geological Series, Quaternary Geology, Toronto and Surrounding Area, Southern Ontario"* (1980) indicates that the study area is dominated by bare bedrock terrain and bedrock-drift complex topography.

4.1.3.2. Bedrock Geology

On *Map 2544-Bedrock Geology of Southern Ontario*, the Palaeozoic (bedrock) geology of the study area is characterized by Middle Ordovician aged limestone with thin soil cover. Bedrock ridges can be seen exposed at the ground surface intermixed with valleys and low-lying depressions. The Paleozoic limestone overlies the granites and magmatites of the Precambrian shield as well as sandstone in some areas. These geologic variations in the bedrock determine important aspects of the groundwater conditions in the study area.

4.1.4. Hydrogeology

According to an available hydrogeological study (Western Cataraqui Region Groundwater Study, Volume I, Groundwater Inventory and Findings, Trow Associates, April 2007), three shallow hydrogeological zones exist in the study area, including the Limestone, the Precambrian Rocks of the Canadian Shield and the Sandstone aquifer systems. The shoreline within the study area is dominated by the limestone aquifer system with small isolated areas of Precambrian and Sandstone systems. According to the well records for the water wells located within the study area, the groundwater table ranges from 1.2 m to 20 m below ground surface. The groundwater flow is inferred to be towards Lake Ontario.

Groundwater usage within the study area is generally limited to domestic, private and agricultural uses.

4.1.5. Fish and Fish Habitat

The study area is located within the Millhaven Creek and Amherst Island watersheds within the jurisdiction of CRCA. According to the *Cataraqui Source Protection Area Assessment Report*

(2011), watercourses within the study area are classified as warmwater streams. MNR classifies nearshore areas of Lake Ontario as coldwater habitat. However, site specific investigations undertaken in support of this project determined that coldwater habitat (specifically, Lake Whitefish and Lake Trout spawning habitat) was not observed in the study area. Based on this finding, the less restrictive, warmwater timing window (July 1 to March 31) should apply to in-water construction activities at both terminals.

Information from the CRCA identifies spring and fall runs of Rainbow Trout (*Oncorhynchus mykiss*), Brown Trout (*Salmo trutta*), Chinook Salmon (*Oncorhynchus tshawytscha*) and Coho Salmon (*Oncorhynchus kisutch*) from Lake Ontario into Millhaven Creek. Therefore, the mouth and the area east of the Millhaven Terminal could potentially be used as a staging area by these fish species as they prepare to migrate upstream.

Based on the MNR reports from nearby Fisheries Assessment Unit collection sites, historical (1977) MNR fish species lists and CRCA data, **Table 4-1** outlines fish species noted in the vicinity of both terminals and the dominant fish species in this area of Lake Ontario. **Table 4-2** summarizes the fish species observed during the summer 2012 field visits.

Table 4-1: Fish Species Noted by Agencies

Common Name	Scientific Name	Common Name	Scientific Name
Millhaven Terminal			
Alewife	*Alosa pseudoharengus*	Black Crappie	*Pomoxis nigromaculatus*
Yellow Perch	*Perca flavescens*	Brown Bullhead	*Ameiurus nebulosus*
Round Goby	*Neogobius melanostomus*	Golden Shiner	*Notemigonus crysoleucas*
Walleye	*Sander vitreus*	White Sucker	*Catostomus commersonii*
Rock Bass	*Ambloplites rupestris*	Common Shiner	*Luxilus cornutus*
Lake Trout	*Salvelinus namaycush*	Bluntnose Minnow	*Pimephales notatus*
Lake Whitefish	*Coregonus clupeaformis*	Longnose Dace	*Rhinichthys cataractae*
Rainbow Smelt	*Osmerus mordax*	Creek Chub	*Semolitus atromaculatus*
Slimy Sculpin	*Cottus cognatus*	Banded Killfish	*Fundulus diaphanous*
Threespine Stickleback	*Gasterosteus aculeatus*	Johnny Darter	*Etheostoma nigrum*
Rainbow Trout	*Oncorhynchus mykiss*	Fallfish	*Semotilus corporalis*
Brown Trout	*Salmo trutta*	Stonecat	*Noturus flavus*
Chinook Salmon	*Oncorhynchus tshawytscha*	Blackstripe Topminnow	*Fundulus notatus*
Coho Salmon	*Oncorhynchus kisutch*	Largemouth Bass	*Micropterus salmoides*
Pumpkinseed	*Lepomis gibbosus*	Central Mudminnow	*Umbra limi*
Northern Pike	*Esox Lucius*	Iowa Darter	*Etheostoma exile*
Smallmouth Bass	*Micropterus dolomieu*	Blacknose Dace	*Rhinichthys atratulus*
Stella Terminal			
Alewife	*Alosa pseudoharengus*	Lake Trout	*Salvelinus namaycush*
Yellow Perch	*Perca flavescens*	Lake Whitefish	*Coregonus clupeaformis*
Round Goby	*Neogobius melanostomus*	Rainbow Smelt	*Osmerus mordax*

Common Name	Scientific Name	Common Name	Scientific Name
Walleye	*Sander vitreus*	Slimy Sculpin	*Cottus cognatus*
Rock Bass	*Ambloplites rupestris*	Threespine Stickleback	*Gasterosteus aculeatus*

Table 4-2: Fish Species Observed During Field Visits in Summer 2012

Location	Fish Species
Millhaven Terminal	
East	Round Goby, Perch, Largemouth Bass, Common Carp (*Cyprinus carpio*), Smallmouth Bass
West	Round Goby, Smallmouth Bass, Freshwater Drum (*Aplodinotus grunniens*)
Lakeward	None
Stella Terminal	
East	None
West	Smallmouth Bass, Round Goby
Lakeward	None

MNR provided the sensitivity status for the nearshore areas adjacent to both terminals. The findings of site specific investigations were used to further discriminate habitat sensitivity within the study area to assist in the evaluation of alternatives. The designation was based on several primary factors used in DFO's Habitat Alteration Assessment Tool (HAAT) model. Key factors considered include: the presence of aquatic macrophyte, communities, their density and diversity; water depth; substrate type; and degree of exposure / shelter to open water habitat. **Table 4-3** summarizes the sensitivity ranking associated with the aquatic habitat adjacent to both terminals.

Table 4-3: Aquatic Habitat Sensitivities

Location	Sensitivities
Millhaven Terminal	
East	Moderate to High
West	Low to Moderate
Lakeward	Low
Stella Terminal	
East	Low to Moderate
West	High – nearshore Low to Moderate – Lakeward
Lakeward	Low

4.1.6. Terrestrial Ecosystems

The study area is positioned within the Huron-Ontario section of the larger Great Lake-St. Lawrence Forest Region. On sites with abundant moisture and good drainage, these upland forests are typically dominated by Sugar Maple (*Acer saccharum*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), Basswood (*Tilia americana*), American Beech (*Fagus grandifolia*), Eastern White Pine (*Pinus strobus*), Eastern Hemlock (*Tsuga canadensis*), White Ash (*Fraxinus*

americana) and/or Green Ash (*Fraxinus pennsylvanica*). Less commonly encountered species include Black Cherry (*Prunus serotina*), Bitternut Hickory (*Carya cordiformis*) and Balsam Fir (*Abies balsamea*). Common understory trees include American Hornbeam (*Carpinus caroliniana*), Shagbark Hickory (*Carya ovate*), Butternut (*Juglans cinerea*), Bur Oak (*Quercus macrocarpa*) and White Oak (*Quercus alba*) are often found on warmer, drier sites.
The study area provides limited habitat for wildlife. Swallows were nesting under the bridge over Millhaven Creek. The mouth of Millhaven Creek has been reported by local naturalists to act as a staging area for a large number of swallows in April and May and for migrating waterfowl in the fall. On Amherst Island the offshore lacustrine areas and the beaches and sandbars are favoured by staging waterfowl and shorebirds. In addition to its prolific bird population, Amherst Island is home to about five hundred deer, as well as raccoons and foxes. Coyotes have also settled there.

No designated areas such as Areas of Natural and Scientific Interest (ANSI), environmentally significant areas (ESA) or wetlands of provincial significance are located in or adjacent to either terminal. There is an environmentally sensitive area identified in Loyalist Township's Official Plan (2010) on Amherst Island (refer to **Figure 4-1**). On the mainland, lands adjacent to Millhaven Creek and along the shoreline east of Millhaven Creek have been identified in the Official Plan as environmental protection areas (refer to **Figure 4-1**). In addition, both terminals are located in Important Bird Areas (IBAs) – Napanee Limestone Plain IBA and Amherst Island IBA. IBAs are discrete sites of varying size that support specific groups of birds: threatened birds, large groups of birds and birds restricted by range or by habitat. A brief description of each IBA is provided below:

Napanee Limestone Plain IBA ON152

The Napanee Limestone Plain IBA is located just north of the Bay of Quinte, between the cities of Kingston in the east and Belleville in the west. It consists of a predominantly rural landscape of approximately 2,000 km² and includes the Millhaven Terminal. The majority of the natural habitats are grasslands, most in early stages of succession.

Amherst Island IBA ON062

Amherst Island has gained international recognition for concentrations of wintering hawks and owls that are often present. Existing habitat types consist of: mixed woods (temperate); scrub / shrub; freshwater lake; freshwater marsh; arable and cultivated lands; perennial crops / orchards; urban parks / gardens; urban / industrial areas; and improved pastureland.

4.1.7. Species at Risk

No Species at Risk (SAR) occurrences within 1 km of the study area were noted in MNR's NHIC database (2012). However, Barn Swallow (*Hirundo rustica*), a provincially Threatened Species, has been reported from the study area, and occurrence of various species of turtles is also possible. Correspondences with DFO and MNR also indicated that two aquatic SAR might be potentially present within the study area.

Barn Swallow nests were observed under the bridge that crosses Millhaven Creek (east of the Millhaven Terminal). A single colony was noted to be nesting in a barn located southeast of the ferry terminal at Stella. Both of these sites are outside of the proposed areas to which an impact may be created as a result of this project. This species occupies a wide range of habitats including urban and rural environments, particularly where suitable built structures and open spaces combine with active animal husbandry. They are not easily disturbed either during the breeding season or in migration, and are confirmed to forage in some of the busiest and noisiest of conditions. As such, neither the Millhaven bridge nests, nor the Stella Island colony can be considered to be at risk of disturbance from construction activity because the bird community is robust and tolerant of ferry terminal operations.

Snapping Turtle (*Chelydra serpentine*, Special Concern) which, based on observed evidence of nesting attempts, appear to be present in the study area. However, individuals were not observed. This species, unlike most other turtles, are active in winter and spend the winter either buried or at surface. As opposed to other turtles which are more sedentary and less likely to move if disturbed during hibernation, Snapping Turtle will likely move out of the area if disturbed.

DFO through their Distribution of Fish Species at Risk mapping, states that the northern shoreline of Lake Ontario in the Millhaven area (including the area adjacent to the Millhaven Terminal) is protected for the fish species Spotted Gar (*Lepisosteus oculatus*). This species and their habitat are protected under the provincial *Endangered Species Act* (ESA) and the federal *Species at Risk Act* (SARA). However, the recently prepared document by DFO (Recovery Strategy for Spotted Gar in Canada, 2012) does not identify this same area as being critical habitat for Spotted Gar.

Through discussions with MNR, there was special attention during field investigations to the Eastern Pondmussel (*Ligumia nasuta*). The preferred habitat for the Eastern Pondmussel in lakes is sheltered areas with water depths of 0.3 – 4.5 m and substrates of fine sand and mud. Despite the presence of sheltered areas and appropriate water depths present at both the Millhaven and Stella Terminals, there are insufficient fine sand and mud substrates at either location to accommodate the Eastern Pondmussel. Considering this, their absence during field surveys and their rareness in Ontario, the likelihood of Eastern Pondmussel utilizing the areas adjacent to the Millhaven and Stella Terminals is low.

4.2. Socio-Economic Environment

The study area is located in Loyalist Township within the County of Lennox and Addington. The following summary of population, total private dwellings, and private dwellings occupied by permanent residents are based on 2011 Statistics Canada data (refer to **Table 4-4**). Place of work status, mode of transportation to work, and the breakdown of industry are based on 2006 Statistics Canada data (refer to **Table 4-5**). This information is only available at the Township level from Statistics Canada but presents a picture of the rural nature of the area and the daily commute of Amherst Island residents to 'off-island' workplaces.

Table 4-4: Population Numbers and Dwellings

Municipality	Population	Total Private Dwellings	Private Dwellings Occupied by Usual Residents
Loyalist Township	16,221 Amherst Island: 450 **This number can double during the summer months.*	6,174	5,969

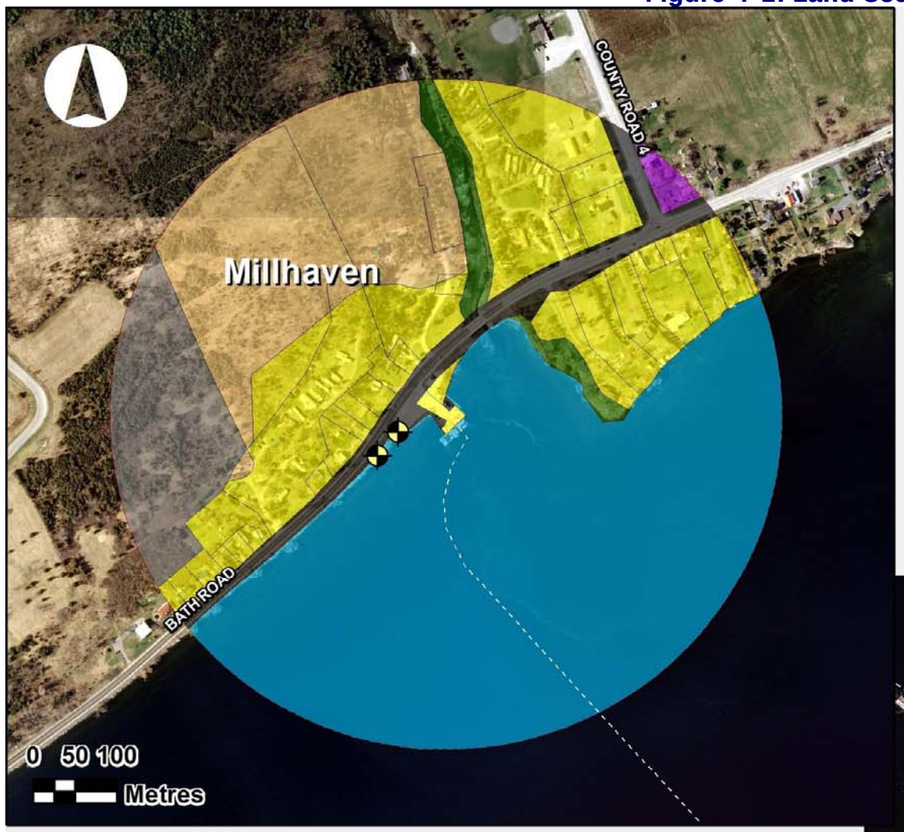
Table 4-5: Place of Work Status, Industry, and Mode of Transportation to Work

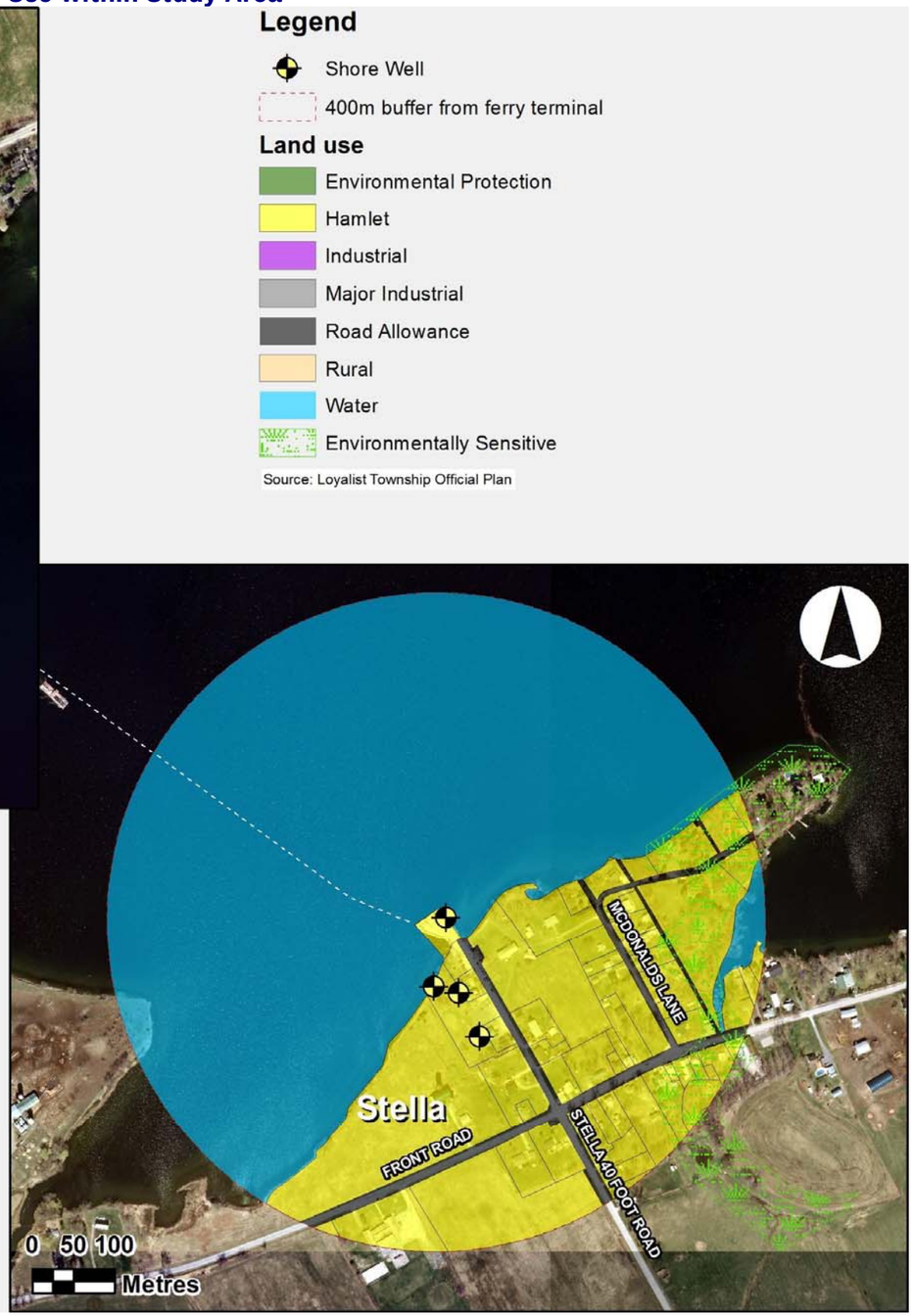
Municipality	Place of Work Status	Industry	Mode of Transportation to Work
Loyalist Township	Worked at home: 530 Work outside Canada: 10 No fixed workplace address: 745 Worked at usual place: 6,020	Agriculture & Other Resource-based Industries: 180 Construction: 605 Manufacturing: 585 Wholesale Trade: 160 Retail Trade: 1,105 Finance & Real Estate: 325 Health Care and Social Services: 1,065 Educational Services: 545 Business Services: 1,015 Other Services: 1,970	Car, truck, van as driver: 5,780 Car, truck, van, as passenger: 530 Public transit: 115 Walked or bicycled: 300 All other modes: 40

4.2.1. Existing Land Use

Figure 4-1 and the following sections outline the key land use characteristics within the study area.

Figure 4-1: Land Use within Study Area





Legend

- Shore Well
- 400m buffer from ferry terminal

Land use

- Environmental Protection
- Hamlet
- Industrial
- Major Industrial
- Road Allowance
- Rural
- Water
- Environmentally Sensitive

Source: Loyalist Township Official Plan

December 6, 2012

landuse mapping: Loyalist Township Official Plan
G:\GIS\Projects\1-33016649-AmherstIsland\GIS\mxds\landuse_6Dec12.mxd

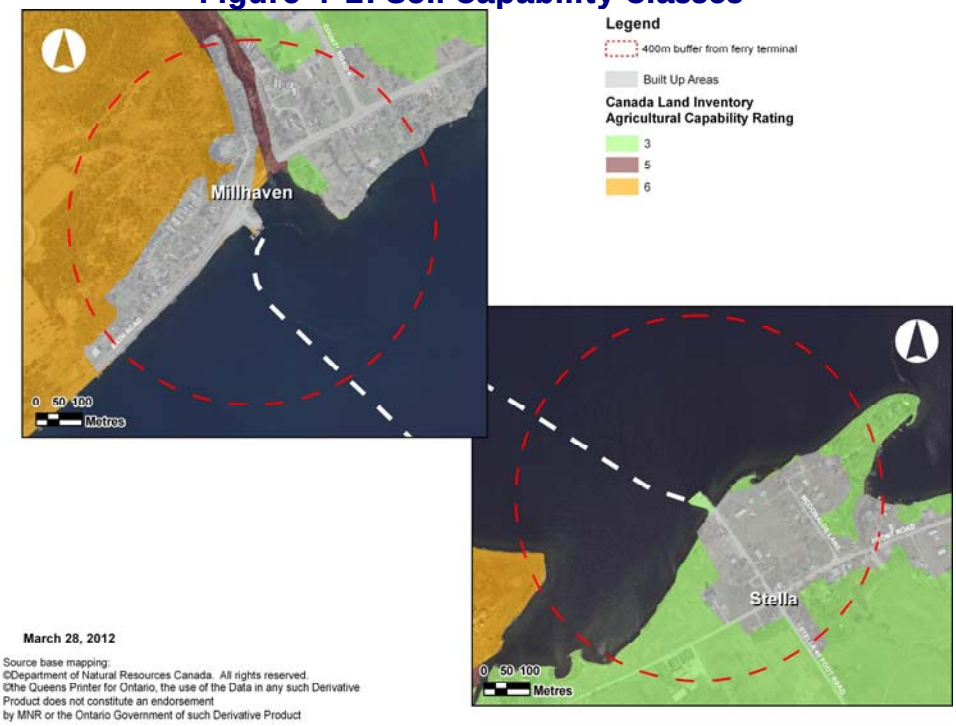
4.2.1.1. Agricultural

Information on agricultural land use was obtained from the Ministry of Agriculture, Food, and Rural Affairs (OMAFRA), and supplemented by field investigations and aerial photography interpretation.

According to Canada Land Inventory Agricultural Capability data (2009), the majority of the land on the mainland within the study area has a Soil Capability Class 6 (refer to **Figure 4-2**). Class 6 soils are unsuited for cultivation, but are capable of use for unimproved permanent pasture. These soils may provide some sustained grazing for farm animals, but the limitations are so severe that improvements through the use of farm machinery are impractical. The terrain may be unsuitable for the use of farm machinery, the soils may not respond to improvement, or the grazing season may be very short. Pockets of Class 3 and Class 5 soils can also be found on the mainland within the study area (i.e. along Millhaven Creek and east of Millhaven Creek). There are no agricultural activities identified within the Millhaven study area.

Lands on Amherst Island have a Soil Capability Class 3 (refer to Figure 4-2). Class 3 soils have moderately severe limitations that reduce the choice of crops or require special conservation practices. They may affect the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management these soils are fair to moderately high in productivity for a wide range of common field crops. While mixed agricultural operations and cattle pastureland are present on Amherst Island, there are no agricultural activities that will be impacted by the Stella Ferry Terminal improvements.

Figure 4-2: Soil Capability Classes



4.2.1.2. Residential

On the mainland within the study area, most dwellings are single-detached houses (refer to **Figure 4-3**). A cluster of rural residences is located on the north side of Highway 33, immediately across from the Millhaven Terminal.

Development on Amherst Island is primarily shoreline related. The largest settlement area is the hamlet of Stella, located on the north central shore. The majority of dwellings are single-detached structures (refer to **Figure 4-4**) with scattered rural residences throughout the remainder of the island, many of which are associated with farmsteads.

On Stella 40 Foot Road, there are several residences with entrances south of the ferry terminal. Adjacent to the Stella Terminal, there is one private dwelling within the vicinity of the potential location for an improved terminal building and vehicle marshalling / parking area.

Figure 4-3: Dwellings on Mainland

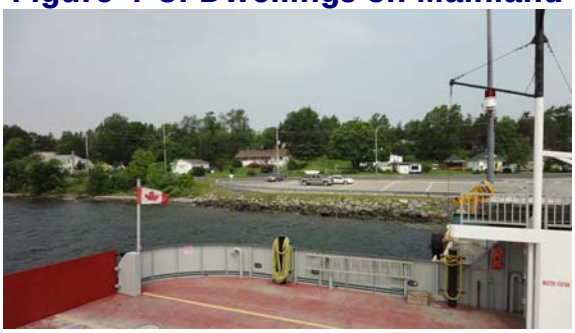


Figure 4-4: Dwellings on Amherst Island

4.2.1.3. Commercial and Industrial

Only one business (Jubilee Bed and Breakfast) is identified on the mainland, directly across from the Millhaven Terminal. Taylor Kidd Industrial Park is located in close proximity to the study area (north of Highway 33, east of County Road 4). It provides for general and heavy industry uses.

Some retail / commercial land uses are located in Stella. A private excavation company is located in close proximity to the Stella Terminal on the west side of Stella 40 Foot Road, south of the Stella Terminal.

4.2.1.4. Community / Recreational / Institutional

Community / Recreation

Trail

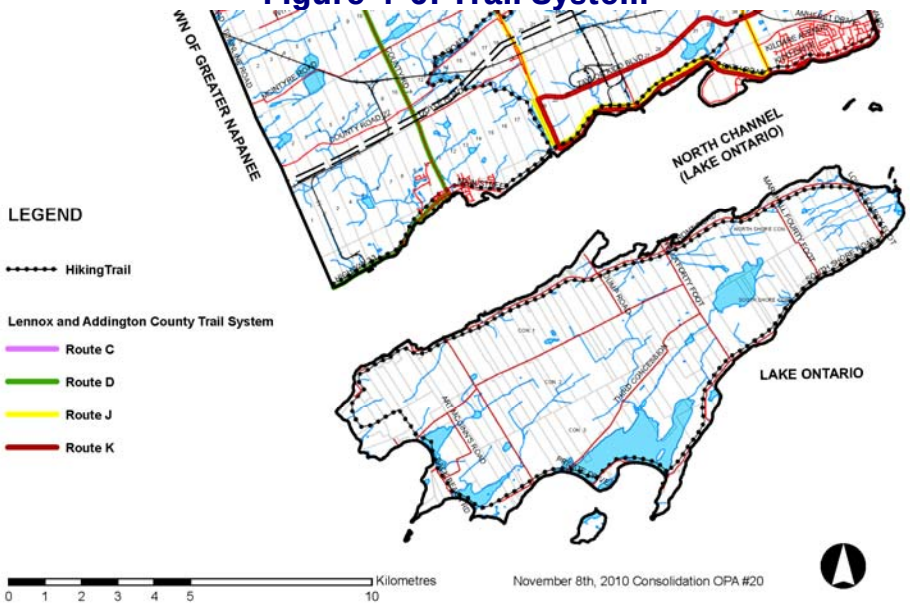
The Waterfront Trail extends along Highway 33 through the mainland study area (refer to **Figure 4-5**). Other trails are located in close proximity to the mainland study area, namely Route J and Route K (refer to **Figure 4-6**).

On Amherst Island, a hiking trail extends around the entire island and parallels Front Road along the north shore (**Figure 4-6**).

Figure 4-5: Waterfront Trail within Study Area

Source: Waterfront Trail Website

Figure 4-6: Trail System

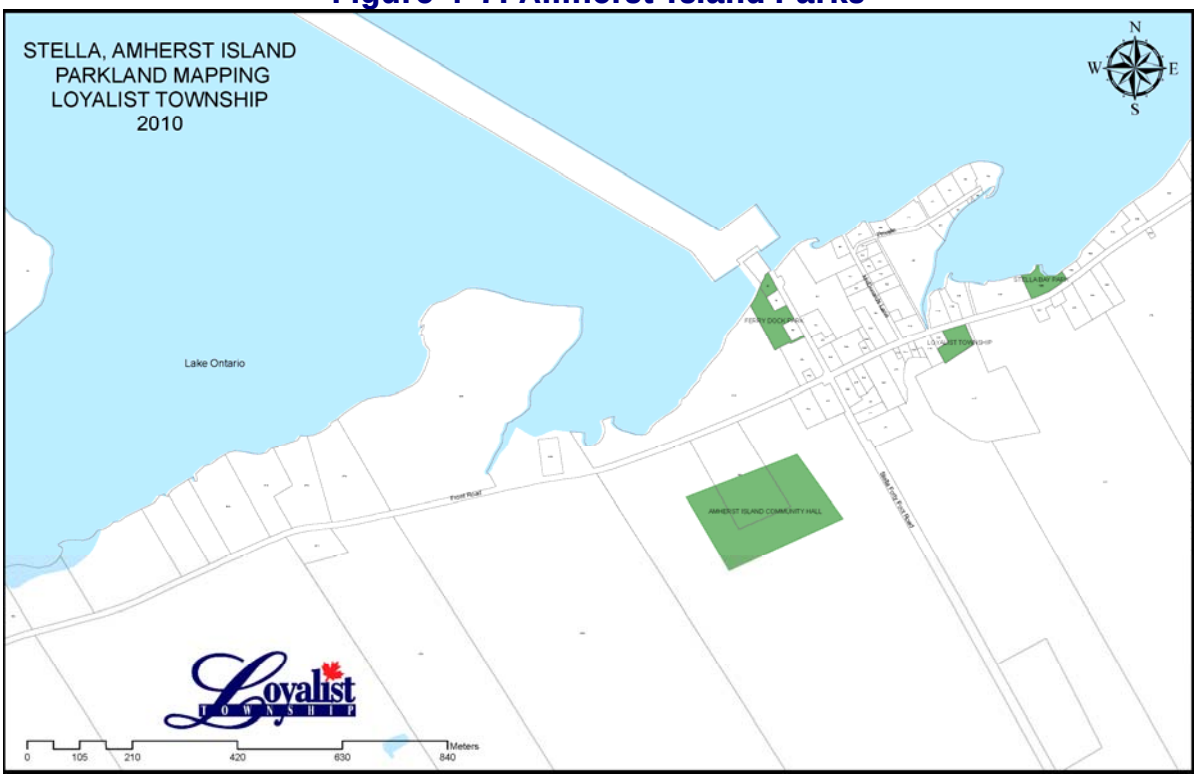


Source: Loyalist Township Official Plan (2010)

Natural Open Space Features

There are four open space areas in the vicinity of Stella (refer to **Figure 4-7**). One of the four, Ferry Dock Park, is located adjacent to the Stella Terminal to the west.

Figure 4-7: Amherst Island Parks



Source: Loyalist Township Website

Community Centre

On Amherst Island, the Community Hall is located at the public school in close proximity to the study area (along Front Road, west of Stella 40 Foot Road). On the mainland, there is no community centre within the study area. The Royal Canadian Legion Hall on County Road 4 provides for community events.

Institutional

School

On Amherst Island, Amherst Island Public School is located in close proximity to the study area (west of Stella 40 Foot Road on Front Road). There are no schools identified within the study area on the mainland.

Libraries

On Amherst Island, the Stella Public Library is located west of Stella 40 Foot Road on Front Road. It is temporarily closed according to the Loyalist Township website. There are no libraries identified within the study area on the mainland.

Post Office

There is no post office on the mainland within the study area. The Amherst Island Post Office is located at the intersection of Stella 40 Foot Road and Front Road. Mail for this Post Office is deposited in Canada Post secure boxes at the Millhaven Terminal (refer to **Figure 4-8**) for later trans-shipment to the Island Post Office.

Figure 4-8: Canada Post Mail Boxes at Millhaven

Correctional Facility

Millhaven Institution is a maximum security facility for male offenders located north of Highway 33. The Institution opened in 1971 and can accommodate up to 413 inmates.

4.2.1.5. Future Planned Development

Windlectric Inc. is proposing to develop the Amherst Island Wind Energy Project. This project is proposed to generate in the order of 56 to 75 MW of wind power via the erection of 31 to 42 wind turbines.

The study area for this wind project includes Amherst Island and an approximately 3-15 km wide corridor stretching between the island and the mainland where a submarine cable is proposed. The mainland portion of the project study area extends from the mainland shoreline, north to the Invista Transformer Station and is generally bounded by: County Road 4 to the west; Canadian National Railway line to the north; and approximately 500 m west of Jim Snow Drive on the east.

The commencement of this proposed project is yet to be determined.

4.2.1.6. Municipal Services

There are no municipal services (i.e. water and sewer) available within the study area for either the Millhaven or Stella Terminals.

Adjacent to both the Millhaven and Stella Terminals, there are several shoreline potable water wells that service adjacent residences.

4.2.1.7. Contamination

A Contamination Overview Study was undertaken as part of this study to determine the potential for soil and groundwater contamination in the study area. The analysis was generally based on current and historical land use (sources of contamination); and on surficial geology, hydrology and topography.

While several of the MOE recorded spills (petroleum products) are related to the ferry operations and resulted in release of a contaminant to the waters of Lake Ontario, they were not considered significant nor to have lasting and traceable impacts.

Based on the findings, the following is a list of the commercial facilities that are considered to be potential environmental concerns:

- Millhaven Terminal;
- Stella Terminal;
- A private excavation company located adjacent to the Stella Terminal. Five aboveground storage tanks (ASTs) were noted on the property. Of the five, two of the ASTs were noted to be equipped with fuel dispensing equipment; and
- A general blacksmith shop (located in Stella).

Note: Properties which were never developed or which were developed but only used for agriculture or residential purposes are not considered potential environmental concern.

4.2.1.8. Aesthetics and Landscape Composition

The study area presents characteristics of a rural community. Scattered rural residences and large farm lands are present throughout Amherst Island. Natural features associated with Lake Ontario are also important elements of the landscape of the study area.

4.3. Cultural Environment

4.3.1. Archaeological Resources

Stage 1 Archaeological Assessment

The Stage 1 Archaeological Assessment undertaken as part of this study determined that no archaeological sites have been registered within a 1-km radius or in close proximity to the study area. Additionally, a review of the general physiography and local 19th century land uses of the study area suggests that the additional parcels in the study area may exhibit archaeological site potential.

Since Lake Ontario itself is a historically significant waterway that has been used by Native peoples for thousands of years and by historic Euro-Canadian peoples since the 18th century, there is an inherent potential for underwater archaeological resources to be present. As the immediate shoreline on mainland Millhaven and Amherst Island are all that will be affected by the recommended improvements to the Millhaven and Stella Terminals, these are the areas of marine concern. Dredging has occurred in the existing docking areas, which will have removed archaeological potential in those areas. The remaining areas of open water in the study area are of sufficient depth that they will not be disturbed, and are thus not of archaeological concern. Given these considerations, in addition to the documentary research (i.e. Save Ontario Shipwrecks, Martine History of the Greater Lakes, etc.), the Project Team confirmed that there are no known shipwrecks in the study area.

The field reviews established that the study area has archaeological potential, although limited. Areas of potential exist where the cultural landscape has not been greatly impacted by recent urban development and in areas that are located in proximity to features of archaeological potential (i.e. waterways, previously registered sites, historic homesteads or transportation routes, etc.). These areas require further archaeological investigations within the study area and are recommended for Stage 2 Archaeological Assessment.

Stage 2 Archaeological Assessment

A Stage 2 Archaeological Assessment was conducted for the area impacted by the improvements to the Stella Terminal to the west of Stella 40 Foot Road. The assessment consisted of test pitting and was completed on October 3, 2013. The Stage 2 Archaeological Assessment was done in accordance with the provisions of the *Ontario Heritage Act* (2005) and with the Ontario Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists (MTCS 2011). All lands within the subject study area were found to be heavily disturbed by past grading / landscaping and construction activities. Given the results of this assessment, the study area is deemed to no longer contain archaeological potential due to the presence of disturbance. It is therefore recommended that this study area be cleared of further archaeological concern.

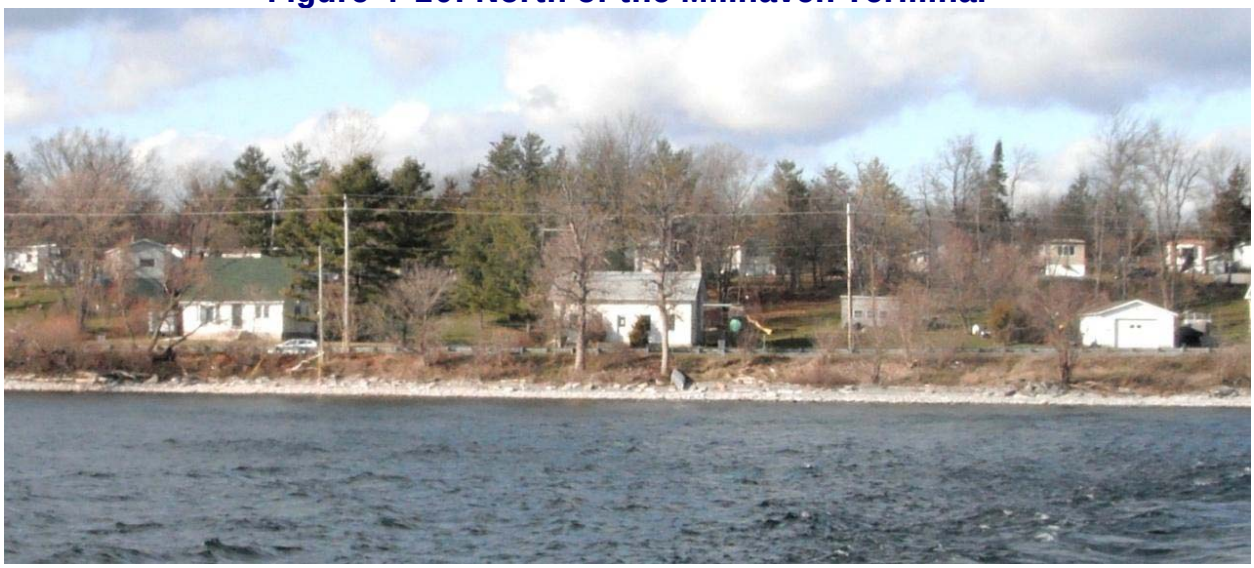
4.3.2. Built Heritage and Cultural Resources

A Built Heritage Assessment was undertaken as part of this study in July 2012. No potential heritage resources were found within the study area. Two Built Heritage Resources (BHR) and one Cultural Heritage Landscape (CHL) were identified adjacent to the study area. Site 01 BHR is located slightly right of centre in **Figure 4-9**. The general character is a mix of recent residences and older homes that have been enlarged and/or modernized.

Figure 4-9: North of the Millhaven Terminal

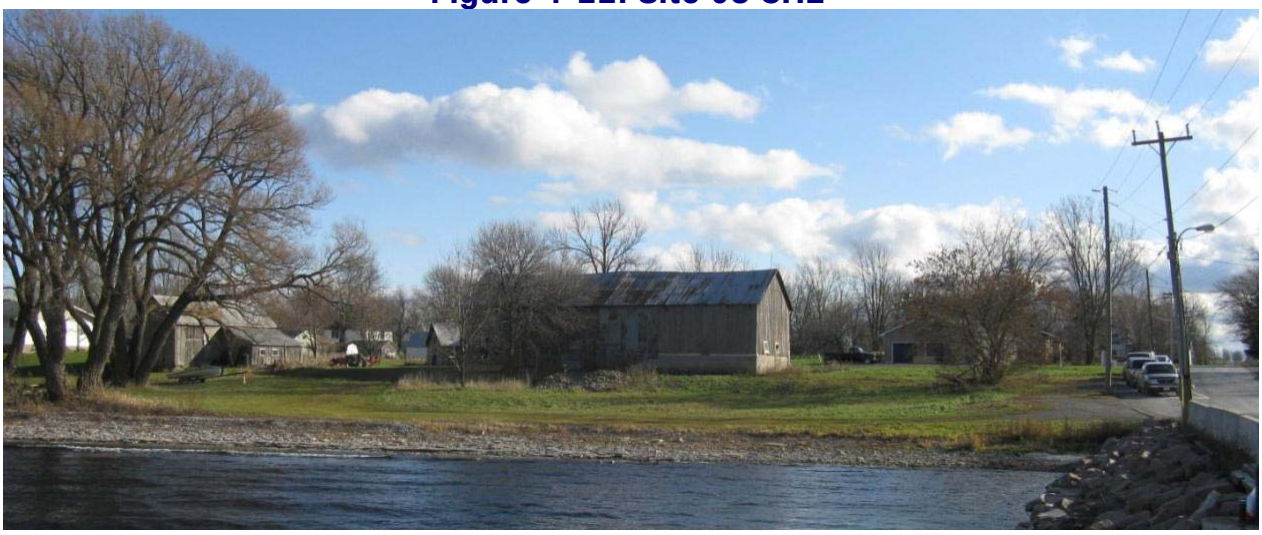
Site 02 BHR (refer to **Figure 4-10**) is located west of the ferry landing on the Millhaven side (centre). Settlement along the Bath Road was historically very close to the waterfront.

Figure 4-10: North of the Millhaven Terminal



Site 03 CHL (refer to **Figure 4-11**) is located immediately to the east of the landing at Stella. It is a farm that is identified in the 1878 Atlas map inset plan of Stella.

Figure 4-11: Site 03 CHL



A Built Heritage Assessment was also undertaken for the residence located immediately south of the Stella Terminal. This property has been acquired by MTO to accommodate the recommended improvements to the Stella Terminal. Parts of the building are more than 40 years old, and some sections of the building may date from the 19th century. However, the building has been enlarged and modernized to such a degree that its original appearance and character are no longer legible. The siding, windows and roof are all modern materials. As such, it does not meet the criteria for listing in the BHA, as laid out in Ont. Reg. 9/06 or 10/06.

4.4. Transportation Infrastructure

4.4.1. Ferry Terminals

Currently the Amherst Island ferry crossing (via the *Frontenac II*) is the only public transportation connection between the island community and the mainland. It serves as a vital link for movement of goods and people. Operated by Loyalist Township and owned by MTO, the Amherst Island ferry service traverses the North Channel (in the Bay of Quinte within Lake Ontario) between Millhaven (Highway 33) and Stella (Amherst Island).

Service is on a daily basis, year round. The ferry leaves Stella on the hour, 6:00 a.m. to 1 a.m. and leaves Millhaven on the half hour, 6:30 a.m. to 1:30 a.m. The crossing time is approximately 20 minutes. It carries no passengers on the 6:30 a.m. trip from Millhaven on Wednesdays (fuel trip). The Amherst Island ferry (Frontenac II) has a capacity of 35 cars and 281 passengers (including five crew members). During periodic dry dock periods for *Frontenac II* maintenance, a smaller capacity vessel (*Quinte Loyalist*; 21 vehicles and 121 passengers) is used for the Amherst Island ferry service.

Ferry fares (2013) are as follows:

- Car, truck (under one ton), van, farm tractor or small school bus: $9.00
- RV or car with trailer, large vehicles requiring up to two vehicle spaces, large school bus: $18.00
- Large vehicles and trailers or equipment requiring more than two vehicle spaces: $27.00
- Motorcycle: $2.00
- Bicycle: $1.50
- 25 Ticket Package: $100.00

Millhaven Terminal

The Millhaven Terminal (refer to **Figures 4-12 and 4-13**) is located west of the intersection of County Road 4 and Highway 33. It has a paved marshalling area (36 queue spaces) immediately northwest of the dock and unmarked gravel parking on both sides of the approach to the current dock structure. Immediately east of the marshalling area, a small paved area provides long-term parking (seven spaces). A pedestrian shelter and a small 'outhouse' style washroom are located adjacent to this long-term parking area.

The Millhaven Terminal consists of a loading ramp at the end of a 40-m long, man-made structure extending into Lake Ontario. The terminal originally consisted of a land bridge connected to an offshore mole. The offshore mole was constructed as a wooden bulkhead to retain earthen and gravel fill. A single lane loading ramp serves side-loading vessel berthing parallel to the shore. The terminal was expanded in 1992 as part of a dredging and bulkhead repair project. As part of the expanded terminal, an auxiliary or back-up loading ramp was constructed on the west side of the Terminal dock.

The two existing loading ramps at the Millhaven Terminal are simple earthen / gravel ramps designed to accommodate the long reach of the side-loading ramp of the ferry vessels. Wood planks, or stop logs, are stacked in steel U-channels to retain the fill. The slope of the ramp can be adjusted for changing lake levels by adding or removing stop logs and grading the fill accordingly. The back-up ramp along the western bulkhead is seldom used due to shallow waters despite the 1992 dredging effort.

Figure 4-12: Millhaven Terminal

Figure 4-13: Overview of Millhaven Terminal (aerial)

Stella Terminal

The Stella Terminal (refer to **Figures 4-14 and 4-15**) is located on Amherst Island at the west end of the community of Stella. The Stella Terminal consists of a loading ramp at the end of a 50-m long, triangular shaped mole extending into Lake Ontario. The mole was originally constructed as a timber cribwork retaining earthen and gravel fill.

The existing loading ramp is a simple earthen / gravel ramp designed to accommodate the long reach of the side-loading ramp of the ferry vessels. Wood planks, or stop logs, are stacked in steel U-channels to retain the earthen fill. The slope of the ramp can be adjusted for changing lake levels by adding or removing stop logs and grading the fill accordingly. There is no auxiliary or back-up ramp at this Terminal.

Marshalling at the Stella Terminal is accommodated on the east shoulder (i.e. northbound shoulder) of the approach roadway. Signage indicates the commencement of the queuing lane and a brief description of the loading procedures. There are three areas in the vicinity of the Stella Terminal for temporary and long-term parking. There is a small 'outhouse' style washroom near the Stella Terminal.

Figure 4-14: Stella Terminal

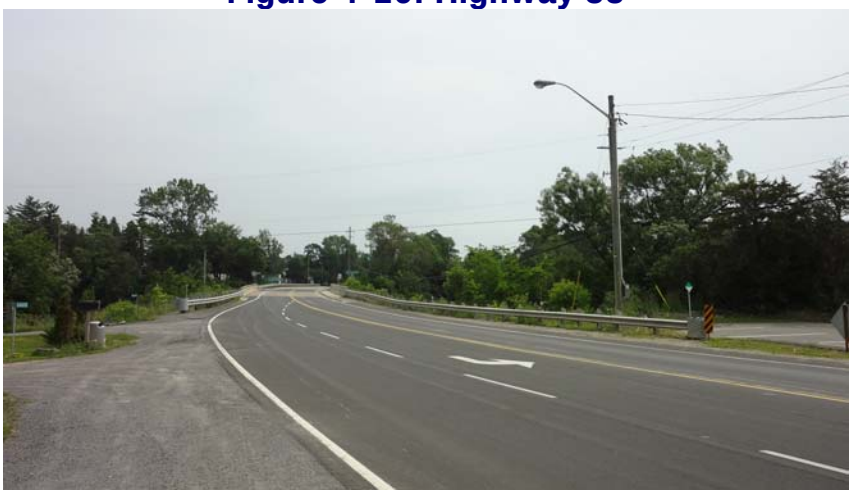
Figure 4-15: Overview of Stella Terminal (aerial)

Several small buildings provide for storage, maintenance and compressor equipment at each terminal.

4.4.2. Roadway Network

Highway 33 is owned and maintained by MTO. Within the study area, Highway 33 has a two-lane cross-section with a posted speed of 60 km/h (refer to **Figure 4-16**) and a westbound left turn lane for ferry terminal traffic. Improvements to Highway 33 access have been examined as part of this study.

Figure 4-16: Highway 33



4.4.3. Transit Services

Within the study area there are no public transit services other than the Amherst Island ferry service.

5. NEED FOR FERRY TERMINAL IMPROVEMENTS

The current Amherst Island ferry service is a side-loading operation. This creates delay for travellers (during loading and unloading) and limits the size of vehicles the ferry can accommodate. The loading operations can be improved by eliminating the need to reverse and manoeuvre to board and exit the ferry.

The current ferry service also does not provide any protective shelter and has very limited amenities for passengers, does not have office space at either terminal, has inadequate storage facilities for ferry operations and has limited vehicle marshalling and long term parking space.

Additionally, the existing ice mitigation system (bubbler system) has poor functionality, and there is no secondary loading ramp at the Stella Terminal in the event of a failure of the primary ramp.

6. ASSESSMENT OF ALTERNATIVES TO THE UNDERTAKING

Consistent with the Class EA, Alternatives to the Undertaking were examined to determine which alternatives were considered reasonable in addressing the identified problems. Alternatives to the Undertaking are broad-based alternatives that represent functionally different ways of addressing the identified problems and opportunities.

6.1. Alternatives to the Undertaking

The purpose of the undertaking was to develop a plan to address the identified existing conditions and operational concerns. Specific objectives were:

- To address existing operational issues;
- To enhance safety for ferry staff and users; and
- To reduce or minimize impacts to the natural, socio-economic and cultural environments.

Alternatives to the Undertaking were examined to determine which alternatives were considered reasonable. For this study, the judgement of reasonableness was based on the degree to which an alternative resolves the transportation problems identified or to take advantage of a transportation opportunity. Alternatives to the Undertaking were assessed based on the advantages and disadvantages of each alternative. The assessment of the Alternatives to the Undertaking is provided below.

6.1.1. Do Nothing

The "Do Nothing" alternative maintains the status quo of the transportation infrastructure and services, with no significant changes or actions being taken to either manage demand, expand infrastructure or improve operations.

The current Amherst Island ferry loading operation creates delay for travellers (during loading and unloading operations) and limits the size of vehicles the ferry can accommodate. The Do Nothing alternative does not improve the safety and operations for users and staff associated with reversing and manoeuvring vehicles on the deck of the vessel. Additionally, the existing ice mitigation system (bubbler system) has poor functionality, and there is no secondary loading ramp at the Stella Terminal in the event of a failure of the primary ramp.

Although the "Do Nothing" alternative does not address the objectives of this study and could be screened out from further consideration due to problems observed at both terminals, it was carried forward and used as a baseline for comparison with the other ferry terminal improvement alternatives.

6.1.2. Relocation of Terminals

The Lake Ontario shoreline does not offer many opportunities to construct new ferry terminals that would enhance or strengthen the existing service that cannot be attained by improving the existing docks. In addition, the creation of new ferry terminals increases the footprint upon the environment and requires decommissioning of the existing infrastructure. As such, this alternative was not carried forward for further consideration.

6.1.3. Construction of a Fixed Link

Currently Amherst Island is well served by the existing ferry service and there are no anticipated crossing capacity issues in the future. As such, this alternative was not carried forward for further consideration.

6.1.4. Dock Conversion / Improvements

Reconstruction of both terminals to permit end-loading of vehicles was explored to address current loading operational issues. Other improvements (i.e. terminal building, operations equipment storage, winter operation system alterations, etc.) to both terminals were also examined. This alternative was carried forward for further consideration.

6.2. Assessment of Alternatives to the Undertaking

Dock conversion / improvements are the only alternatives that can fully address the objectives of this study on their own, and were therefore carried forward for further study.

7. GENERATION, ASSESSMENT AND EVALUATION OF ALTERNATIVES

Specific ferry terminal improvement alternatives corresponding to the Alternatives to the Undertaking that were carried from **Chapter 6** were developed. A total of five alternatives were developed for both the Millhaven and Stella Terminals (i.e. dock configurations and associated improvements). Each alternative is summarized in **Sections 7.1.2 and 7.1.3** with **Table 7-3** providing details of the evaluation undertaken. Refer to **Appendix C** for concept plans of the various configurations developed to permit end-loading of vehicles. A total of seven alternatives were also developed for the winter operation system and are presented in **Section 7.1.4**. **Table 7-5** details the evaluation undertaken.

7.1. Assessment and Evaluation of Alternatives

7.1.1. Evaluation Methodology

The evaluation method used in this study was the Reasoned Argument Method (Trade-Off Method). The Reasoned Argument Method considered the advantages and disadvantages of each alternative and the relative significance of the impacts. Both the professional opinions of the Project Team, as well as the input from stakeholders were used to determine the significance of impacts. The Reasoned Argument Method then presented a clear and thorough evaluation of the trade-offs between various categories / factors / indicators, and the reasons why one alternative was preferred over another. No alternative was considered that adversely impacted ferry operations or safety.

Both the terminal alternatives and the winter operation alternatives under consideration were assessed and evaluated based on impacts to and the opportunities provided for the natural, socio-economic and cultural environments, as well as transportation and cost considerations using the criteria listed in **Tables 7-1 and 7-2**, respectively.

Table 7-1: Evaluation Criteria for the Terminal Alternatives

Category	Factor
Natural Environment	- Fish and Fish Habitat - Terrestrial Ecosystems - Species at Risk - Groundwater (including potable wells) - Surface Water - Designated Areas - Erosion and Sediment
Socio-Economic Environment	- Noise - Land Use Factors - Agricultural Operations - Contamination and Waste - Landscape Composition

Category	Factor
	- Air Quality - Future Development
Cultural Environment	- Archaeological Resources - Built Heritage and Cultural Landscapes
Engineering / Operational Considerations	- Traffic, Pedestrian and Cyclist Safety - Ferry Operations - Marine Conditions - Constructability - Utilities - Cost

Table 7-2: Evaluation Criteria for the Winter Operation Alternatives

Category	Factor
Natural Environment	- Fish and Fish Habitat - Species at Risk
Socio-Economic Environment	- Noise
Cultural Environment	- Archaeological Resources
Engineering / Operational Considerations	- Operations (including channel ice formation) - Implementation - Cost

7.1.2. Summary of Millhaven Terminal Alternatives

A total of five alternatives were developed for the Millhaven Terminal. The alternatives are illustrated in **Appendix C** and described as:

Alternative 1: Dock expansion and new ferry berth (on west face) with generally direct extension into the lake.
Marshalling area expansion with orientation parallel to Highway 33.

Alternative 2: Dock expansion and new ferry berth (on east face) with angular extension into the lake.
Marshalling area expansion with orientation parallel to Highway 33.

Alternative 3: Dock expansion and new ferry berth (on south face) parallel to shoreline of the lake.
Marshalling area expansion with orientation parallel to Highway 33.

Alternative 4: Dock expansion and new ferry berth (on west face) with angular extension into the lake.
Marshalling area expansion with orientation perpendicular to Highway 33.

Alternative 5: Dock expansion and new ferry berth (on east face) with generally direct extension into the lake.
Marshalling area expansion with orientation parallel to Highway 33.

All five alternatives are equally preferred from the socio-economic and cultural perspectives.

Both Alternatives 1 and 4 are equally preferred from a technical perspective. Given that Alternative 1 is the least preferred alternative from a natural environment perspective, it is not preferred. Alternative 4 also results in moderate displacement of sensitive fish habitat east of the ferry terminal. As such, Alternative 4 is not preferred.

Although Alternative 3 is preferred from a natural environment perspective, it is the least preferred alternative from a technical perspective. As such, Alternative 3 is not preferred.

Although Alternative 5 is the most preferred alternative from a natural environment perspective, it is approximately 27% more expensive to construct than Alternative 2 and results in similar improvements to the ferry operations as Alternative 2. As such, Alternative 5 is not preferred.

Alternative 2 results in the least amount of general fish habitat displacement and minor sensitive fish habitat and vegetation community displacement. Given that Alternative 2 is less expensive to construct than Alternative 5 and results in similar improvements to the ferry operations, Alternative 2 is the preferred alternative for the Millhaven Terminal.

The evaluation was presented for public review and comment at the PICs held in August 2012 and is provided in **Table 7-3**.

7.1.3. Summary of Stella Terminal Alternatives

A total of five alternatives were developed for the Stella Terminal. The alternatives are illustrated in **Appendix C** and described as:

Alternative 1: Dock expansion and new ferry berth (on west face) with generally direct extension into the lake.
New in-land marshalling area on Township lands and residential displacement.

Alternative 2: Dock expansion and new ferry berth (on east face) with generally direct extension into the lake.
New in-land marshalling area on Township lands.

Alternative 3: Dock expansion and new ferry berth (on west face) with angular extension into the lake.
New marshalling area within the lake and on Township lands.

Alternative 4: Dock expansion and new ferry berth (on west face) with angular extension into the lake.
Marshalling area along Stella 40 Foot Road.

Alternative 5: Dock expansion and new ferry berth (on west face) with angular extension into the lake.
New in-land marshalling area on Township lands.

Although Alternative 1 is preferred from a cultural environment and technical / operations perspective, from a socio-economic environment perspective it is not preferred due to the

displacement of one residence west of Stella 40 Foot Road in close proximity to the Stella Terminal.

Although Alternative 2 is preferred from a technical perspective, it is the least preferred alternative from a natural environment perspective as it results in the greatest general fish habitat displacement, especially in the more productive area west of the ferry terminal. As such, Alternative 2 is not preferred.

Although Alternative 3 is preferred from a socio-economic environment perspective, it results in poor protection from ice floes (however ice floes are not anticipated to be a concern at the Stella Terminal because of the upstream shoreline geometry), high staging complexity and poor ferry operation during construction. As such Alternative 3 is not preferred.

Although Alternative 5 results in slightly greater impacts to undisturbed lands that have archaeological potential and displacement of vegetation community than Alternative 4, it is more preferred from the technical and socio-economic perspectives than Alternative 4. As such, Alternative 5 is the preferred alternative for the Stella Terminal (refer to **Section 8.1** for details on the refinements to the Technically Preferred Alternative).

The evaluation was presented for public review and comment at the PICs held in August 2012 and is provided in **Table 7-4**.

7.1.4. Summary of the Winter Operation Alternatives

A total of seven alternatives were generated for the winter operation system, consisting of:

Alternative 1: Maintain existing bubbler system "as-is" (berths and crossing).

Alternative 2: Replace existing with new bubbler system (berths and crossing).

Alternative 3: Replace existing with new bubbler system (berths only).

Alternative 4: Decommission existing bubbler system / no replacement.

Alternative 5: Ferry hull modification to permit crossing on ice.

Alternative 6: Provide ice breaking vessel assistance as needed.

Alternative 7: Replace existing with new bubbler systems (berths only) and modify ferry hull to permit crossing on ice.

All alternatives are equally preferred from the natural, socio-economic and cultural perspectives.

Alternative 1 is a "Do Nothing" option that represents a continuation of current trends with no significant improvements. Given that the existing bubbler system is obsolete and requires significant annual maintenance, Alternative 1 is the least preferred.

Alternative 4 results in disruption to the ferry service in extreme weather conditions since there will be no winter operation system in place. As such, it is not preferred from a technical perspective.

Although Alternative 2 results in desirable operations and permits ferry service during cold weather conditions, it has high capital and operating costs associated with the new bubbler system. As such, it is not preferred.

Alternative 6 requires the remote ice breaking vessel be deployed on short notice, which may result in delays / downtime awaiting arrival and ice breaking. As such, it is not preferred from a technical perspective.

Alternative 3 is slightly less preferred as the ferry service will be disrupted when contiguous ice blocks the channel or in the event of prolonged cold weather conditions.

Alternative 5 is slightly less preferred as it results in potential delays due to slow operation in extreme ice conditions, especially in dock berth areas.

Alternative 7 is preferred from a technical perspective as it results in desirable operations and implementation, has moderate costs, and maintains operations in all weather conditions.

The evaluation was presented for public review and comment at the PICs held in August 2012 and is provided in **Table 7-5**.

Table 7-3: Evaluation of Millhaven Terminal Alternatives

Category	Millhaven Alternative 1	Millhaven Alternative 2	Millhaven Alternative 3	Millhaven Alternative 4	Millhaven Alternative 5	Category Summary
Technical Considerations	●	◕	◔	●	◐	Alternative 3 is the least preferred alternative from a technical perspective. It results in the least desirable traffic operations and circulation, and ease of manoeuvrability for trucks. Alternative 3 also results in poor protection from ice floes and requires the most dredging. Neither Alternative 2 nor Alternative 5 is preferred from a technical perspective. Alternative 2 results in slightly less desirable traffic operations, and marine conditions than Alternative 4 and slightly less desirable constructability than Alternative 1. Alternative 5 does not result in the most desirable traffic operations, marine conditions and constructability, and is not the least expensive alternative to construct. Both Alternatives 1 and 4 are equally preferred from a technical perspective. Although Alternative 1 is slightly more expensive to construct (~34% more expensive than Alternative 2, the least expensive alternative), it results in the most desirable traffic operations and constructability. Although Alternative 4 results in less desirable constructability, it results in more desirable traffic operations and marine conditions. Alternative 4 also results in no impact to utilities.
Natural Environment	○	◐	◕	◔	●	Alternative 1 is the least preferred alternative from a natural environment perspective. Alternative 1 results in the greatest displacement of sensitive fish habitat located to the north of the ferry terminal, productive fish habitat (i.e. shallow/nearshore and vegetated areas) and vegetation community. Neither Alternative 2 nor Alternative 4 is preferred from a natural environment perspective. Both Alternatives 2 and 4 result in minor displacement of sensitive fish habitat located to the north of the ferry terminal. Alternative 3 and Alternative 5 do not impact the sensitive fish habitat located to the north of the ferry terminal and result in minor displacement of general fish habitat and vegetation community. Alternative 5 is slightly more preferred than Alternative 3 due to the less permanent infill in the nearshore area and reduced total area of disturbance to general fish habitat. As such, Alternative 5 is preferred from a natural environment perspective.
Socio-Economic Environment	●	●	●	●	●	All five alternatives result in similar impacts to nearby air quality/noise receivers and minor change to the existing view of Lake Ontario, have low potential for waste/contamination, require no private property, permit end-loading of vehicles and allow larger vehicles to be transported to/from the island, and enhance the existing aesthetics by improving the dock. As such, all five alternatives are equally preferred from a socio-economic environment perspective.
Cultural Environment	●	●	●	●	●	All five alternatives result in no impact to areas of archaeological potential and built heritage and cultural landscapes. As such, all five alternatives are equally preferred from a cultural environment perspective.
Overall Summary	All five alternatives are equally preferred from the socio-economic and cultural perspectives. Both Alternatives 1 and 4 are equally preferred from a technical perspective. Given that Alternative 1 is the least preferred alternative from a natural environment perspective, it is not preferred. Alternative 4 also results in moderate displacement of sensitive fish habitat east of the ferry terminal. As such, Alternative 4 is not preferred. Although Alternative 3 is preferred from a natural environment perspective, it is the least preferred alternative from a technical perspective. As such, Alternative 3 is not preferred. Although Alternative 5 is the most preferred alternative from a natural environment perspective, it is approximately 27% more expensive to construct than Alternative 2 and results in similar improvements to the ferry operations as Alternative 2. As such, Alternative 5 is not preferred. Alternative 2 results in the least amount of general fish habitat displacement and minor sensitive fish habitat and vegetation community displacement. **Given that Alternative 2 is less expensive to construct than Alternative 5 and results in similar improvements to the ferry operations, Alternative 2 is the preferred alternative for the Millhaven Terminal.**					

○ → ● Least Preferred Most Preferred

Denotes not a decision relevant factor

Table 7-4: Evaluation of Stella Terminal Alternatives

Category	Stella Alternative 1	Stella Alternative 2	Stella Alternative 3	Stella Alternative 4	Stella Alternative 5	Category Summary
Technical Considerations	◕	●	◔	◐	◕	Although Alternative 3 results in the most desirable traffic operations, it is not preferred from a technical perspective as it results in poor protection from ice floes (however ice floes are not anticipated to be a concern at the Stella Terminal because of the upstream shoreline geometry), requires the most area of works constructed in-water, and results in high staging complexity and poor ferry operation during construction. Alternatives 1, 4 and 5 are slightly less preferred than Alternative 2 from a technical perspective. Alternative 1 is the most expensive alternative to construct. Alternatives 4 and 5 result in slightly less desirable marine conditions and constructability. Alternative 4 results in greater impacts to utilities (i.e. telephone and hydro poles, and a culvert). Although Alternative 2 results in less desirable traffic operations, it results in the most desirable marine conditions and constructability, and no impact to utilities. As such, Alternative 2 is preferred from a technical perspective.
Natural Environment	◐	◔	◐	●	◕	Alternative 2 is the least preferred from a natural environment perspective as it results in the greatest general fish habitat displacement, especially in the more productive area to the south of the ferry terminal. Neither Alternative 1 nor Alternative 3 is preferred from a natural environment perspective as both alternatives result in moderate general fish habitat displacement. Alternative 5 is less preferred than Alternative 4 from a natural environment perspective as it results in greater displacement of vegetation community. Alternative 4 is the most preferred from a natural environment perspective as it results in the least general fish habitat displacement, especially in the more productive area to the south of the ferry terminal. Alternative 4 also results in the least vegetation community displacement.
Socio-Economic Environment	◔	◕	●	◐	◕	Alternative 1 is the least preferred from a socio-economic environment perspective because it results in the displacement of one residence in close proximity to the Stella Terminal, impacts two properties that have potential for waste/contamination and results in impacts to nearby air quality/noise receivers. Alternatives 2, 4 and 5 are not preferred from a socio-economic environment perspective. All three alternatives impact two properties that have potential for waste/contamination and result in impacts to nearby air quality/noise receivers. Alternative 4 also results in minor disruption to three properties (two residences east of Stella 40 Foot Road and one business at the northeast quadrant of Stella 40 Foot Road and Front Road). Alternative 3 is preferred from a socio-economic environment perspective because it requires no property and impacts only one property that has potential for waste/contamination.
Cultural Environment	●	◐	◕	◕	◐	Alternatives 2, 3, 4 and 5 result in minor displacement of lands that have archaeological potential (less than 1 ha). Given that Alternative 1 results in no impact to lands that have archaeological potential, Alternative 1 is preferred from a cultural environment perspective.
Overall Summary	Although Alternative 1 is preferred from a cultural environment and technical / operations perspective, from a socio-economic environment perspective it is not preferred due to the displacement of one residence west of Stella 40 Foot Road in close proximity to the Stella Terminal. Although Alternative 2 is preferred from a technical perspective, it is the least preferred alternative from a natural environment perspective as it results in the greatest general fish habitat displacement, especially in the more productive area west of the ferry terminal. As such, Alternative 2 is not preferred. Although Alternative 3 is preferred from a socio-economic environment perspective, it results in poor protection from ice floes (however ice floes are not anticipated to be a concern at the Stella Terminal because of the upstream shoreline geometry), high staging complexity and poor ferry operation during construction. As such Alternative 3 is not preferred. Although Alternative 5 results in slightly greater impacts to undisturbed lands that have archaeological potential and displacement of vegetation community than Alternative 4, it is more preferred from the technical and socio-economic perspectives than Alternative 4. **As such, Alternative 5 is the preferred alternative for the Stella Terminal.**					

○ → ● Least Preferred Most Preferred

Denotes not a decision relevant factor

Table 7-5: Evaluation of Winter Operation Alternatives

Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Category Summary
Technical Considerations	◔	◐	◕	◔	◕	◐	●	Alternative 1 is a "Do Nothing" option that represents a continuation of current trends with no significant improvements. Given that the existing bubbler system is obsolete and requires significant annual maintenance, Alternative 1 is the least preferred. Alternative 4 results in disruption to the ferry service in extreme weather conditions for there will be no winter operation system in place. As such, it is not preferred from a technical perspective. Although Alternative 2 results in desirable operations and permits ferry service during cold weather conditions, it has a high capital cost associated with the new bubbler system. As such, it is not preferred. Alternative 6 requires the remote ice breaking vessel be deployed on short notice, which may result in delays/downtime awaiting arrival and ice breaking. As such, it is not preferred from a technical perspective. Alternative 3 is slightly less preferred as the ferry service will be disrupted when contiguous ice blocks the channel. Alternative 5 is slightly less preferred as it results in potential delays due to slow operation in extreme ice conditions, especially in dock berth areas. Alternative 7 is preferred from a technical perspective as it results in desirable operations and implementation, and has moderate costs.
Natural Environment	●	●	●	●	●	●	●	All alternatives are equally preferred from a natural environment perspective.
Socio-Economic Environment	●	●	●	●	●	●	●	All alternatives are equally preferred from a socio-economic environment perspective.
Cultural Environment	●	●	●	●	●	●	●	All alternatives are equally preferred from a cultural environment perspective.
Overall Summary	All alternatives are equally preferred from the natural, socio-economic and cultural perspectives. Alternative 1 is a “Do Nothing” option that represents a continuation of current trends with no significant improvements. Given that the existing bubbler system is obsolete and requires significant annual maintenance, Alternative 1 is the least preferred. Alternative 4 results in disruption to the ferry service in extreme weather conditions for there will be no winter operation system in place. As such, it is not preferred from a technical perspective. Although Alternative 2 results in desirable operations and permits ferry service during cold weather conditions, it has high capital and operating cost associated with the new bubbler system. As such, it is not preferred. Alternative 6 requires the remote ice breaking vessel be deployed on short notice, which may result in delays / downtime awaiting arrival and ice breaking. As such, it is not preferred from a technical perspective. Alternative 3 is slightly less preferred as the ferry service will be disrupted when contiguous ice blocks the channel or in the event of prolonged cold weather conditions. Alternative 5 is slightly less preferred as it results in potential delays due to slow operation in extreme ice conditions, especially in dock berth areas. **Alternative 7 is preferred from a technical perspective as it results in desirable operations and implementation, has moderate costs, and maintains operations at terminals in all weather conditions.**							

○ → ● Least Preferred Most Preferred

Denotes not a decision relevant factor

8. THE RECOMMENDED PLAN

8.1. Changes to the Technically Preferred Alternative after the PICs

Following the PICs held on August 28 and 29, 2012, the Project Team re-examined the Technically Preferred Alternative for the Stella Terminal (Alternative 5). This re-examination was conducted due to concerns expressed by the public and Loyalist Township relating to the Stella Terminal improvements that would envelope the existing residential property at the foot of and on the west side of Stella 40 Foot Road, and also due to the potential to create traffic movement conflicts. Some of the specific concerns that were identified with the residence remaining included: air pollution with prevailing westerly winds, proximate noise pollution, potential groundwater contamination via nearby wells and parking lot, vehicle light trespass, privacy and property value.

The Project Team considered two general approaches to address the above identified issues, namely:

1. **Refine Technically Preferred Alternative:** Retain and refine the previously identified Technically Preferred Stella Alternative 5 as presented at the PICs by incorporating mitigation strategies (such as berms and/or barrier walls, landscaping features such as trees, increased separation between the marshalling area and the property line, an anti-idling policy, bio swales, sewage holding tank instead of a septic bed, and directed lighting) to address the identified issues and impacts; or
2. **Property Acquisition:** Acquire the subject residential property, thereby providing opportunity for refining the Technically Preferred Alternative to provide for a more compact design oriented more directly to Stella 40 Foot Road.

Based on a review of the two approaches, it was discovered that none of the mitigation strategies completely address the potential impacts to the residents. However, through discussions with the subject property owner during and after the Public Information Centres, it was identified that there was a willingness to explore property acquisition, thereby providing a viable means of dealing with the remaining impacts. Furthermore, it was noted that purchasing the subject property creates an opportunity for the Project Team to revise the preferred alternative at the Stella Terminal site to create a more compact ferry terminal, with better operations and a reduced footprint.

Thus, after reviewing the two approaches, the Stella Terminal configuration was modified and then presented to Loyalist Township. Several items were discussed and accommodated in the Plan in order to improve traffic and pedestrian flow. This included the installation of service conduits for a future automated fare collection system at the entrance to the marshalling area (to be installed by Loyalist Township in the future), sidewalks (with accessibility ramps for persons with disabilities) for pedestrians walking between the ferry and the terminal building, and acquisition of the property at the southwest corner of the Stella Terminal (this residential

property was subsequently acquired by MTO. No other land is required, although MTO will negotiate the acquisition or use of the adjacent land owned by Loyalist Township).

The refined Technically Preferred Alternative is presented in Figure 8-2. Given that this modified terminal layout is different than the one presented at the PICs, additional consultation was undertaken to inform adjacent area residents who are directly impacted by this alternative on Stella 40 Foot Road. No major concerns were raised during the additional public consultation and all comments received were taken into consideration when refining the modified Technically Preferred Alternative for the Stella Terminal.

8.2. Summary of the Recommended Plan

The Recommended Plan (refer to **Figures 8-1 and 8-2** for more details) includes the following improvements:

- Both the Millhaven and Stella Terminals will be reconstructed to permit end-loading of vehicles for the ferry;
- New hydraulic primary ramps will be installed at both terminals as well as new secondary ramps for backup conditions. The secondary ramps comprise granular material that can be graded to the required elevation, similar to the existing ramps;
- The Millhaven and Stella berthing piers will be extended lake-ward by 75 m and 70 m, respectively, from the current dock to a maximum length of 84 m (at the Stella Terminal);
- Dredging and rock removal will be required at both terminals. At Millhaven, there will be ≈630 m^3 of overburden removal and ≈1,420 m^2 of rock removal. At Stella, there will be ≈2,130 m^3 of overburden removal and ≈3,260 m^2 of rock removal;
- The marshalling area at the Millhaven and Stella Terminals will be expanded to accommodate at least 42 and 36 passenger cars, respectively;
- The number of parking spaces will be increased to at least 26 at the Millhaven Terminal and 35 at the Stella Terminal;
- Terminal buildings, including public washrooms and storage facilities will be constructed at both terminals;
- The Stella Terminal will include an office and amenities for ferry staff, which is planned to be LEED certified;
- Provisions will be made to accommodate a future automated fare system at the Stella Terminal;
- The existing winter ferry operation system (i.e. bubbler system) will be replaced with new bubbler systems at both berths only; and
- Other improvements include site lighting, passenger messaging and pedestrian amenities.

Figure 8-1: Recommended Plan – Millhaven Terminal

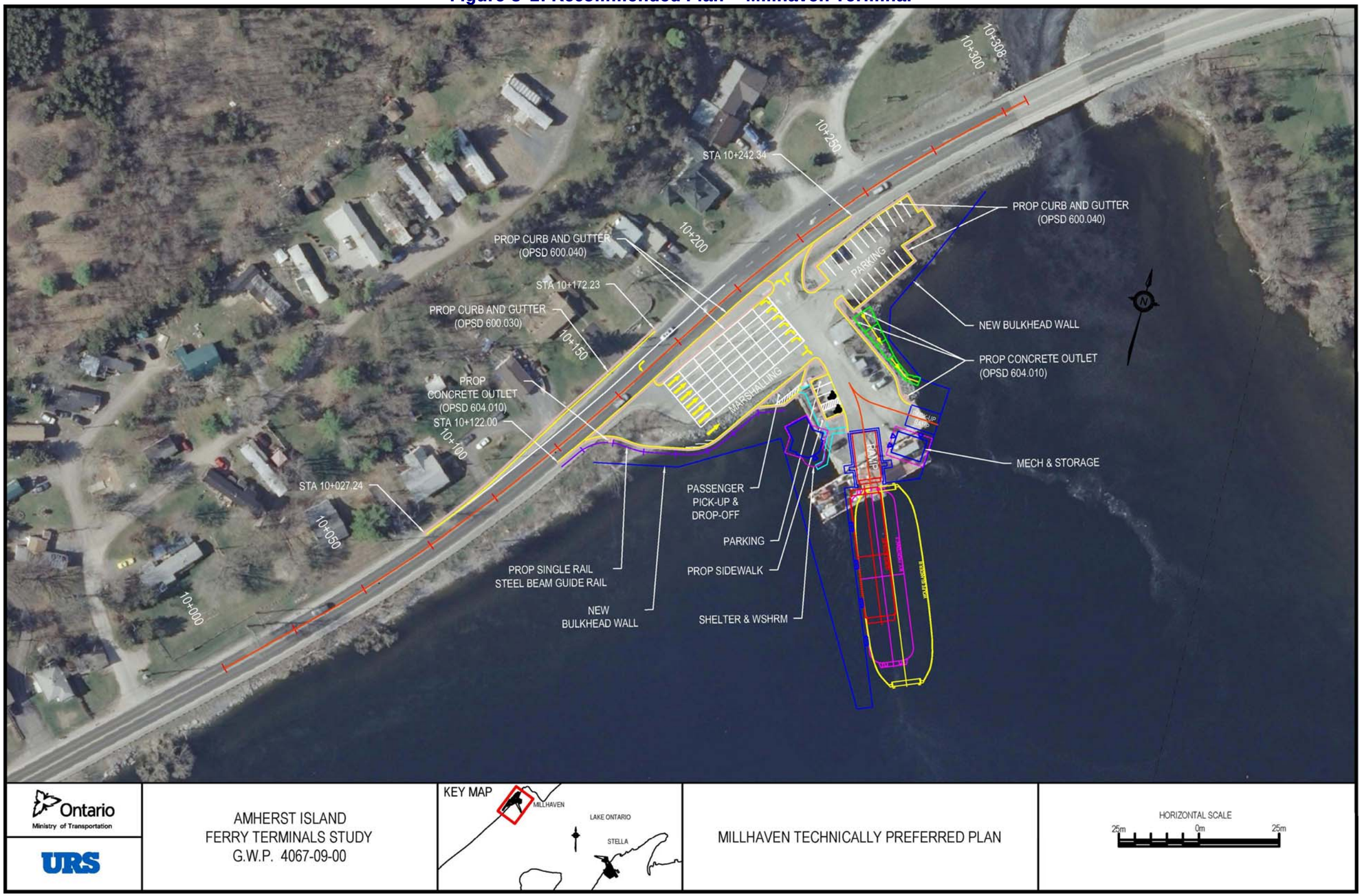
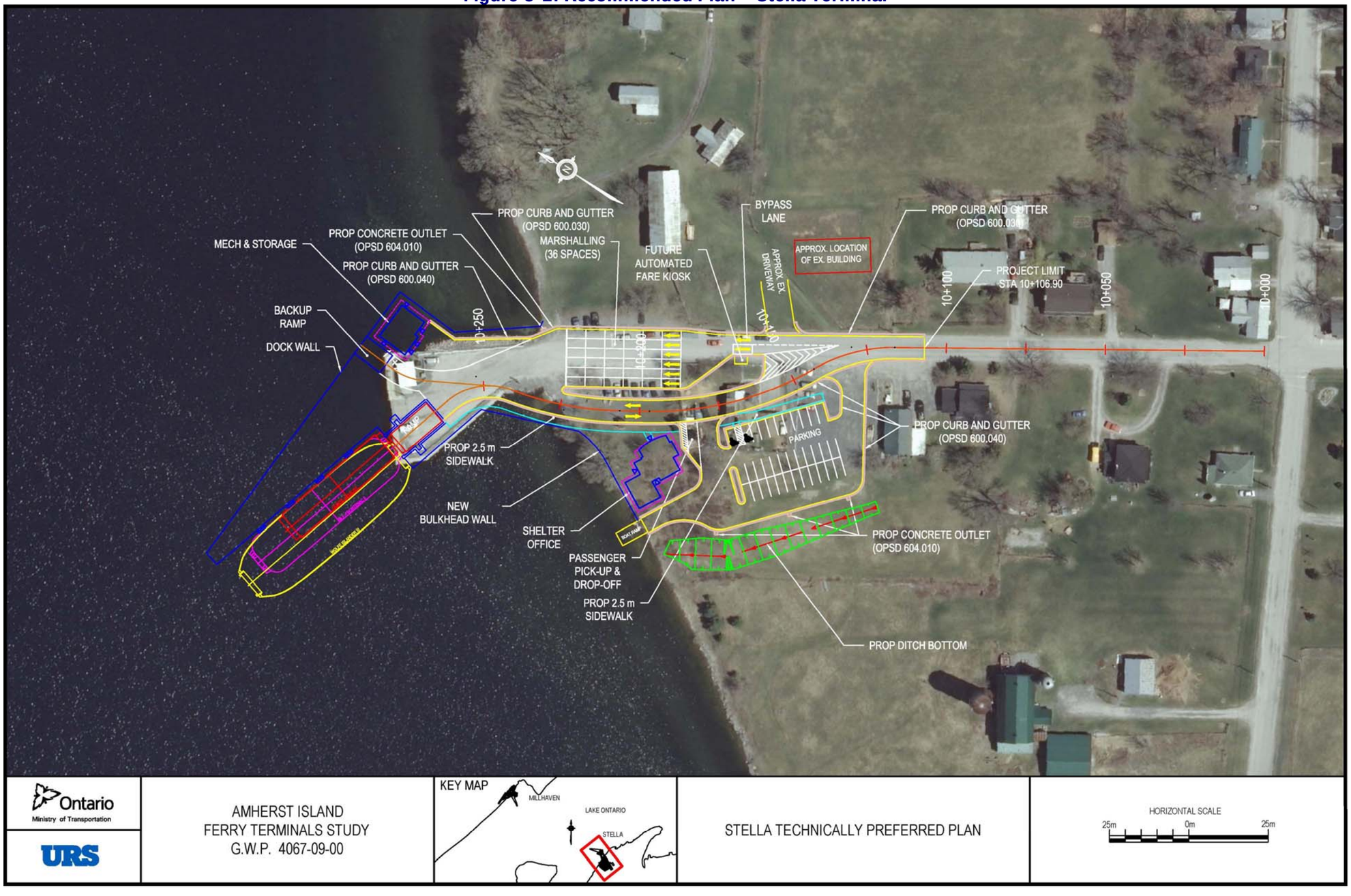


Figure 8-2: Recommended Plan – Stella Terminal



9. ENVIRONMENTAL ISSUES, EFFECTS, MITIGATION MEASURES AND COMMITMENTS

This chapter summarizes the direct and indirect environmental (natural, socio-economic and cultural) effects, as well as transportation (constructability, cost) effects, associated with the Recommended Plan. It also describes the mitigation measures that will be implemented to avoid or minimize the potential effects associated with the Recommended Plan. Mitigation includes planning decisions, design features, and construction requirements and constraints. The mitigation measures and commitments outlined in this report will be refined in greater detail in the next stage of the project. Specific environmental controls based on these detailed mitigation measures will then be included in the contract documents and specifications to address specific environmental and operational concerns during the preparation of the design-build contact documents in the subsequent procurement and construction phase.

9.1. Natural Environment

9.1.1. Fish and Fish Habitat

Modifications to lake shoreline habitat and nearshore lake beds have the potential to impact fish and fish habitat. The Recommended Plan has the following potential impacts to fish and fish habitat associated with the construction and operation of the proposed ferry terminal improvements at the Millhaven and Stella Terminals:

1. **Lake infill and occupation of lake bed:** The terminal reconstructions will occupy a larger footprint than the existing terminals. Lake infilling and therefore permanent occupation of the lake bed will be required. The infill requirements will directly remove fish habitat. The primary potential impacts from infill include: displacement of open water lake environment and the over print of the lake bed, both resulting in a reduction in area of available nearshore habitat area. Although reversible, lake infill is considered a permanent habitat alteration or destruction.

2. **Lake bed dredging:** Lake bed dredging will be required to facilitate a new ferry docking approach and allow berthing closer to shore. In-water dredging will remove the existing lake substrate and result in a deeper lake bed than currently exists. The deepening of the nearshore zone may reduce the productivity of dredged area. This alteration of the near shore lake environment will be isolated to the dredged area and therefore considered relatively minor in extent in the context of the Lake Ontario shoreline.

   The dredging activity can also produce short-term impacts during construction. When conducted in the absence of mitigation, dredging can increase the turbidity of the lake water and release fine particulate matter (suspended sediments) into the adjacent lake environment. Both of these potential impacts can potentially affect fish and other aquatic organisms.

Although temporary isolation of work zones prohibits use by fish in the area, this is considered a minor effect and likely inconsequential if conducted during the appropriate timing windows for in-water works.

Disposal of dredged material can present an issue if stored on land for drying prior to hauling to its destination or if open lake disposal is used. Dry land drying must occur well away from the lake and be contained behind properly installed and maintained sediment barriers or devices. The location and selection of appropriate containment techniques will need to be addressed during the next phase of this project. Similarly, the potential effects of open water disposal will need to be addressed during the next phase of this project, should it be selected as the preferred disposal method. In the event when contaminated dredged material is encountered, it must be disposed of according to the Ontario Ministry of the Environment guidelines.

3. **Underwater blasting:** The lake bottom is comprised of bed rock in much of the nearshore areas. Similar to the need for dredging, bedrock removal may be required to deepen the new ferry berthing area. Several options exist for rock removal ranging from blasting to ramhoe operation. The use of explosives adjacent to or under water poses several potential impacts to fish and fish habitat. Blasting as a method of deepening the lake bed can produce many of the same effects as dredging on the local lake environment. As the effects are similar in extent, duration and intensity as dredging, their lasting impacts are anticipated to be similarly low to negligible in effect.

   The detonation of explosives in or adjacent to fish habitat has been demonstrated to cause disturbance, injury or death to fish. In addition, many explosives contain ammonia which, when released in to the water in blasting residue, can be lethal to fish. DFO has developed guidelines intended to prevent or avoid the harm and destruction of fish. In order to protect fish, the use of explosives for this project will be required to follow the "Guidelines for the use of Explosives In or Near Canadian Fisheries Waters" (Wright and Hopky 1998). Through the application of the DFO guidelines, peak particle velocity is controlled and explosives free from ammonia are used to prevent harm to fish. Should the contractor not be able to effectively apply these blasting guidelines, a Fisheries Act Authorization is required in order to conduct blasting underway.

4. **Modification of existing facility walls and shorelines and shoreline alteration and infilling:** Existing walls and shorelines of each facility will be altered as part of the proposed terminal and docking improvements. This will involve removal of material and replacement with a variety of edge treatments including armour stone and vertical sheet pile walls. Similarly, the terminal reconstructions and construction of ancillary facilities will occupy a larger footprint than the existing terminal configuration. As a result, shoreline alteration and filling will be required.

   The common potential impacts of shoreline alteration include: reduction in substrate variability with the introduction of one size class of stone or other material; the steepening and hardening of shoreline slopes causing the creation of high energy zones due to abrupt wave break; and in the case of sheet pile walls, the removal of habitat opportunities afforded

by crevices and micro topography of stone or vegetated shores. These potential effects can be reduced in intensity when smaller rock is added to the toe of rock and sheet pile wall slopes.

5. **Riparian vegetation clearing:** Similar to shoreline alteration, the terminal reconstructions and ancillary facilities will occupy a larger footprint than the existing terminal configuration. As a result, riparian vegetation clearing will be required.

6. **Accidents and Malfunctions:** Accidents and malfunctions are unplanned events that may occur as a result of the project and have the potential to interact with the environment. In this particular project, the risk of accidents and malfunctions is highest during construction. Examples include: release of sediment laden water; creation of increased turbidity of lake water; off-site migration of suspend fine particulate matter; and spills or release of fuel and lubricants from storage and refuelling of equipment.

During construction, mitigation encompasses implementation of all relevant standard and non-standard / site-specific protection measures and management practices embodied in MTO's Operational Constraints and Construction Specifications. These measures and all the site-specific measures will continue to be refined and detailed as the design evolves through subsequent design phases. The mitigation measures will be finalized based on the final design, and its effects on fish and fish habitat. In addition, comprehensive construction mitigation involves recognition and implementation of additional control measures that may be identified through good construction practices and environmental inspection.

Erosion and Sediment Control

A comprehensive erosion and sediment control (ESC) plan will be developed in subsequent design phases and implemented to prevent migration of sediment laden runoff (or other contaminants) from the construction zone to the lake. This plan will include inspection and maintenance of the measures until final cover is established. More detailed erosion and sediment control measures will be developed during subsequent design phases.

Construction Access, Site Controls and Operational Constraints

- The construction access and work areas will be confined to the extent required for the construction activities, and these areas are then defined in the field using appropriately installed protective fencing or other suitable barriers.
- Removal of riparian vegetation, particularly woody vegetation, will be kept to the minimum necessary for the project works. The woody vegetation that will likely require removal should be replaced with appropriate native species.
- Any temporarily stockpiled material, construction or related materials will be properly contained (e.g. with perimeter silt fence). Petroleum product or other material (e.g. concrete curing agents, etc.) shall be stored either a minimum of 30 m from any waterbody or within a secured perimeter that prevents product escape to the natural environment (land or water).
- All construction materials and debris will be removed and appropriately disposed of following construction.

- Every effort will be made to retain as much of the natural vegetation as reasonably possible to help ensure bank stability, control erosion and expedite the re-colonization of vegetative cover.
- All vegetation clearing required for access will be conducted using proper clearing techniques and appropriate construction timing windows as may be defined by other legislation (e.g. Migratory Birds Convention Act).
- Removed shoreline vegetation is to be replaced using native vegetation along the newly created shoreline at a ratio that exceeds the removal of woody stock.
- The dredge and other machinery assigned to operate in the water shall arrive on site in a clean condition to prevent the spread of non-indigenous species.
- All activity will be controlled so as to prevent entry of any petroleum products, debris or other potential contaminants / deleterious substances, in addition to sediment as outlined above, to any waterbody. No storage, maintenance or refuelling of equipment will be conducted near any waterbody. A Spills Prevention and Response Plan will be developed and kept on site at all times.

Fish Protection

- The warmwater timing window of July 1 to March 31 has been confirmed by MNR for all in-water works at the Millhaven and Stella Terminals. This timing window permits the following activities to be undertaken: dredging; blasting; removal of lake bed sediment and rock; shoreline / water interface excavation or disturbance; or in water placement or installation of sheet piling, amour stone or poured concrete.
- Once sheet piling or other enclosure structure is constructed to separate the work zone from the open waters of Lake Ontario, construction inside this closed area may proceed and not be impacted by the open water timing constraint window of March 31 to July 1 of any year.
- Any fish stranded within the temporary in-water work zones will be removed and relocated using appropriate techniques by a qualified fisheries specialist.
- Blasting on the site will be required to follow the "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters" to reduce particle velocities and pressure changes created by underwater explosives that can result in fish injuries and mortality. This also includes the methods of small scare blasts and staking of charges. Only the use of explosives using non-ammonia constituents will be permitted.
- A turbidity curtain will be installed during blasting operations to prevent the migration of fine particulate matter into the adjacent water column.
- A turbidity curtain shall be installed during dredging operations.

Protection During Removal of Existing Terminal and Docking Facility

- Appropriate containment systems will be designed and implemented during the removal of the existing structures to prevent entry of debris into Lake Ontario. This system(s) will address large materials and fine particulates, and will be regularly monitored to remove and appropriately dispose of accumulated material.
- Materials that fall in the water will be carefully retrieved to minimize disturbance.

Protection of Water Quality During Dredging

- Floating silt curtains will be installed around the lake side of the dredged area.
- All dredged material shall be removed and deposited in an area above the high water mark of the shoreline and be contained behind properly installed and maintained sediment barriers or devices.
- In the event contaminated material is encountered, it should be disposed of according to the MOE guidelines.

9.1.2. Groundwater / Surface Water

The Recommended Plan for the Millhaven Terminal results in the displacement of one shore well immediately west of the marshalling area. The Recommended Plan for the Stella Terminal results in impacts to one shore well and the displacement of one inland well. These wells will be relocated, and reviewed during the subsequent detail design of this project to provide for maintained well water needs during and after construction. Other standard mitigation measures include:

- Minimize the need for dewatering during construction;
- Conduct dewatering activities in accordance with approved control procedures;
- Minimize disturbance to existing vegetation and grassed slopes where re-grading is required (disturbed areas should be re-vegetated as quickly as possible after completion of construction activities);
- Prepare and implement a spill prevention and control management plan;
- Prevent the infiltration of contaminates into the groundwater / surface water resource;
- Identify and initiate a well monitoring program prior to, during and after construction activities; and
- Employ effective salt storage and application techniques as defined in the MTO *Salt Management Plan* (2005).

9.1.3. Terrestrial Ecosystems

The Recommended Plan will require the removal of approximately 0.08 ha of Mineral Cultural Thicket habitat and 0.03 ha of Cultural habitat on the Millhaven side. The Recommended Plan will require the removal of approximately 0.20 ha of Mineral Cultural Woodland habitat, 0.17 ha of Mineral Cultural Meadow and turf habitat, and or 0.003 ha of Cultural Habitat on the Stella side. Although the removal of the Cultural Woodland habitat on the Stella side is the largest removal of vegetation for this project, its impact is negligible. The Cultural Woodland is very small in size and isolated on the landscape as it does not connect with any larger habitat patches within or outside of the Study Area. The Cultural Meadow / turf habitat lost to accommodate additional parking on the Stella side is primarily manicured lawn space (turf).

All impacted vegetation communities are not part of larger habitat patches, are isolated on the landscape, and contain low species diversity with many non-native species. These vegetation

units are considered common throughout southern Ontario. Therefore impacts to these vegetation types will not affect the integrity of other vegetation types within or outside of the study area.

Wildlife

The works associated with the Recommended Plan are not anticipated to have a significant impact on individual species or habitat. Vegetation cover within both study areas provides habitat for primarily urban tolerant species. This is due to the small size of the features and limited vegetation diversity. Wildlife passage within the study area will not be affected by the proposed construction as the ferry terminals do not act as corridors on the landscape.

General management and mitigation measures that are recommended to reduce direct and indirect effects include the following:

- Re-stabilize and re-vegetate exposed surfaces as soon as possible, using vegetation seed mixes, where feasible, and plantings, where possible;
- Clearly delineate vegetation clearing zones and vegetation retention zones on construction drawings. Equipment, materials and other construction activities shall not access these zones;
- Conduct vegetation removal and protection measures in accordance with OPSS 201 (tree clearing) and OPSS 565 (tree protection). Vegetation that does not require removal for the purposes of the construction will be protected through the installation and maintenance of temporary protection measures (e.g. temporary fencing);
- Cut and grubbed material may be disposed of through chipping. Wherever possible, wood chip material is to be utilized in any edge plantings. This material will help retain soil moisture and prevent weed spread;
- Implement environmental inspection during construction to make sure that protection measures are implemented, maintained and repaired and to make sure remedial measures are implemented where warranted;
- Landscaping will be considered to protect / enhance adjacent vegetated areas;
- Individual trees outside the footprint of the Ferry Terminal improvements should be protected by means of demarcation fencing to ensure their retention;
- All migratory bird species and their nests are protected under the *Migratory Bird Convention Act* (MBCA 1994) and therefore, vegetation clearing efforts must be avoided during the breeding season (April 15 to July 15). The songbird breeding season extends from mid-May until late July (Cadman et al., 2007);
- Vegetation removal (including trees, shrubs and grasslands) should be undertaken through the late summer, fall and winter months to avoid disrupting any species during their nesting season (MBCA 1994; *Fish and Wildlife Coordination Act* 1997). If removal of vegetation is to occur during the breeding season, an extensive nest search of the area to be affected must be completed to confirm that no birds or their nests are present that may be affected (disturbed or destroyed) during construction; and

- Measures such as installing exclusion fencing, sheet pile, etc. and designating / delineating specific environmentally significant areas to exclude reptile / amphibians from shoreline and in-water work areas and to prevent incursion will be implemented.

9.1.4. Species at Risk

No Species at Risk (SAR) occurrences within 1 km of the study area were noted in the MNR, NHIC database (2012). However, correspondence with DFO and MNR indicated that four SAR are potentially present in the study area – Barn Swallow, Snapping Turtles, Spotted Gar and Eastern Pondmussel.

- Barn Swallow: The nests identified during the field investigations are outside of the proposed areas to which an impact may be created as a result of this project. This species occupies a wide range of habitats including urban and rural environments, particularly where suitable built structures and open spaces combine with active animal husbandry. They are not easily disturbed either during the breeding season or in migration, and are confirmed to forage in some of the busiest and noisiest of conditions. As such, neither the Millhaven bridge nests, nor the Stella Island colony can be considered to be at risk of disturbance from construction activity because the bird community is robust and tolerant of ferry terminal operations.
- Snapping Turtles: Individuals were not observed during the field investigations. This species, unlike most other turtles, are active in winter and spend the winter either buried or at surface. As opposed to other turtles which are more sedentary and less likely to move if disturbed during hibernation, Snapping Turtle will likely move out of the area if disturbed. Measures such as installing exclusion fencing, sheet pile, etc. and designating / delineating specific environmentally significant areas to exclude reptile / amphibians from shoreline and in-water work areas and to prevent incursion will be implemented.
- Spotted Gar: This species and their habitat are protected under ESA and SARA. However, the recently prepared document by DFO (Recovery Strategy for Spotted Gar in Canada, 2012) does not identify the northern shoreline of Lake Ontario in the Millhaven area (including area adjacent to the Millhaven Terminal) as being critical habitat for Spotted Gar.
- Eastern Pondmussel: The preferred habitat for the Eastern Pondmussel in lakes is sheltered areas with water depths of 0.3 – 4.5 m and substrates of fine sand and mud. Despite the presence of sheltered areas and appropriate water depths present at both the Millhaven and Stella Terminals, there are insufficient fine sand and mud substrates at either location to accommodate the Eastern Pondmussel. Considering this, their absence during field surveys and their rareness in Ontario, the likelihood of Eastern Pondmussel utilizing the areas adjacent to the Millhaven and Stella Terminals is low.Socio-Economic Environment

9.1.5. Property Impacts

The Recommended Plan has resulted in the acquisition of one residential property west of Stella 40 Foot Road in close proximity to the Stella Terminal, and land owned by Loyalist Township west of Stella 40 Foot Road will be required. MTO will negotiate the acquisition or use of the

land owned by Loyalist Township. Compensation will be based on the fair market value of the proposed properties required. The impacted property owners were consulted as part of this study.

9.1.6. Aesthetics

The Recommended Plan for both terminals results in a minor change to the existing view of the water due to the proposed terminal / storage buildings. A visual impact review was completed on the Millhaven side. Nearby residences on the northwest side of Bath Road will experience a change in view due to the addition of the terminal building and the extension of the dock. .

9.1.7. Waste Management and Excess Materials

An analysis of the data collected as part of the Contamination Overview Study was undertaken to determine the potential for soil and groundwater contamination in the study area. The analysis was generally based on current and historical land-use (sources of contamination); and on surficial geology, hydrology and topography.

While several of the MOE recorded spills (petroleum products) are related to the ferry operations and resulted in release of a contaminant to the waters of Lake Ontario, they were not considered significant nor to have lasting and traceable impacts.

Based on the findings, the following is a list of the facilities that are considered to be potential environmentally noteworthy:

- Millhaven Terminal;
- Stella Terminal;
- A private excavation company located adjacent to the Stella Terminal. Five aboveground storage tanks (ASTs) were noted on the property; and
- A general blacksmithing business located west of the Front Road and Stella 40 Foot Road intersection.

Both the Millhaven and Stella Terminals are considered to be potential environmental concerns based on ferry operations (i.e. fueling) and material handling and storage procedures. Determination is required to confirm the levels of contamination and required remediation actions. In addition, excess materials will be managed in accordance with standard MTO practices (OPSS 180) and caution will be exercised while handling and disposing of contaminated materials. The Recommended Plan does not result in impacts to the excavation company and the general blacksmithing business in Stella.

9.1.8. Air Quality

No impact to air quality associated with the Recommended Plan is anticipated as the marshalling areas and the location of boat mooring at both terminals will be in the same general area as existing. In addition, there will be no change to the number of ferry trips, or to the Frontenac II ferry capacity.

Dust and other construction-related emissions have the potential to cause temporary impacts at the nearby residences. Standard best practices for minimizing construction-related emissions are recommended, including:

- Reduced speeds for heavy equipment travel on unpaved or unclean routes;
- Covered loads;
- Tire washes or other methods to prevent tracking of soil onto paved streets;
- Covered stockpiles of soils or other materials that can entrained by wind;
- Water or other dust suppression on unpaved traffic areas; and
- Temporary enclosures for sandblasting activities.

9.1.9. Noise

No significant increase in noise level is anticipated with the Recommended Plan as the marshalling areas and the location of boat mooring at both terminals will be in the same general area as existing. In addition, there will be no change to the number of ferry trips, or to the Frontenac II ferry capacity.

In addition to traffic / operation noise, noise during the construction phase needs to be considered. Unlike operational traffic noise, construction noise is temporary, lasting from a few days to several months during any particular activity or at any particular location, and is dependent upon the type of construction equipment and processes used, and the time of day.

During construction, the Contractor will be required to:

- Abide by any municipal noise control by-laws;
- Keep idling of construction equipment to a minimum;
- Maintain equipment in good working order; and
- Address any concerns that may arise with respect to noise during construction.

Complaints will be investigated according to the provisions of the MTO *Environmental Guide for Noise (2006)*. Any initial complaint from the public requires verification by MTO that the general noise control measures agreed to are in effect. If not, MTO will advise the Contractor of any problems, and enforce the contract.

9.1.10. Utilities

No impact to general utilities (i.e. power, communications, etc.) is anticipated with the Recommended Plan. Shore wells on both the Millhaven and Stella shorelines will be relocated and details as to precise location will be expanded upon during the subsequent detail design of this project to provide for maintained well water needs during and after construction.

Current water supply for fire suppression purposes is obtained by use of a portable pump from the Stella dock. A fire emergency water source will be available in association with Stella dockside storage buildings.

9.2. Cultural Environment

9.2.1. Archaeology

A Stage 2 Archaeological Assessment was conducted for the area impacted by the improvements to the Stella Terminal to the west of Stella 40 Foot Road. All lands within the subject study area were found to be heavily disturbed by past grading / landscaping and construction activities. Given the results of this assessment, the study area is deemed to no longer contain archaeological potential due to the presence of disturbance. It is therefore recommended that this study area be cleared of further archaeological concern.

Should the proposed improvements to the Amherst Island Ferry Terminals expand beyond areas assessed as part of this study, further Stage 2 Archaeological Assessment should be conducted in accordance with the MTCS *Standards and Guidelines for Consultant Archaeologists* (2011), prior to any land disturbing activities. The purpose of this work would be to identify and assess any archaeological remains that may be present.

The above recommendations are subject to MTCS's approval, and it is an offence to alter any archaeological site without MTCS concurrence. No grading or other activities that may result in the destruction or disturbance of an archaeological site are permitted until notice of MTCS concurrence has been received.

9.2.2. Heritage Resources

A Built Heritage Assessment was undertaken as part of this study. No potential heritage resources were found within the study area. The residence located immediately south of the Stella Terminal that has been acquired by MTO to accommodate the recommended improvements to the Stella Terminal does not meet the criteria for listing in the BHA, as laid out in Ont. Reg. 9/06 or 10/06.

9.3. Transportation

9.3.1. Ferry Operation During Construction

Ferry service will be maintained during construction. Advanced signage at both terminals and notice on websites (MTO and Loyalist Township) will notify users of potential disruption to service. Construction sequences and staging will be employed to maintain traffic access to the ferry terminals and ramp operations. Specific details of the construction sequences and staging will be developed during detail design.

9.3.2. Navigability

Formal application with attendant detailed documentation will be presented to Transport Canada under either the *Navigable Waters Protection Act* or the new *Navigation Protection Act* (scheduled for implementation in April 2014) in order to obtain approval for works associated with the Terminal docks and the Bubbler System. As per the Project Team's correspondence with Transport Canada, Transport Canada does not foresee any reasons to why a formal Approval would not be granted under the *Navigable Waters Protection Act* for this project upon receipt of details from the Design-Build contractor.

9.4. Summary of Environmental Effects, Mitigation and Commitments to Future Work

The proposed mitigation measures and commitments to future work to address specific concerns associated with the Recommended Plan are listed in **Table 9-1**.

Table 9-1: Summary of Environmental Concerns, Mitigating Measures and Commitments to Future Work

ID#	ENVIRONMENTAL CONCERN AND POTENTIAL IMPACT	CONCERNED AGENCIES	MITIGATION / COMMITMENT TO FUTURE WORK
1	**Fish and Fish Habitat** (Infilling, dredging, blasting, etc.)	DFO MNR MTO CA	Erosion and Sediment Control A comprehensive erosion and sediment control (ESC) plan will be developed in subsequent design phases and implemented to prevent migration of sediment laden runoff (or other contaminants) from the construction zone to the lake. This plan will include inspection and maintenance of the measures until final cover is established. More detailed erosion and sediment control measures will be developed during subsequent design phases. Construction Access, Site Controls and Operational Constraints • The construction access and work areas will be confined to the extent required for the construction activities, and these areas are then defined in the field using appropriately installed protective fencing or other suitable barriers. • Removal of riparian vegetation, particularly woody vegetation, will be kept to the minimum necessary for the project works. The woody vegetation that will likely require removal should be replaced with appropriate native species. • Any temporarily stockpiled material, construction or related materials will be properly contained (e.g. with perimeter silt fence). Petroleum product or other material (e.g. concrete curing agents, etc.) shall be stored either a minimum of 30 m from any waterbody or within a secured perimeter that prevents product escape to the natural environment (land or water). • All construction materials and debris will be removed and appropriately disposed of following construction. • Every effort will be made to retain as much of the natural vegetation as reasonably possible to help ensure bank stability, control erosion and expedite the re-colonization of vegetative cover. • All vegetation clearing required for access will be conducted using proper clearing techniques and appropriate construction timing windows as may be defined by other legislation (e.g. Migratory Birds Convention Act). • Removed shoreline vegetation is to be replaced using native vegetation along the newly created shoreline at a ratio that exceeds the removal of woody stock. • The dredge and other machinery assigned to operate in the water shall arrive on site in a clean condition to prevent the spread of non-indigenous species. • All activity will be controlled so as to prevent entry of any petroleum products, debris or other potential contaminants / deleterious substances, in addition to sediment as outlined above, to any waterbody. No storage, maintenance or refuelling of equipment will be conducted near any waterbody. A Spills Prevention and Response Plan will be developed and kept on site at all times. Fish Protection • The warmwater timing window of July 1 to March 31 has been confirmed by MNR for all in-water works at the Millhaven and Stella Terminals. This timing window permits the following activities to be undertaken: dredging; blasting; removal of lake bed sediment and rock; shoreline / water interface excavation or disturbance; or in water placement or installation of sheet piling, amour stone or poured concrete. • Once sheet piling or other enclosure structure is constructed to separate the work zone from the open waters of Lake Ontario, construction inside this closed area may proceed and not be impacted by the open water timing constraint window of March 31 to July 1 of any year. • Any fish stranded within the temporary in-water work zones will be removed and relocated using appropriate techniques by a qualified fisheries specialist. • Blasting on the site will be required to follow the “Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters” to reduce particle velocities and pressure changes created by underwater explosives that can result in fish injuries and mortality. This also includes the methods of small scare blasts and staking of charges. Only the use of explosives using non-ammonia constituents will be permitted. • A turbidity curtain will be installed during blasting operations to prevent the migration of fine particulate matter into the adjacent water column. • A turbidity curtain shall be installed during dredging operations. Protection During Removal of Existing Terminal and Docking Facility • Appropriate containment systems will be designed and implemented during the removal of the existing structures to prevent entry of debris into Lake Ontario. This system(s) will address large materials and fine particulates, and will be regularly monitored to remove and appropriately dispose of accumulated material. • Materials that fall in the water will be carefully retrieved to minimize disturbance. Protection of Water Quality During Dredging • Floating silt curtains will be installed around the lake side of the dredged area. • All dredged material shall be removed and deposited in an area above the high water mark of the shoreline and be contained behind properly installed and maintained sediment barriers or devices.

ID#	ENVIRONMENTAL CONCERN AND POTENTIAL IMPACT	CONCERNED AGENCIES	MITIGATION / COMMITMENT TO FUTURE WORK
			• In the event contaminated material is encountered, it should be disposed of according to the MOE guidelines.
2	**Groundwater** (Displacement of wells and protection of groundwater resources)	MOE MNR MTO MUN RES/BUS	Impacted shore wells will be relocated, and reviewed during the subsequent detail design of this project to provide for maintained well water needs during and after construction.. Other standard mitigation measures include: • Minimize the need for dewatering during construction; • Conduct dewatering activities in accordance with approved control procedures; • Minimize disturbance to existing vegetation and grassed slopes where re-grading is required (disturbed areas should be re-vegetated as quickly as possible after completion of construction activities); • Prepare and implement a spill prevention and control management plan (during the next stage of this project); • Prevent the infiltration of contaminates into the groundwater resource; • Identify and initiate a well monitoring program prior to, during and after construction activities; and • Employ effective salt storage and application techniques as defined in the MTO *Salt Management Plan* (2005).
3	**Terrestrial Ecosystems** (Removal of edge vegetation)	MNR MTO MUN CA	• Re-stabilize and re-vegetate exposed surfaces as soon as possible, using vegetation seed mixes, where feasible, and plantings, where possible; • Clearly delineate vegetation clearing zones and vegetation retention zones on construction drawings. Equipment, materials and other construction activities shall not access these zones; • Conduct vegetation removal and protection measures in accordance with OPSS 201 (tree clearing) and OPSS 565 (tree protection). Vegetation that does not require removal for the purposes of the construction will be protected through the installation and maintenance of temporary protection measures (e.g. temporary fencing); • Cut and grubbed material may be disposed of through chipping. Wherever possible, wood chip material is to be utilized in any edge plantings. This material will help retain soil moisture and prevent weed spread; • Implement environmental inspection during construction to make sure that protection measures are implemented, maintained and repaired and to make sure remedial measures are implemented where warranted; • Landscaping will be considered to protect / enhance adjacent vegetated areas; • Individual trees outside the footprint of the Ferry Terminal improvements should be protected by means of demarcation fencing to ensure their retention; • All migratory bird species and their nests are protected under the *Migratory Bird Convention Act* (MBCA 1994) and therefore, vegetation clearing efforts must be avoided during the breeding season (April 15 to July 15). The songbird breeding season extends from mid-May until late July (Cadman et al., 2007); • Vegetation removal (including trees, shrubs and grasslands) should be undertaken through the late summer, fall and winter months to avoid disrupting any species during their nesting season (MBCA 1994; *Fish and Wildlife Coordination Act* 1997). If removal of vegetation is to occur during the breeding season, an extensive nest search of the area to be affected must be completed to confirm that no birds or their nests are present that may be affected (disturbed or destroyed) during construction; and • Measures such as installing exclusion fencing, sheet pile, etc. and designating / delineating specific environmentally significant areas to exclude reptile / amphibians from shoreline and in-water work areas and to prevent incursion will be implemented.
4	**Waste Management and Excess Materials**	MTO MOE	• Determination is required to confirm the levels of contamination and required remediation actions based on ferry operations (i.e. fueling) and material handling and storage procedures. • Excess materials will be managed in accordance with standard MTO practices (OPSS 180) and caution will be exercised while handling and disposing of contaminated materials.
5	**Air Quality During Construction**	MTO MOE RES/BUS	Standard best practices for minimizing construction-related emissions are recommended, including: • Reduced speeds for heavy equipment travel on unpaved or unclean routes; • Covered loads; • Tire washes or other methods to prevent tracking of soil onto paved streets; • Covered stockpiles of soils or other materials that can entrained by wind; • Water or other dust suppression on unpaved traffic areas; and • Temporary enclosures for sandblasting activities.
6	**Noise During Construction**	MTO MOE RES/BUS	During construction, the Contractor will be required to: • Abide by any municipal noise control by-laws; • Keep idling of construction equipment to a minimum; • Maintain equipment in good working order;

ID#	ENVIRONMENTAL CONCERN AND POTENTIAL IMPACT	CONCERNED AGENCIES	MITIGATION / COMMITMENT TO FUTURE WORK
			• Be available to address any concerns that may arise with respect to noise during construction; and • Investigate complaints according to the provisions of the MTO *Environmental Guide for Noise (2006)*. Any initial complaint from the public requires verification by MTO that the general noise control measures agreed to are in effect. If not, MTO will advise the Contractor of any problems, and enforce the contract.
7	**Archaeological**	MTO MTCS	• Should the proposed improvements to the Amherst Island Ferry Terminals result in the encroachment upon previously undisturbed lands determined to have archaeological site potential, a Stage 2 Archaeological Assessment should be conducted in accordance with MTCS' Standards and Guidelines for Consultant Archaeologists (2011), prior to any land disturbing activities. • The above recommendations are subject to MTCS's approval, and it is an offence to alter any archaeological site without MTCS concurrence. No grading or other activities that may result in the destruction or disturbance of an archaeological site are permitted until notice of MTCS has been received.
8	**Class EA**	MTO	For Design-Build delivery of this project, the following are required: • Additional consultation with Loyalist Township; • Additional consultation with Aboriginal Communities; • Obtain final approvals from DFO, TC and MNR. • Prepare a Design and Construction Report if changes are proposed to this Recommended Plan. If significant changes are proposed by the Design-Builder, the Design-Builder will be responsible to prepare a TESR Addendum.
9	**Ferry Operation During Construction**	MUN MTO	• Ferry service will be maintained during construction. • Advanced signage at both terminals and notice on websites (MTO and Loyalist Township) will notify ferry users of potential disruption to service. • Construction staging will be employed to maintain traffic movement and access to the ferry terminals and ramp operations. • Specific details of the construction sequences and staging will be developed during detail design.
10	**Utilities**	Stella Fire Services RES / BUS MTO MUN	• A fire emergency water source will be available in association with Stella dockside storage buildings. • Impacted shore wells will be relocated and details as to precise location will be expanded upon during the subsequent detail design of this project.
11	**Navigable Waters**	TC MTO	• The *Navigable Waters Protection Act* (new *Navigation Protection Act*, April 2014) applies to Ferry Terminal improvements in the water and the Bubbler System. A formal application will be submitted under this Legislation.
12	**Property Acquisition**	MTO MUN	MTO Property Guidelines and Procedures will be employed for acquisitions of land owned by Loyalist Township west of Stella 40 Foot Road.

Legend	
DFO: Fisheries and Oceans Canada	MUN: Municipality
MNR: Ministry of Natural Resources	RES/BUS: Area residents and/or businesses
MTO: Ministry of Transportation	MTCS: Ministry of Tourism, Culture and Sport
CA: Conservation Authority	MOE: Ministry of the Environment
TC: Transport Canada	

9.5. Monitoring

9.5.1. Project Specific Monitoring

During subsequent design-build for this Recommended Plan, MTO will confirm that consultation, the implementation of the mitigation measures and key design features are consistent with the project agreements and should significant changes be required of the Recommended Plan in this TESR, a TESR addendum shall be prepared and published for an additional 30-day public review period. In addition, MTO or its agent will assess the effectiveness of the proposed mitigation measures to confirm:

- Individual mitigation measures are providing the expected control and/or protection;
- Composite control and/or protection provided by mitigation measure is adequate;
- Additional mitigation measures are provided as required for any unanticipated environmental conditions which may develop during construction; and
- Information is available for the overview assessment of mitigation measures.

Environmental monitoring, after a project is completed, may involve follow-up monitoring of significant measures and/or significant concerns, depending on approval requirements.

9.5.2. Project Specific Class EA Monitoring

During the planning and design stage, MTO or its agent must confirm compliance with the Class EA process before MTO issues an "environmental clearance" for project implementation.

During construction, MTO or its agent must confirm that external notification and consultations are consistent with any commitments that may have been made earlier. Following construction, monitoring will confirm that any follow-up information is provided to external agencies as per any outstanding environmental commitments.

9.5.3. Implementation of Environmental Monitoring Framework

Construction is subject daily to general on-site inspection to confirm the execution of the environmental component of the work and to deal with environmental problems that develop during construction. This is the primary method for compliance monitoring.

Projects with mitigation measures / concerns are subject to periodic site visits by Construction Administration environmental staff. The timing and frequency of such site visits are determined by the schedule of construction operations, the sensitivity of environmental concerns and the development of any unforeseen environmental problems during construction. MTO staff will be available should difficulties arise.

APPENDIX A

Correspondence and Minutes of Meetings

NOTICE OF STUDY COMMENCEMENT

AMHERST ISLAND FERRY TERMINALS STUDY

THE PROJECT

URS Canada Inc. has been retained by the Ontario Ministry of Transportation (MTO) to undertake a Preliminary Design Study of the Amherst Island Ferry Terminals under G.W.P. 4067-09-00.

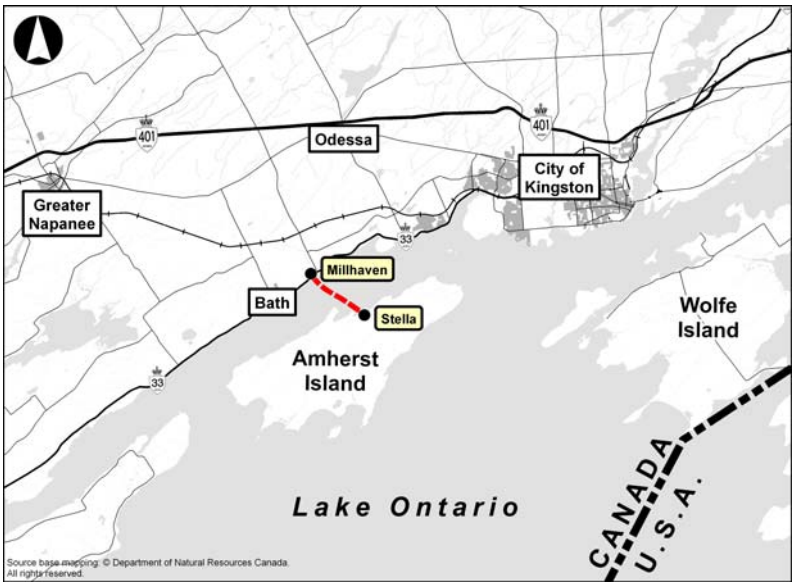
This Study will examine reconstruction of the Millhaven and Stella Terminals to permit end-loading of vehicles. The Study will further examine improvements to Highway 33 access, parking and marshalling areas, washrooms, pedestrian shelters, site lighting, passenger messaging as well as, staff and operations building requirements. The existing winter ferry operation system (bubble system) will also be examined and recommendations developed.

THE PROCESS

This Study will follow the planning process for a Group 'B' project under the *Class Environmental Assessment for Provincial Transportation Facilities (2000)*.

The planning process includes public and agency consultation, identification and evaluation of alternatives, an assessment of the effects of the proposed improvements upon the environment, and the identification of measures required to mitigate adverse effects.

At the end of the Study, a Transportation Environmental Study Report (TESR) will document the Recommended Plan, the planning process and the identified effects and proposed mitigation measures. The TESR will be available for a 30-day public review.



A Public Information Centre (PIC) is tentatively scheduled for fall 2012 and will be held in the Millhaven and Stella areas to provide the public with the opportunity to discuss the project and provide input to the Project Team.

Details regarding the PIC and the TESR review will be published in this newspaper and mailed to those on our mailing list.

Participation

There is an opportunity at any time throughout the Study for you to provide comments, seek additional information or have your name added to the mailing list. Please contact:

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Comments and information are being collected to assist in meeting the requirements of the *Environmental Assessment Act*. All comments will become part of the public record, except for personal information in conformity with the *Freedom of Information and Protection of Privacy Act*.

Ontario

STUDY COMMENCEMENT

THE PROJECT

URS Canada Inc. has been retained by the Ontario Ministry of Transportation (MTO) to undertake a Preliminary Design Study and Class Environmental Assessment of the Amherst Island Ferry Terminals under G.W.P. 4067-09-00.

This Study will examine reconstruction of the Millhaven and Stella Terminals to permit end-loading of vehicles. The Study will further examine improvements to Highway 33 access, parking and marshaling areas, washrooms, pedestrian shelters, site lighting, passenger messaging, as well as staff and operations building requirements. The existing winter ferry operation system (bubble system) will also be examined and recommendations developed.

THE PROCESS

This Study will follow the planning process for a Group 'B' project under the *Class Environmental Assessment for Provincial Transportation Facilities (2000)*.

The planning process includes public and agency consultation, identification and evaluation of alternatives, an assessment of the effects of the proposed improvements upon the environment, and the identification of measures required to mitigate adverse effects.

At the end of the Study, a Transportation Environmental Study Report (TESR) will document the Recommended Plan, the planning process and the identified effects and proposed mitigation measures. The TESR will be available for a 30-day public review.

A Public Information Centre (PIC) is tentatively scheduled for Fall 2012 and will be held in the Millhaven and Stella areas to provide the public with the opportunity to discuss the project and provide input to the Project Team.

Details regarding the PIC and the TESR review will be published in local newspapers and mailed to those on our mailing list.

Participation

There is an opportunity at any time throughout the Study for you to provide comments, seek additional information or have your name added to the mailing list. Please contact:

Vladimir Weisser, P.Eng.	**Bill Grant**	**Steve Jacobs, P.Eng.**	**Bob Bird**
Project Engineer	Senior Environmental Planner	Senior Project Manager	Senior Environmental Planner
Planning and Design Section	Environmental Section	URS Canada Inc.	URS Canada Inc.
Ministry of Transportation	Ministry of Transportation	75 Commerce Valley Dr E	75 Commerce Valley Dr E
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Comments and information are being collected to assist in meeting the requirements of the *Environmental Assessment Act*. All comments will become part of the public record, except for personal information in conformity with the *Freedom of Information and Protection of Privacy Act*.

Ontario

AAND AND MAA LETTER

November 14, 2011

Aboriginal Affairs and Northern Development, Ontario Region
Environmental Assessment Co-ordination
25 St. Clair Ave E, 8th Floor
Toronto, ON M4T 1M2

Attention: Mei Ling Chen
Sr. Environmental Officer

RE: Amherst Island Ferry Terminals Preliminary Design Study
Class Environmental Assessment Group 'B' Project; G.W.P. 4067-09-00

URS Canada Inc. has been retained by the Ministry of Transportation (MTO) to undertake a Preliminary Design Study of the Amherst Island Ferry Terminals (Millhaven and Stella). This Study will examine:

- reconstruction of the Millhaven and Stella terminals to permit end-loading of vehicles;
- improvements to Highway 33 access;
- improvements to parking and marshalling areas;
- requirements for washrooms, pedestrian shelters, site lighting, and passenger messaging;
- requirements for staff and operations buildings; and,
- winter ferry operations.

This study will follow the planning process for a Group 'B' project under the *Class Environmental Assessment for Provincial Transportation Facilities (2000).* A Public Information Centre (tentatively scheduled for fall 2012) will be held to present project details and solicit comments and input from the public and regulatory agencies. At the end of this assignment, a Transportation Environmental Study Report (TESR) will be prepared and posted for a 30 day review and will describe the recommended improvements, consultation undertaken, potential environmental impacts, proposed mitigation strategies and next steps.

The purpose of this letter is to seek your assistance in identifying any Aboriginal Nation communities who may have an interest in this project, so that we may engage them in constructive consultation. Currently, we have identified the following communities and will be in direct contact with each.

- Mohawks of the Bay of Quinte
- Association of Iroquois and Allied Indians
- Métis Nation of Ontario

If possible, a response to this initial request within the next 30 days would be appreciated. Further opportunities for consultation are provided throughout all stages of this preliminary design study.

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Tel: 905.882.4401
Fax: 905.882.4399
www.urs.ca

Yours truly,
URS Canada Inc.

Bob Bird
Senior Environmental Planner
(647) 922-8981

Encl (map & response form)

cc. V. Weisser - MTO Project Engineer
B. Grant - MTO Senior Environmental Planner
S. Jacobs - URS Senior Project Manager

Ministry of Transportation
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Ministère des Transports
Section de l'environnement
Région du l'Est
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Sac postal 4000
Kingston, Ontario K7L 5A3
Téléc: (613) 540-5106

Ontario

November 14, 2011

Mohawks of the Bay of Quinte
Administration Building
13 Old York Rd, RR 1
Deseronto, ON K0K 1X0

Attention: Chief R. Donald Maracle

RE: Amherst Island Ferry Terminals Preliminary Design Study
Class Environmental Assessment Group 'B' Project; G.W.P. 4067-09-00

URS Canada Inc. has been retained by the Ministry of Transportation (MTO) to undertake a Preliminary Design Study of the Amherst Island Ferry Terminals (Millhaven and Stella). This Study will examine:

- reconstruction of the Millhaven and Stella terminals to permit end-loading of vehicles;
- improvements to Highway 33 access;
- improvements to parking and marshalling areas;
- requirements for washrooms, pedestrian shelters, site lighting, and passenger messaging;
- requirements for staff and operations buildings; and,
- winter ferry operations.

This study will follow the planning process for a Group 'B' project under the *Class Environmental Assessment for Provincial Transportation Facilities (2000).* A Public Information Centre (tentatively scheduled for fall 2012) will be held to present project details and solicit comments and input from the public and regulatory agencies. At the end of this assignment, a Transportation Environmental Study Report (TESR) will be prepared and posted for a 30 day review and will describe the recommended improvements, consultation undertaken, potential environmental impacts, proposed mitigation strategies and next steps.

For this Preliminary Design assignment, we will be examining the environmental factors of:

- Fish and Fish Habitat Conditions and Impact Assessment for Lake Ontario
- Terrestrial Ecosystems to document migratory birds, vegetation compositions and ecological land classification
- Species at Risk
- Potentially contaminated land and materials
- Archaeological assessment, following the Ministry of Tourism and Culture requirements
- Cultural Heritage Evaluation
- Erosion and Sedimentation
- Excess material management.

A key component of all of these studies is the development of environmental protection and mitigation measures to avoid/prevent or control/mitigate any adverse environmental impacts on the natural environment and cultural resources. All measures developed for this project will be documented in the TESR.

We are interested in understanding your community's desired level of interaction on this project and are available to personally discuss the details with you. Additionally, we would appreciate receiving any comments, information and suggestions that you have regarding this project

For your information and records, Mr. Steve Jacobs, URS Canada (905-882-4401) is the Consultant Project Manager on this project.

Yours truly,

Bill Grant
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(613) 545-4878

cc. V. Weisser - MTO Project Manager
S. Jacobs - URS Senior Project Manager
B. Bird - URS Senior Environmental Planner

Encl (map)